International Journal of Advanced Education and Research
www.alleducationjournal.com
ISSN: 2455-5746
Received: 14-05-2025, Accepted: 13-06-2025, Published: 28-06-2025
Volume 10, Issue 2, 2025, Page No. 141-145

Examining smartphone addiction and academic self-efficacy as correlates of academic performance among undergraduates

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Abstract
This study examined smartphone addiction and academic self-efficacy as correlates of academic performance. Two hypotheses derived from the specific objectives of the study were tested. This study is cross-sectional and adopts the survey design. The study used quantitative data and this was gathered with a questionnaire used to elicit responses from 110 participants. Pearson Product Moment Correlation was used to test the hypotheses. Results suggest that smartphone addiction correlates negatively with academic performance and academic self-efficacy correlates positively with academic performance As regards the research findings, the following were recommended; lecturers and school management are advised to enact regulations that restrict smartphone use during lectures to maintain a conducive learning atmosphere that will help improve academic self-efficacy of students that will ultimately translate to improved academic performance. Students should also maintain a positive use of smartphones, by including themselves in more academic social forums online rather than spend countless hours on platforms that have no ties with their discipline among others.

Keywords: Smartphone addiction, academic self-efficacy, academic performance

Introduction

Higher education is a key institution in societal progression and outlook. The University as a citadel of teaching and research is designed to be at the centre of efforts to drive future innovations to create a better society. In this regard, students are trained and equipped with relevant skills and knowledge to address present and future challenges and their performance is assessed either continuously or at the end of a semester to gauge their mastery of the learning process. Tadese *et al*. (2022) [18] referred to academic performance as a measure of how well a student has achieved the learning objectives of a programme as seen in the result of their continuous assessment or cumulative grade point average (CGPA). Good (2009) [6] defines academic performance as the knowledge obtained or skills developed in school subjects usually designed by test scores or marks assigned by the teacher. Mehta (2008) [14] opines that academic performance includes both curricular and co-curricular performance of the students. It indicates the learning outcomes of the students.

Students' academic performance in higher institutions has garnered interest among scholars, wards, and educators for many reasons. Academic performance is associated with higher income, better employment benefits, more career growth opportunities, high self-esteem, self-efficacy and self-confidence and fewer mental health problems (Tadese *et al*., 2022) [18]. Due to the socio-economic and psychological implications of academic performance in the short and long term, studies have been carried out to examine its antecedents. In this study, smartphone addiction and academic self-efficacy are examined as correlates of the academic performance of undergraduate students.

The use of smartphones has increased among students significantly in recent years. Students now use smartphones to access information, communicate with friends, course mates and lecturers, and exchange academic resources geared towards academic excellence (Kaplan, & Haenlein, 2010) [10]. In a nutshell, smartphones are gradually becoming a compelling learning tool used to enhance teaching and learning in education. Its usage ensures flexible course delivery and makes it possible for learners to access online learning platforms, access course resources and interact virtually. However, with students, smartphone addiction is getting higher due to over-dependency on technology in every aspect. The use of smartphone devices has become so pervasive that a psychological term has been developed to describe the attachment people have; nomophobia, or the fear of being without a mobile device (Kuznekoff &Titsworth, 2013) [11].

Smartphone addiction is the excessive, and hard to control, use of a smartphone. Ownership of a mobile phone has social, economic, psychological and educational consequences on students as it usually influences their attitude and behaviour towards academic activities. Some of the constraints posed by the ownership of mobile phones to effective learning include inattentiveness, disruption and distraction. Closely associated with these is the use of mobile phones which causes noise and distraction during lecture hours. Studies have shown that there is a relationship between students' performance and smartphone use in lecture rooms as those who use mobile phones during lecture hours are more likely to experience distraction, inattentiveness, and non-participation in academic classwork (Tindell & Bohlander, 2012). [19]

According to self-efficacy theory, individuals judge their ability to successfully cope with new challenges, thus developing domain-specific self-efficacy beliefs (Raghuram, 2013). Psychologist Albert Bandura defined self-efficacy as one's belief in one's ability to succeed in specific situations or accomplish a task. In the context of academics, a

student's self-efficacy can play a major role in how he/she approaches academic goals, tasks, and challenges. Academic self-efficacy is theoretically defined as one`s expectations of his ability to perform various tasks successfully. A person with a high level of academic self-efficacy is confident that he can control and solve the difficult problems he encounters.

Literature Review

Smartphone Addiction and Academic Performance

Smartphone addiction, sometimes colloquially known as "nomophobia" (fear of being without a mobile phone), is considered as the inability to control smartphone use despite negative effects on users. The use of a smartphone not only produces pleasure and reduces feelings of pain and stress but also leads to failure to control the extent of use despite significant harmful consequences in financial, physical, psychological, and social aspects of life (Shaffer, 2016). Awareness regarding the severity of smartphone addiction has already been reflected in clinical science and praxis. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5, American Psychiatric Association (APA), 2013) introduced the diagnostic criteria for Internet gaming disorder and encouraged further research for listing it as a formal diagnosis.

Oulasvirta (2012) reported that the awareness of problems with repeated use of smartphones was underestimated, and only a few reported that they were aware of it. A few respondents reported repeated usage of a smartphone as annoying, addicting, "a trap," and distracting. They were aware that repeated use could lead to addiction; however, they were not aware of the severity of the repeated and intense use of a smartphone. If one is aware of the risks posed by smartphone addiction, one would do something against it. The awareness of the severity of smartphone addiction can, therefore, play a role in preventing it. Jubien (2013) [9] observed that depending on the application, using smartphones among students might have both beneficial and bad consequences. One of the disadvantages highlighted by the author is that smartphones have significantly increased the amount of distraction in the classroom. Students who are addicted to their phones have a high propensity to check updates or notifications almost every minute if not carefully controlled. This causes them to become distracted from their studies, even when a teacher is giving his or her all in a lecture. Students who use their smartphones excessively in classes are disengaged from what they are studying, which hurts their academic performance (Abbas, 2014) [1].

The pros and cons of smartphones can be found in previous literature and research reviews. Students using smartphones can access the internet, send and receive e-mails, video messages and video chat with friends and family from the palm of their hands. Students also use social media sites and applications, online libraries and portals on their phones to help them learn effectively (Mahmood *et al*., 2020) [12]. The growing popularity and development of mobile learning resources and electronic libraries have increased the usefulness of smartphones and improved student information-seeking behaviour (Soyemi *et al*., 2015) [17]. Adenya and Oyeyinka-Oyelaran (2020) [2], noted that educational institutions have witnessed an astronomical increase in the use of smartphones by students in recent times. This scenario has been extended to primary and secondary institutions as well.

However, in highlighting the constraints to effective learning, Rabiu *et al*. (2016) [15] listed inattentiveness, disruption and distraction. Closely associated with these, is the use of smartphones which causes noise and distraction during lecture hours. A study carried out at Ball State's Hanley Institute for mobile media research on students' use of smartphones, revealed that students not only use a smartphone for voice calls, but they also use it to e-mail, send text, download and listen to music and access social media sites. The study also found that 49% of students use smartphones to access websites for entertainment or concert information, 52% use them for movie viewing, 61% for news, 87% for weather reports while 57% of students reported using them for searching and 51% reported making one or more calls per day (Rabiu *et al*., 2016) [15].

Cheung (2008) [5] asserted that students use their smartphones for tagging location, status updates, and broadcasting where they are and what they are doing to all of their friends. Sarwar and Soomro (2013) [16] studied the attitudes of students towards the use of smartphones and the perceived social pressure and likely consequences. The study revealed a high usage of smartphones and found that some students see smartphone usage as pleasant, helpful and easy while others said they experience feelings of anxiety and distraction and that it sometimes takes too much of their attention that could have been allotted to other mainstream school programmes. Thus, some challenges and implications require to be addressed. Against this background, the following is hypothesised:

Hypothesis 1: Smartphone addiction will correlate positively with academic performance

Academic Self-Efficacy and Academic Performance

Self-efficacy refers to one's belief in one's abilities to arrange and perform actions that are needed to achieve desirable outcomes (Usher & Morris, 2023) [21]. Self-efficacy beliefs provide the foundation for human motivation, well-being, personal accomplishment and self-regulation (Bannock and Bowyer, 2015). Self-efficacy is one of the important psychological variables that are related to the behaviour and contribute to the achievement of the personal goals, of an individual. Judgements and beliefs of an individual about his abilities and capabilities take an important role in controlling the environment and, consequently, achieving success. Academic self-efficacy, given that it is about behaviour, has become of paramount importance. This is especially true in studies that involve educational constructions (Al-Ali & Abd Al-Mottalib, 2016) [3].

Academic self-efficacy refers to a student's confidence in his/her abilities to successfully perform academic activities at a desired level (Bardas & Phocas, 2014) [4]. As Bandura (1956) stated, academic self-efficacy is easier to obtain. Thus, it may be useful as an intervention to increase flexibility for at-risk populations like undergraduates. Prior studies have shown that academic self-efficacy is positively associated with academic performance (Albert & Wesker, 2014; Leon & Kennedy, 2015; Wong & Valentine, 2019).

Students with strong academic self-efficacy generate a greater interest in academic activities by establishing demanding goals and acting towards achieving them (Wong, 2018). As such, academic self-efficacy affects performance by influencing effort, persistence and perseverance. In addition, Chemers (2017) indicated that highly efficacious students experienced less stress, resulting in fewer health problems and a better adjustment to the higher education environment.

Academic self-efficacy is among the most dominant factors that affect perseverance and academic performance in a university student. Academic self-efficacy refers to the student's beliefs and attitudes toward their capabilities to achieve academic success. It is possible, through academic self-efficiency, to predict whether a student has a high or low level of academic performance (Zajacova *et al*., 2005) [22]. The previous studies were performed to identify the relationship between this concept and many educational and psychological variables. These studies were carried out in various environments and among participants from different grades and age groups. For instance, Khalid (2010) investigated the relationship between the beliefs related to academic self-efficacy and academic performance.

Students having a high level of academic self-efficacy related to performing difficult tasks are less prone to disorders than their counterparts and can regulate their behaviours (Bong, 2017). Matoti (2011) [13] emphasizes that self-efficacy affects many skills required for general academic performance. Therefore, if the individual does not believe in his self-efficacy, he will be less likely to combine simple and complex activities. Such a person will also be less likely to perform tasks continuously. On the other hand, if students maintain a high level of academic self-efficacy to perform tasks, they will motivate themselves to study a lot and, face the challenges, and they will remain and resist persistently. Hus *et al*. (2017) [7] agree with this perspective because they stress the importance of academic self-efficacy and the belief that one has about oneself.

Hypothesis 2: Academic self-efficacy will correlate positively with academic performance

METHODS

Participants

The participants of the study consist of one hundred and ten (110) students from the Faculty of the Social Sciences, Delta State University, Abraka, Nigeria; specifically, only the students from the Department of Psychology were sampled because of the nature of the study. This is because of accessibility to students' results hence the researcher had to sample only students from the Department of Psychology. The researcher with a letter authorizing the research introduced herself to the respondents. Through the assistance of course lecturers, the researcher administered the questionnaires to the students and the department lecture halls after their consent was given.

Measures

A questionnaire consisting of two parts was used as the instrument for the collection of data in this research. Part A of the questionnaire consists of demographic information of the respondents while Part B assess the impact of the impact of smartphone addiction and academic self-efficacy on academic performance. Three research instruments that were used to measure the variables and elicit information from the participants include; the smartphone addiction scale, academic performance scale and academic self-efficacy scale. The smartphone addiction scale was developed by (Sarfo, García-Santillán, Bastos & Attafuah, 2022), and has 7 items measuring smartphone addiction. All seven items on the scale were developed by the aforementioned authors the reliability coefficient of the scale was .90. The scale items are scored on a 5-point Likert response format ranging from 'Strongly Disagree' (scored 1) to 'Strongly Agree' (scored 5)

The Academic Self-Efficacy Scale (ASES) was used to measure academic self-efficacy. The ASES is a 20-item scale developed by Sachitra & Bandara (2017). The scale's authors reported Cronbach alphas of .83 and .85 in two different studies and test-retest reliability of .87. The scale items are scored on a 5-point Likert response ranging from 'Strongly Disagree' (scored 1) to 'Strongly Agree' (scored 5). A validation study of the ASES among thirty students sampled was conducted by the researchers. Item analysis on data obtained revealed a Cronbach's alpha of .84.

Academic Performance was accessed using the CGPA of students. This is a widely accepted measure of academic performance because it is objective and not based on the way the students perceive their performance (self-report). The CGPA is measured on a five (5) point scale where participants with a CGPA of 1.50-2.39, 2.40-3.49, 3.50-4.47 and 4.50-5.00 are within the third-class, second-class honours (lower division and upper division) and first-class honours respectively.

Design and Statistical Tool

The study adopted a cross-sectional design. The Pearson Product Moment Correlation (PPMC) statistic was used to test the research hypotheses. The questionnaires were coded and analysed using the IBM SPSS v23.0.

Results

A total number of two hundred and ten questionnaires were distributed for this study, one hundred ten were retrieved from the participants and used in the analysis.

Table 1: Socio-demographic characteristics of participant

Participants characteristics	*n*	%
Gender		
Male	35	31.8
Female	75	68.2
Marital Status		
Married	7	6.4
Single	103	93.6
Level of study		
100	29	26.4
200	30	27.3
300	33	30.0
400	18	16.3

As shown in Table 1, the study's sample was female-dominated and the majority of the participants. The academic level distribution of participants shows that those

in their second year of study were the highest while those in their fourth year were the lowest.

Hypotheses Testing

Table 2: Mean, standard deviation, and correlation of research variable

		n	*M*	*SD*	1	2	3
1	Smartphone Addiction	110	3.30	0.76	-	-	-
2	Academic self-efficacy	110	4.18	1.38	-	-	-
3	Academic performance	110	2.89	0.79	-.12	.213	-

The Pearson correlation coefficient shows that smartphone addiction correlates negatively with academic performance while academic self-efficacy correlates positively with academic performance. This confirms the study's two hypotheses. R^2 statistics show that smartphone addiction and academic self-efficacy respectively account for 1% and 4% of the variance in academic performance.

Discussion

This study investigates smartphone addiction and academic self-efficacy as correlates of academic performance. The first finding revealed that smartphone addiction correlates negatively with academic performance. This finding corroborates the findings of Jubien (2013) [9] who highlighted the disadvantages of smartphone use, noting that smartphones have significantly increased the amount of distraction in the classroom. Children who are addicted to their phones have a high propensity to check updates or notifications almost every minute if not carefully controlled. This causes them to become distracted from their studies, even when a teacher is giving his or her all in a lecture. Students who use their smartphones excessively in class get disengaged from what they are studying, which hurts their academic performance (Abbas, 2014) [1]. Buttressing this, Sarwar and Soomro (2013) [16] study on attitudes of students towards the use of smartphones and the perceived social pressure and likely consequences revealed a high usage of smartphones and found that some students see smartphone usage as pleasant, helpful and easy while others said they experience feelings of anxiety, distraction and that it sometimes takes too much of their attention that could have been allotted to other mainstream school programmes.

The second finding revealed that academic self-efficacy correlates positively with academic performance. This finding is in tandem with Zajacova *et al.* (2005) [22] who opined that academic self-efficacy is among the most dominant factors that affect perseverance and academic performance in a university student. Matoti (2011) [13] emphasizes that self-efficacy affects many skills required for general academic performance. Therefore, if the individual does not believe in his abilities to succeed at school, he/she will be less likely to give effort in simple and complex activities. Such a person will also be less likely to persist in performing tasks. On the other hand, if a student maintains a high level of self-efficacy to perform tasks, he will motivate himself to study and, when faced with challenges, he is likely to show resilience and persistence. Hus *et al.* (2017) [7] agree with this perspective because they stress the importance of self-efficacy and the belief that one has about oneself.

Conclusion

Smartphone addiction significantly correlates with academic performance. This is because smartphones are commonly used by students for academic research amongst other things. This no doubt could create a situation whereby their attention is often diverted from their academic research while using their smartphones to socialise with their online friends and consuming other non-academic related content (i.e. pornography and abstract videos). This will affect their academic achievement in the long run as the quality of their studies is poor. Academic self-efficacy has a significant relationship on academic performance. This implies that students' academic performance is hinged on how well they believe in their academic prowess. The importance of self-efficacy in academic performance cannot be overstated.

Recommendations for Practice

Based on the findings presented earlier, several recommendations and solutions can be made to improve the impact of smartphone addiction and academic self-efficacy on academic performance. Lecturers and school management are advised to enact regulations that no student should be allowed to use his/her smartphone when lectures are going on to maintain a conducive learning atmosphere that will help improve academic self-efficacy of students that will ultimately translate to improved academic performance. Students should maintain a positive use of smartphones, by including themselves in more academic social forums online rather than spend countless hours on platforms that have no ties with their discipline. Students should be encouraged to develop an interest in the use of academic websites and the use of mobile applications that will improve their attitude towards education and academic performance as well.

Recommendations for Further Studies

Further studies should be carried out to ascertain the impact of smartphone addiction and self-efficacy on the academic performance of secondary school students. Future researchers should carry out studies on the impact of smartphone addiction and self-efficacy on academic performance emphasizing variables such as students' adaptability to the course of study and attentiveness during lectures.

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