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Empirical Study and Statistical Analysis of the Nexus between Smartphone and Academic Performance

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ABSTRACT

The primary objective of this research is to investigate and determine the positive and negative influences of smartphones on students' academic performance. This is a comparative study of the effects of using smartphones on the academic performance of university students as students use their smartphones for both educational and recreational purposes. The research was conducted at different educational institutes in the Nawabshah district. The questionnaire was developed for this study and the sample size was 300, simple random sample techniques were used for data collection. Cross-tabulation and chi-square techniques were used to analyze the data. The result of the study found that students' smartphone use influences them positively and negatively. Also, most students consider smartphones useful for obtaining academic content. As a result, it is suggested that teachers use this medium to connect with students more frequently like chat groups to help everyone to stay connected. In addition, Educational institutions should also implement software that bans students from the use of social networking sites while attending class. Further, it is revealed that smartphones have a wide range of effects on the academic career of undergraduate students at Shaheed Benazir Bhutto University, Degree Boys' College Nawabshah, and the Shaheed Benazir Bhutto University of Veterinary and Animal Sciences Sakrand. Arguments. Hence, this study contributes to a deeper understanding of the impact of smartphone usage on academic performance and provides insights into potential strategies for raising a balanced and productive relationship between students and their smartphones in the educational context.

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1. Introduction

IBM invented the first smartphone 25 years ago. IBM is primarily tasked with creating the world's first smartphone, the cumbersome but affectionately nicknamed Simon. It was introduced in 1975 and had a touchpad, Gmail functionality, and a few designed programs, such as a calculator and a drawing pad. Simon had many challenges, including a claimed battery power life of 60 minutes. It was also a bit of a flop, with various It's also a bit of a disaster, with estimates claiming that such a gadget was just on the market for six months, selling roughly 50,000 copies. According to reports, the device was only on the market for six months, selling approximately 50,000 units. Smartphones are one of the miracles of science and technology that can handle multiple tasks at the same time. The smartphone is more than an ordinary phone made by the assembler and has more options than the current version. During this process, it is kept in mind to make it easy and user-friendly. Smartphones are modern tools designed to help users solve problems with technology. Smartphones contain more options than a simple mobile phone. One of the significant advantages of the smartphone is that it reduces labor by allowing multiple tasks to be done with a single click. A smartphone

is also being used as an alternative to other products. I.e., laptops, watch calculators, etc. The smartphone has innovative structures and functionality that are used more often than calls and text messages. The smartphone is used to display photographs, watch videos, play games, read maps, have a built-in camera, replay audio and video, send/receive Emails, and show off applications for public websites, wireless Internet, and distant places. Smartphones may be found almost anywhere. That is why humans cannot stay without it and have become dependent on it. One additional utilization of it is Mile's amusement and social media. Researchers noticed that as smartphones became more popular, individuals became increasingly reliant on them. The aim is to understand better the elements contributing to inappropriate smartphone usage. IBM is primarily tasked with creating the world's first smartphone, the cumbersome but affectionately nicknamed Simon. It was introduced in 1975 and had a touchpad, Gmail functionality, and a few designed programs, such as a calculator and a drawing pad. Simon had many challenges, including a claimed battery power life of 60 minutes. It was also a bit of a flop, with various It's also a bit of a disaster, with estimates claiming that such a gadget was just on the market for six months, selling roughly 50,000 copies. According to reports, the device was only on the market for six months, selling approximately 50,000 units.

Mobile phones represent the fastest-growing market segment in the telecom industry and account for more than 40% of all mobile devices sold in the era of the world. Over 80% of the world's population uses smartphones, which have become the standard setup for mobile phone devices. In the second quarter of 2013, mobile phone sales increased by 3.6 percent, to 435 million copies, with smartphones accounting for more than half of the market for the first time. In 2013, internet-connected smartphones sold more than basic mobile phones for the first time. Though telecommunication and desktop computers were invented in the 1970s, it wasn't until the end of 2006, when Research in Motion (RIM) released the Blackberry mobile, that the smartphone became a commercially viable product. Apple got its start in the market in 2007 with the release of the first model of the iPhone, and Samsung introduced the Samsung Instinct soon after (Jun 2008), the Apple iPhone's direct competition. Since then, there has been intense competition for market share among holders as new companies. The latest legal fight between Apple and Samsung over inventions and designs indicates that smartphone suppliers vigorously compete for the market. Leadership, even though Samsung is increasing its position due to the growing adoption of the Android system. Huawei's technology was launched in 1987 in Shenzhen City. Between 1996 and 1998, Huawei began to grow in metropolitan areas as China's urban population increased. HUAWEI defeated Apple and Samsung as the world's second-largest smartphone vendor, marking the first time in seven years that a competitor has managed to divide the top two. Apple and Samsung must make their portfolios more competitive to maintain their position in the market. Huawei has introduced the P30 Pro, a redesigned smartphone with a strong Kirin CPU optimized for the 5G network. Smartphones are among the most inventive and communicative devices available today. Smartphones amuse people with various applications such as watching videos, listening to music, and playing video games. It also enables people to communicate socially through platforms like Facebook and Twitter. However, it has a detrimental impact on life, such as developing obsessive behavior and the creation of such topics as security hazards, hacking, and even being spied upon. Smartphones influence virtually every sector, including education, business, and entertainment.

It makes people distressed in various ways, including threats to privacy, disrespectful conduct, job distraction, etc. Mobile phones have become a worldwide phenomenon and a vital component of the lives of today's youth. Young people use technology constructively to maintain social contexts and family relationships, resulting in a shift in safe practices and regulation of family relations. It, on the other hand, harms the younger generation, leading to prejudice and cyberbullying. Smartphone technology influences human civilization well, allowing users to achieve their jobs more efficiently and remain active. Unfortunately, it hurts people's lives and their lifestyles. Teenagers have been noticed to chat with each other constantly. Conversely, adults have residual responsibilities like phone calls, e-mails, and other associated tasks. Mobile phones are a popular innovation and a need in today's world. Therefore, in recent years, smartphones have become ubiquitous tools in students' lives, providing access to a wealth of information and communication platforms. However, concerns have been raised regarding the potential negative impact of excessive smartphone usage on academic performance. Therefore, this study contributes to a deeper understanding of the

impact of smartphone usage on academic performance and provides insights into potential strategies for nurturing a balanced and productive relationship between students and their smartphones in the educational context. Further, this study aims to examine and determine the positive and negative impact of smartphones on students' educational performance. This is a comparative study to identify the effect of using smartphones on the academic performance of university students as students use their smartphones for both educational and recreational purposes. The quantitative and qualitative research techniques are used in this study in which phone dependency on academic overall performance among undergraduate students from three particular institutions: Shaheed Benazir Bhutto University, Degree Boys' College Nawabshah, and Shaheed Benazir Bhutto University of Veterinary and Animal Sciences Sakrand. The 300 respondents which were college students were randomly selected for this study.

2. Literature Review

According to Kaur (2024), mobile phones have come to be the leading disease of our date, tangling approximately everybody in their command. On the other hand, the excessive use of mobile phones does not directly impact the performance of the students, But, it indirectly affects the performance of the students through the mediation of smartphones (Ammunje, Prabhu H, & Barkur, 2023). Further, to explore the gender differences and learning environment experiences in smartphone use for academic purposes among first-year and fourth-year undergraduate students at the University of Botswana. The study suggests that smartphone use for academic tasks is influenced by students' familiarity with their learning contexts, advocating for further research utilizing varied data collection methods to understand students' perceptions and the impact of smartphone use on academic performance (Faimau, Tlhowe, & Tlhaolang, 2022). Furthermore, it is argued by the author that this thought challenges the negative belief of smartphones amongst college students, revealing that their appropriate use can honestly decorate overall educational performance. Analyzing six cellular software kinds amongst over 10,000 students reveals tremendous influences from cellular getting-to-know and news apps, while social media, gaming, and leisure apps display adverse results. Nomophobia and negative sleep habits mediate these effects, highlighting the complex relationship between smartphone use and academic results (Lin, Liu, Fan, Tuunainen, & Deng, 2021).

In addition, systematic evaluation examines the clinical literature on smartphone use and educational success, highlighting a generic lousy association. However, versions exist that are the strength of this association based totally on facts-gathering techniques, overall academic performance measures, and cellphone use measures. While causality cannot be mounted, the assessment suggests avenues for future studies (Amez & Baert, 2020). Sapci, Elhai, Amialchuk, and Montag (2021), investigated the impact of smartphone utilization on educational fulfillment among ninety-nine undergraduate iPhone users at a massive Midwestern U.S. University. The observer examined factors influencing overall academic performance by utilizing objective cellphone use information from Apple's Screen Time feature alongside official GPA and ACT/SAT scores. Results indicated that every extra hour of daily telephone use correlated with a 0.152-factor lower modern-term GPA, highlighting the harmful impact of phone utilization on academic productivity. Conversely, Shakoor (2021) researched 150 college students in Islamabad to research the impact of cellphone usage on getting to know their behavior and overall academic performance. Their findings revealed a high-quality correlation between cellphone utilization and academic performance, emphasizing the impact of smartphones on college students' getting-to-know conduct and professional results. This empirical proof fills an opening in current research by integrating smartphone utilization and educational performance to offer quantitative estimates and correlations. Likewise, Abbasi, Jagaveeran, Goh, and Tariq (2021), examined the relationship between content use, smartphone dependency, and overall educational performance among 250 undergraduate students. Findings discovered acceptable outcomes of leisure, social networking, and recreation-related use on cellphone dependency, while sport-associated use negatively impacted instructional performance. Physical pastime was recognized as a moderator, negatively influencing the effect of recreation-related use on educational performance.

Besides, Ahmed, Salman, Malik, Streimikiene, Soomro, and Pahi (2020), investigates the impact of smartphones on educational performance among college students in Pakistan. It

delves into various telephone features like programs, messaging offerings, and entertainment, examining their influence on instructional outcomes. Additionally, it explores the mediating function of digital word of mouth and mindset and the moderating effect of generation and dependency. The findings propose vast relationships among telephone functions, educational overall performance, and mediating/moderating variables, offering realistic insights for educators, fathers and mothers, and policymakers. On the other hand, Baert et al. (2020), conducted a study to assess the causal effect of smartphone use on instructional performance, using instrumental variable estimation strategies with data from two Belgian universities. Results showed that a one-preferred-deviation boom in each day phone use caused a lower in standard exam scores using approximately one point out of 20, with the poor association being extra reported among students with pretty knowledgeable fathers, those with divorced fathers and mothers, and those in properly fitness. The look highlights the need for statistics and focuses on campaigns among instructors, and parents concerning the trade-off between cellphone use and educational performance. Therefore, the effect of smartphone usage on academic performance has been studied significantly. Bjerre-Nielsen, Andersen, Minor, and Lassen (2020) performed a longitudinal study tracking the telephone utilization of 470 college students over two years. Their findings revealed a deviant affiliation between in-elegance cellphone use and grades, consistent with previous research. However, using a set-outcomes model, the authors observed a reduced magnitude of this association, suggesting that earlier studies may have overestimated the effect size by no longer accounting for all substantial pupil and path characteristics.

Han and Yi (2019) examines how college students' phone use impacts their perceived academic and overall performance. Through route evaluation and a couple of organization analyses, they have confirmed significant relationships between telephone use and academic average overall performance. Notably, one direction varies considerably across scholar majors. These findings provide insights for educational policymakers and educators on the effect of smartphone usage on pupil learning consequences. On the other hand, Chaudhury and Tripathy (2018), mentioned that phone addiction's effect on academic overall performance using statistics mining techniques with 222 university students. Results showed a terrible correlation between phone addiction and overall educational performance, corroborated by Pearson's correlation evaluation. Additionally, attributes like internet connectivity and involvement in outdoor sports activities negatively correlate with overall academic performance. These findings provide insights for mitigating internet dependence and improving educational results among students. It is stated Brennan and Dempsey (2018) that longitudinal information from college students through 11 looks at programs at two Belgian universities, marking the first international attempt to examine cellphone use's causal impact on instructional performance.

Utilizing panel data random-effects estimation, findings revealed that a 1 SD boom in smartphone use corresponded to a zero decrease.349 points out of 20 in educational scores and a reduction of 2.616 percent factors in the fraction of tests exceeded. Author Felisoni and Godoi (2018), experimented with Fundação Getúlio Vargas (FGV), Brazil, using Apps like 'Moment' and 'App Usage Tracker' to determine actual cellphone usage among forty-three students. Findings discovered a significant negative correlation between total telephone utilization time and educational performance, indicating a discount in college students' rating via 6.3 points for each one hundred minutes of day-by-day usage, specifically during magnificence time. This study underscores the destructive outcomes of excessive telephone use on academic performance, imparting valuable insights for educators and educational stakeholders. Yi, You, and Bae (2016) explored the factors influencing college students' smartphone use for academic purposes by examining smartphones' task-technology fit (TTF). Their research model elucidates the relationship between TTF, perceived academic performance, and smartphone use among college students. On the other hand, smartphone misuse, and addiction are essential issues in Tanzania, especially among students. This study examines the impact of smartphone use on the learning outcomes of high school students. A survey of 100 smartphone-owning students was conducted using SPSS and Excel, focusing on critical factors affecting academic achievement and the extent of engagement (Kibona & Mgaya, 2015). Therefore, this study comprehensively expands on how smartphone use distresses academic performance and suggests various perspectives to nurture a congenial and applicable interaction between students and their smartphones in the educational system.

3. Research Methodology

This study used quantitative and qualitative study techniques, using the survey questionnaire to discover the effect of smartphones on the student's academic overall performance among undergraduate students from three particular institutions: Shaheed Benazir Bhutto University, Degree Boys' College Nawabshah, and Shaheed Benazir Bhutto University of Veterinary and Animal Sciences Sakrand. The study used descriptive and inferential statistical analyses to examine the data. However, descriptive statistics were applied to measure the frequency and percentage, mean, median, and mode. Over 300 college students were randomly selected, comprising 47% ladies and 53% males. Data was accrued via questionnaires and 21 closed-ended questions administered face-to-face. The observer used a correlation design to discover the connection between cellphone self-performance, interaction competency, behavioral intention, and educational success. Statistical techniques, frequency, descriptive facts, and chi-square of independence were employed for information analysis. These comprehensive techniques shed light on the nuanced dynamics between smartphone utilization and educational performance among university students.

3.1. Frequency and Descriptive Analysis

Descriptive analysis is foundational in comprehending datasets, whether they represent complete populations or samples. It employs concise summaries to encapsulate the essence of the information, paving the manner for additional analysis. Frequency evaluation extends this technique by visually illustrating the prevalence of every price inside the dataset, typically via tables or charts (Kotronoulas et al., 2023). Building upon these summaries and frequencies, data presentation employs various formats, including textual content, tables, or graphs, to elucidate relationships amongst exceptional data factors, facilitating informed choice-making by researchers. Subsequently, descriptive facts offer a more complex examination of the information, categorized into central tendency and dispersion measures. Central tendency measures like imply median and mode remove darkness from the standard value within the dataset, even as dispersion measures such as widespread deviation and variance delineate the spread of statistics factors (Thakur, 2024). By comprehending these characteristics, researchers can derive nuanced expertise of the dataset under scrutiny, enriching the analytical system.

3.2. Chi-square Test

When the test variable is nominal, dichotomous, ordinal, or grouped, we will use independence to examine group differences using the chi-square test. Chi-square statistics is a non-parametric statistical approach for determining if a distribution of observed frequencies varies from the theoretical predicted frequencies (Turhan, 2020).

- **Contingency table analysis and Hypothesis testing**

While the first and second classification of categories is not mutually exclusive, then:

$$E_{ij} = \frac{(R_i)(C_j)}{n}$$

- **The alternative hypothesis (H_A) and the null hypothesis (H_0) are:**

H_A: There is a significant association between the two variables.
H_0: There is no significant association between the two variables.

$$X^2 = r * c \sum ij = 1$$

$$X^2 = \frac{(O_{ij} - E_{ij})2}{E_{ij}}$$

Where (r-1) (c-1) degrees of freedom

3.3. Decision rule

The decision rule is if $X^2 > \boldsymbol{X}^2 u$ rejects the null hypothesis H_0. Where $X^2 u$Is from the chi-square distribution with *(r-1) (c-1)* degree of freedom.

4. Results and Discussion

This study is based on the analysis of questionnaires gathered during the empirical assessment of the effects of smartphones on the academic performance of undergraduate students at the Shaheed Benazir Bhutto University, Degree Boys' College Nawabshah, and the Shaheed Benazir Bhutto University of Veterinary and Animal Sciences Sakrand. The descriptive study examined smartphones' favorable influence on undergraduate students' academic performance at Shaheed Benazir Bhutto University, Degree Boys' College Nawabshah, and the Shaheed Benazir Bhutto University of Veterinary and Animal Sciences Sakrand. The following are the queries that had a positive and negative impact. The process of data collection and computerization was addressed in the earlier section. When undertaking analysis, it is vital to understand the properties or nature of the data. The frequency table and visual depiction might be highly beneficial for some topics. In this section, we'll look at some of the represented graphs. The analysis was performed using the SPSS 21 version.

4.1. Frequency Table and Graphs

Table 1: Description of Age

	Frequency	Per cent	Valid Percent	Cumulative Percent
16-19	159	53.0	53.0	53.0
20-23	117	39.0	39.0	92.0
23-27	24	8.0	8.0	100.0
Total	300	100.0	100.0	

Figure 1: Pie chart for the Age variable of respondents

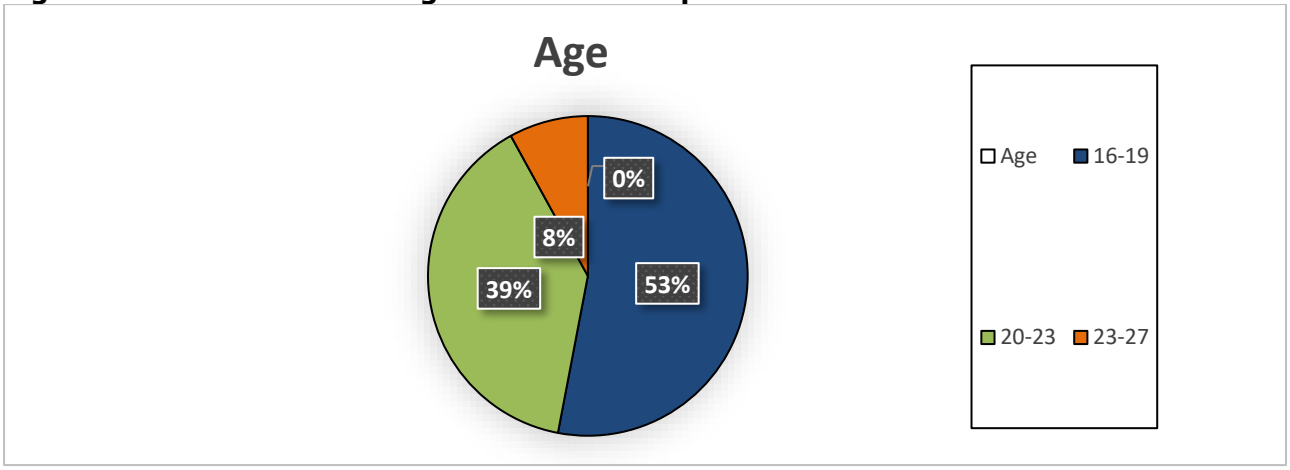


Table 1 illustrates that the frequency of age in the first column record with the frequency name indicates how many students of different ages are included in this study. There are a total of 300 respondents in this study. Age, in which the respondents are under 16-19 (53%), 20-23 (39%), and 23-27 (8%). Graphical Analysis The above graph 1 also indicates the frequency of participants.

According to these results, most participants are between the ages of 16 and 19, with 53% covered with blue shade.

Table 2: Description of Gender

	Frequency	Per cent	Valid Percent	Cumulative Percent
Male	159	53.0	53.0	53.0
Female	141	47.0	47.0	100.0
Total	300	100.0	100.0	

The above table shows that the frequency of gender in the first column recorded with the frequency name shows how many genders are included in this research, equal to 300. The third column tells us the valid percent of the variable, and the fourth column tells us the cumulative percent. Because 53% are male and 47% are female, we can say that most genders fall in the male category.

Figure 2: Bar chart for the Gender

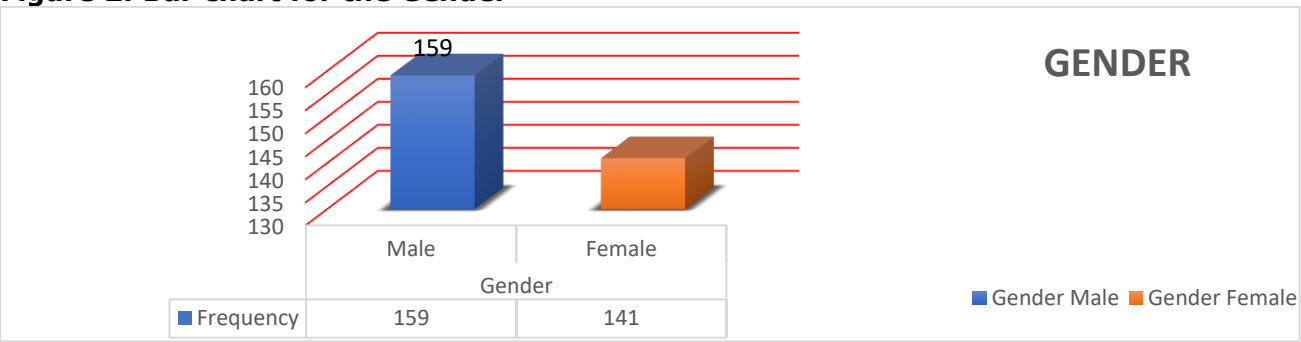
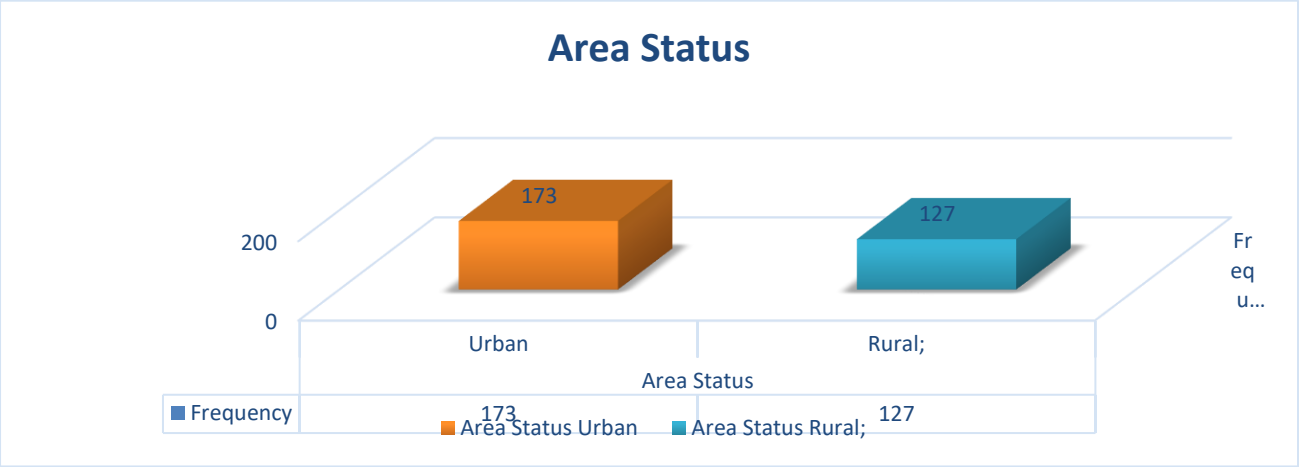


Table 3: Description of Area Status

	Frequency	Per cent	Valid Percent	Cumulative Percent
Urban	173	57.7	57.7	57.7
Rural;	127	42.3	42.3	100.0
Total	300	100.0	100.0	

Figure 3: Bar chart for the Area Status of the respondents



The table shows that the frequency of area status in the first column record with the frequency name shows how many area statuses are included in this research, equal to 300. Another third column tells us the valid percent of variables, and the fourth column tells us the cumulative percent. Because 42.3% of students belong to rural areas, and 57.7% belong to urban areas, we can say that most area statuses belong to urban sides.

Table 4: Description of Subject Reading

	Frequency	Per cent	Valid Percent	Cumulative Percent
Science	249	83.0	83.0	83.0
Arts	51	17.0	17.0	100.0
Total	300	100.0	100.0	

Figure 4: Bar chart for the frequency distribution of respondents Subject reading

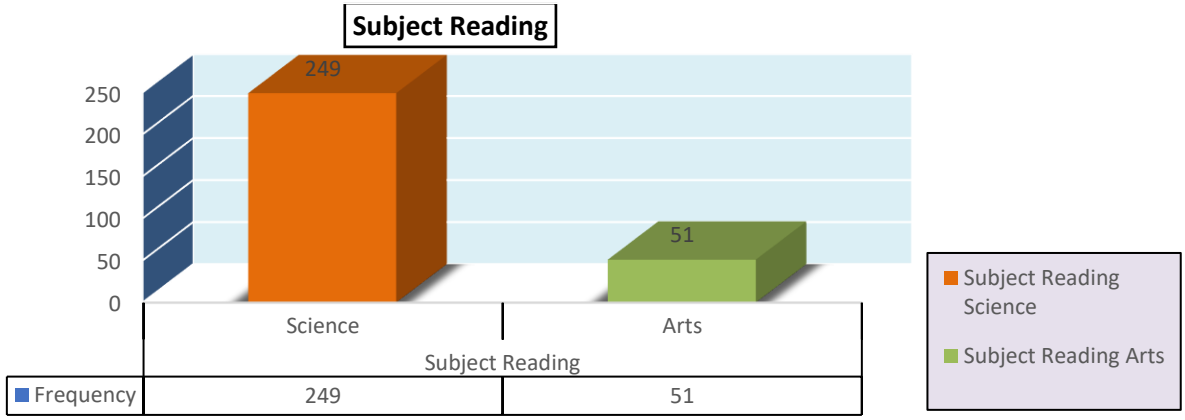
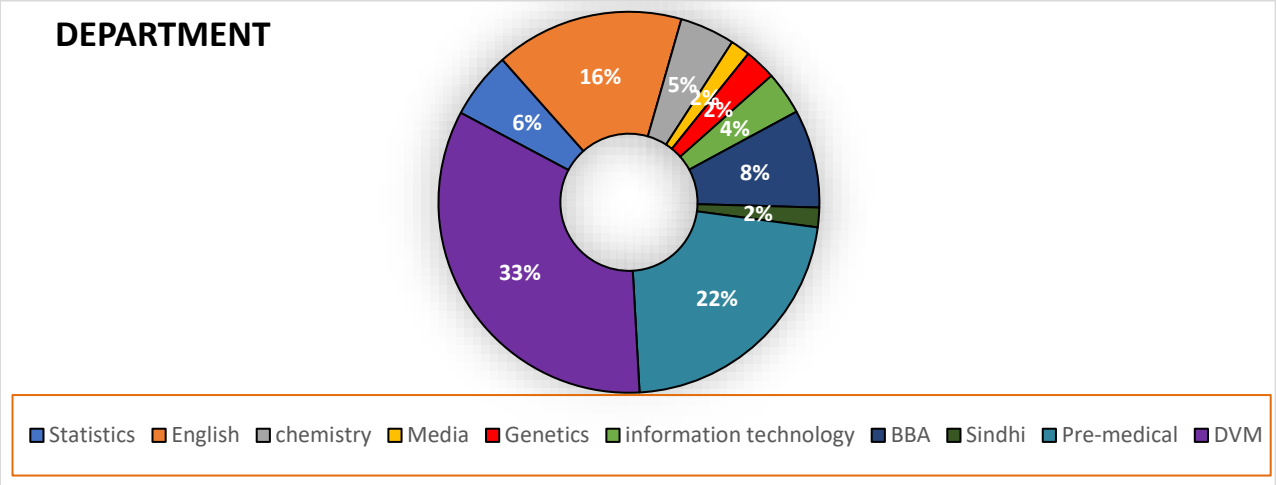


Table 5: Frequency Distribution of Respondents Subject-wise

	Frequency	Per cent	Valid Percent	Cumulative Percent
Statistics	17	5.7	5.7	5.7
English	48	16.0	16.0	21.7
Chemistry	14	4.7	4.7	26.3
Media	5	1.7	1.7	28.0
Genetics	8	2.7	2.7	30.7
Information technology	11	3.7	3.7	34.3
BBA	25	8.3	8.3	42.7
Sindhi	5	1.7	1.7	44.3
Pre-medical	66	22.0	22.0	66.3
DVM	101	33.7	33.7	100.0
Total	300	100.0	100.0	

Figure 5: Pie chart for the frequency distribution of respondent's subject-wise



The above table shows that the frequency of subject reading in the first column recorded with the frequency name shows how many subject readings are included in this research, equal to 300. Another third column tells us about the valid percent of the variable, and the fourth column tells us about the cumulative percent. Because 83% of students read science subjects and 17% of students read Art subjects in their academic career. We can say that most of the science subject reading students are participants. Graphical Analysis The above bar graph 4 also indicates the frequency of participants.

According to these results, most participants are science subject reading students. The following table 5 data shows that most respondents are in the Doctor of Veterinary Medicine (DVM) program, 5.7% are statistics, and 5% are media, Sindhi department. This indicates that most respondents are undergraduates in the Doctor of Veterinary Medicine (DVM) program.

Table 6: Chi-square and P-value of age variable with different statements of smartphone the academic performance of students

Statements	Chi-Square	df	P-value
Gender	0.315	2	0.854
Area Status	4.118	2	0.128
Subject reading	1.394	2	0.498
I find it simple to read on my smartphone.	9.956	4	0.41
Using a smartphone helps me to study more efficiently.	0.919	4	0.922
My learning contact using my smartphone is straightforward and understandable.	5.942	4	0.204
Using a smartphone improves my studying performance.	11.911	4	0.018
Using a smartphone increases my coursework productivity.	12.727	4	0.013
With smartphones, we can take quizzes and Interim Assessments (IA) anywhere and anytime.	15.694	4	0.003
We can have rapid access to information on the internet with the aid of our smartphones.	19.613	4	0.001
We were able to obtain additional abilities and experiences outside of the classroom by using the smartphone for learning	1.861	4	0.761
My smartphone allows me to record lectures given by my	7.515	4	0.111

professors.			
My smartphone allows me to keep track of all of my lesson materials.	7.180	4	0.127
My smartphone allows me to access my e-mail swiftly.	3.042	4	0.551
Smartphones help me share lecture materials among colleagues and facilitate online group discussions.	2.894	4	0.576
Do you agree that smartphones are always used for playing games and accessing social media platforms instead of using it for learning?	4.974	4	0.290
Using smartphones during academic tasks might promote multitasking and task switching, resulting in decreased academic performance.	9.718	4	0.045
Using my smartphone to learn consumes a large amount of data, which increases my costs.	9.553	4	0.049
My focus is diverted from my academics by my smartphone.	14.316	4	0.006

In Table 6 the chi-square test findings concerning the effect of smartphones on academic performance across extraordinary age agencies show no significant distinction in opinions. Similarly, gender, vicinity reputation, subject reading, and perceptions of cellphone use for reading reveal non-great institutions. These outcomes indicate that attitudes toward phone usage for instructional functions are steady throughout numerous demographic factors. However, significant relationships emerge in variables related to smartphone capability and educational engagement. Factors consisting of accessing net statistics and multitasking throughout academic responsibilities display sizable institutions across extraordinary age groups. This shows that positive phone behaviors can also significantly impact academic overall performance, suggesting a need for centered interventions to deal with distractions and promote centered knowledge (Dontre, 2021). Moreover, findings revealing a good-sized diversion of focus from teachers due to smartphone use underscore the significance of know-how and how generation affects scholar engagement. These results spotlight the complexity of smartphone use in educational settings and emphasize the need for tailored techniques to mitigate distractions and foster conducive learning surroundings (Walcutt & Schatz, 2019).

Table 7: Chi-square and P-value of Area of the status variable with different statements of smartphone the academic performance of students

Statements	Chi-Square	Df	P-value
Gender	1.018	1	0.313
Age	4.118	2	0.128
Subject reading	0.192	1	0.661
I find it simple to read on my smartphone.	3.947	2	0.139
Using a smartphone helps me to study more efficiently.	3.822	2	0.148
My learning contact using my smartphone is straightforward and understandable.	2.340	2	0.310
Using a smartphone improves my studying performance.	1.609	2	0.447
Using a smartphone increases my coursework productivity.	6.766	2	0.034
With smartphones, we can take quizzes and Interim Assessments (IA) anywhere and anytime.	8.950	2	0.011
We can have rapid access to information on the internet with the aid of our smartphones.	7.960	2	0.019
We were able to obtain additional abilities and experiences outside of the classroom by using the smartphone for learning	4.844	2	0.089
My smartphone allows me to record lectures given by my professors.	13.639	2	0.001
My smartphone allows me to keep track of all of my lesson materials.	11.636	2	0.003
My smartphone allows me to access my e-mail swiftly.	3.741	2	0.154
Smartphones help me share lecture materials among colleagues and facilitate online group discussions.	0.442	2	0.802
Do you agree that smartphones are always used for playing games and accessing social media platforms instead of using it for learning?	2.968	2	0.227
Using smartphones during academic tasks might promote multitasking and task switching, resulting in decreased academic performance.	0.199	2	0.905
Using my smartphone to learn consumes a large amount of	5.256	2	0.072

data, which increases my costs.			
My focus is diverted from my academics by my smartphone.	3.922	2	0.141

In Table 7 the chi-rectangular look at the results screen that for variables 1 through 17, the calculated p-values exceed the standard alpha level of zero.05. Consequently, the null speculation cannot be rejected for those variables, indicating no substantial affiliation between regions' fame and the respective variables. However, for variables 12 and thirteen, the p-values are less than zero.05, leading to the rejection of the null hypothesis. Hence, there may be sufficient evidence to signify an affiliation between region status and variables associated with recording lectures and preserving the music of lesson materials and the usage of smartphones. Table 7 presents a complete evaluation of the chi-square test consequences for each variable, indicating whether or not a massive affiliation with area status exists primarily based on the calculated p-values.

Table 8: Chi-square and P-value of Gender of statistics variable with different statements of smartphone the academic performance of students

Statements	Chi-Square	Df	P-value
Age	0.315	2	0.854
Area Status	1.018	1	0.313
Subject reading	2.399	1	0.212
I find it simple to read on my smartphone.	4.171	2	0.124
Using a smartphone helps me to study more efficiently.	0.453	2	0.797
My learning contact using my smartphone is straightforward and understandable.	1.242	2	0.537
Using a smartphone improves my studying performance.	0.958	2	0.619
Using a smartphone increases my coursework productivity.	9.774	2	0.008
With smartphones, we can take quizzes and Interim Assessments (IA) anywhere and anytime.	4.375	2	0.113
We can have rapid access to information on the internet with the aid of our smartphones.	1.518	2	0.468
We were able to obtain additional abilities and experiences outside of the classroom by using the smartphone for learning	2.355	2	0.308
My smartphone allows me to record lectures given by my professors.	4.423	2	0.110
My smartphone allows me to keep track of all of my lesson materials.	11.674	2	0.003
My smartphone allows me to access my e-mail swiftly.	4.423	2	0.110
Smartphones help me share lecture materials among colleagues and facilitate online group discussions.	6.165	2	0.046
Do you agree that smartphones are always used for playing games and accessing social media platforms instead of using it for learning?	8.903	2	0.012
Using smartphones during academic tasks might promote multitasking and task switching, resulting in decreased academic performance.	1.832	2	0.400
Using my smartphone to learn consumes a large amount of data, which increases my costs.	0.818	2	0.662
My focus is diverted from my academics by my smartphone.	4.559	2	0.102

In Table 8 the chi-rectangular check effects for numerous variables related to gender display that the calculated p-values are all more than the standard alpha degree of zero.05. Therefore, the null hypothesis can't be rejected for any of these variables, indicating no huge affiliation between gender and the respective elements taken into consideration. Specifically, no proof suggests an association between gender and variables such as phone utilization for reading, development in overall performance, or productivity (Jackson, Von Eye, Witt, Zhao, & Fitzgerald, 2011). Similarly, there may be no great link between gender and the potential to document lectures, get admission to e-mail, or interact in online organization discussions through smartphones. Furthermore, the evaluation of gender on the subject of different variables, which includes multitasking during instructional obligations or diversion of cognizance from lecturers because of cellphone utilization, additionally yields non-huge consequences. This implies that gender no longer significantly influences smartphone usage and its effect on overall academic performance (Wang, Wu, & Wang, 2009). Overall, the chi-rectangular check outcomes suggest that gender isn't a figuring-out element within the numerous dimensions of smartphone use and its outcomes on educational engagement and overall performance in a few

surveyed populations. In conclusion, the findings from Table Three imply that there may be no substantial association between gender and the variables tested about cellphone usage and overall educational performance. These results underscore the need for additional research into other potential elements influencing the relationship between smartphone use and academic effects beyond gender. Additionally, the non-sizeable findings endorse that interventions or regulations addressing smartphone-related problems in instructional settings must consider broader factors beyond gender while designing-centered techniques.

5. Conclusion

Nowadays, smartphone use causes a substantial challenge among university students in Pakistan. Students in today's educational atmosphere often show extreme smartphone practice, as a matter of unease for both teachers and paternities. Thus, this study intended to discover undergraduate student's viewpoint on the smartphone and its effect on their academic performance and achievement. The results show an unfavorable effect of smartphones on the academic performance of Pakistani students. Further, according to the results above, students reported that smartphones help them stay in touch with their instructors. Furthermore, most students considered smartphones useful for obtaining academic content. As a result, it is suggested that teachers use this medium to connect with students more frequently. This could be achieved by creating chat groups to help everyone (students and lecturers) stay connected to share information. Educational institutions should also implement programs that ban students' use of social networking sites and applications while attending class. Finally, the data reveal that smartphones have a wide range of effects on the academic career of undergraduate students at Shaheed Benazir Bhutto University, Degree Boys' College Nawabshah, and the Shaheed Benazir Bhutto University of Veterinary and Animal Sciences Sakrand. Arguments have been made in the literature for and against the effects of smartphones on student academic achievement. This study found that students' smartphone use influences them positively and negatively. It would be highly beneficial if more studies on how students utilize smartphones to improve their academic performance were conducted in underdeveloped nations.

5.1. Theoretical Implications

1. This research provides the theoretical perception of the association between the usage of the smartphone and academic performance.
2. This study improves the current literature by empirically studying the relationship between the smartphone and the student's academic performance results.
3. The outcomes of the study provide an understanding of the theoretical context which explains how smartphone use can affect the academic performance and achievement.

5.2. Policy Implications for Academician

1. To create and execute strategies for the accountable usage of smartphones that focus on the possible advantages and disadvantages of educational performance. Also, inform students in what way to use the smartphone as a device for academic improvement such as downloading different educational apps.
2. To introduce policies to observe and limit non-educational usage of smartphones during class. Further, management can employ technical solutions by implementing or providing limited access to networking sites and no educational application during school time to minimize interference.
3. Further, seminars and training conferences can be executed on the management of time or digital literateness. In addition, makes the students understand the aspect of how to equalize their smartphone usage for academic rationales with individual habits, also, emphasizes approaches for curtailing interferences and increasing efficiency.

Hence, by applying these policies, educational institutes can perform healthier and cope with the effect of smartphones on the performance of academics and make sure that their usage can be positive to schoolchildren's educational practices.

References

Abbasi, G. A., Jagaveeran, M., Goh, Y.-N., & Tariq, B. (2021). The impact of type of content use on smartphone addiction and academic performance: Physical activity as moderator. *Technology in Society, 64*, 101521. doi:https://doi.org/10.1016/j.techsoc.2020.101521

Ahmed, R. R., Salman, F., Malik, S. A., Streimikiene, D., Soomro, R. H., & Pahi, M. H. (2020). Smartphone use and academic performance of university students: a mediation and moderation analysis. *Sustainability, 12*(1), 439. doi:https://doi.org/10.3390/su12010439

Amez, S., & Baert, S. (2020). Smartphone use and academic performance: A literature review. *International Journal of Educational Research, 103*, 101618. doi:https://doi.org/10.1016/j.ijer.2020.101618

Ammunje, R. N., Prabhu H, M., & Barkur, G. (2023). Smartphones and academic performance: Evidence from India. *Interactive Technology and Smart Education, 20*(2), 161-176. doi:https://doi.org/10.1108/ITSE-11-2021-0204

Baert, S., Vujić, S., Amez, S., Claeskens, M., Daman, T., Maeckelberghe, A., . . . De Marez, L. (2020). Smartphone use and academic performance: correlation or causal relationship? *Kyklos, 73*(1), 22-46. doi:https://doi.org/10.1111/kykl.12214

Bjerre-Nielsen, A., Andersen, A., Minor, K., & Lassen, D. D. (2020). The negative effect of smartphone use on academic performance may be overestimated: Evidence from a 2-year panel study. *Psychological Science, 31*(11), 1351-1362. doi:https://doi.org/10.1177/0956797620956613

Brennan, A., & Dempsey, M. (2018). *The student voice: the students own views on smartphone usage and impact on their academic performance.* Paper presented at the INTED2018 Proceedings.

Chaudhury, P., & Tripathy, H. K. (2018). A study on impact of smartphone addiction on academic performance. *International Journal of Engineering & Technology, 7*(2.6), 50-53.

Dontre, A. J. (2021). The influence of technology on academic distraction: A review. *Human Behavior and Emerging Technologies, 3*(3), 379-390. doi:https://doi.org/10.1002/hbe2.229

Faimau, G., Tlhowe, K., & Tlhaolang, O. (2022). Smartphone use, experience of learning environment, and academic performance among university students: a descriptive appraisal. *Advances in Human-Computer Interaction, 2022*.

Felisoni, D. D., & Godoi, A. S. (2018). Cell phone usage and academic performance: An experiment. *Computers & Education, 117*, 175-187. doi:https://doi.org/10.1016/j.compedu.2017.10.006

Han, S., & Yi, Y. J. (2019). How does the smartphone usage of college students affect academic performance? *Journal of Computer Assisted Learning, 35*(1), 13-22. doi:https://doi.org/10.1111/jcal.12306

Jackson, L. A., Von Eye, A., Witt, E. A., Zhao, Y., & Fitzgerald, H. E. (2011). A longitudinal study of the effects of Internet use and videogame playing on academic performance and the roles of gender, race and income in these relationships. *Computers in Human Behavior, 27*(1), 228-239. doi:https://doi.org/10.1016/j.chb.2010.08.001

Kaur, H. (2024). Exploring the Interplay of Smartphone Addiction, Sleep Quality, and Social Isolation: An Empirical Investigation. *International Journal of Interdisciplinary Approaches in Psychology, 2*(5), 73: 88-73: 88.

Kibona, L., & Mgaya, G. (2015). Smartphones' effects on academic performance of higher learning students. *Journal of multidisciplinary engineering science and technology, 2*(4), 777-784.

Kotronoulas, G., Miguel, S., Dowling, M., Fernández-Ortega, P., Colomer-Lahiguera, S., Bağçivan, G., . . . Dieperink, K. B. (2023). *An overview of the fundamentals of data management, analysis, and interpretation in quantitative research.* Paper presented at the Seminars in oncology nursing.

Lin, Y., Liu, Y., Fan, W., Tuunainen, V. K., & Deng, S. (2021). Revisiting the relationship between smartphone use and academic performance: A large-scale study. *Computers in Human Behavior, 122*, 106835. doi:https://doi.org/10.1016/j.chb.2021.106835

Sapci, O., Elhai, J. D., Amialchuk, A., & Montag, C. (2021). The relationship between smartphone use and studentsacademic performance. *Learning and Individual Differences, 89*, 102035. doi:https://doi.org/10.1016/j.lindif.2021.102035

Shakoor, F. F. (2021). Impact of smartphone usage on the learning behaviour and academic performance of students: empirical evidence from Pakistan. *Int. J. Acad. Res. Bus. Soc. Sci 11, no. 2*, 862-881.

Thakur, V. (2024). *Practical Applications of Business Statistics: Techniques and Insights*: Dr Vishal Thakur.

Turhan, N. S. (2020). Karl Pearson's Chi-Square Tests. *Educational Research and Reviews, 16*(9), 575-580.
Walcutt, J., & Schatz, S. (2019). Modernizing Learning: Building the Future Learning Ecosystem. *Advanced Distributed Learning Initiative*.
Wang, Y. S., Wu, M. C., & Wang, H. Y. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British journal of educational technology, 40*(1), 92-118. doi:https://doi.org/10.1111/j.1467-8535.2007.00809.x
Yi, Y. J., You, S., & Bae, B. J. (2016). The influence of smartphones on academic performance: The development of the technology-to-performance chain model. *Library Hi Tech, 34*(3), 480-499. doi:https://doi.org/10.1108/LHT-04-2016-0038