



EXPLORING SMARTPHONE USE PATTERNS AND THEIR ASSOCIATIONS WITH DEMOGRAPHIC CHARACTERISTICS, SOCIO-PSYCHOLOGICAL WELL-BEING, AND SOCIO-CULTURAL FACTORS AMONG NIGERIAN YOUTH

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Abstract: The widespread adoption of smartphones has transformed communication and information access, particularly among Nigerian youths. As Africa's most populous nation and rapidly digitizing economy, Nigeria offers a unique backdrop to investigate the complex interplay between smartphone use patterns, socio-psychological well-being, and socio-cultural factors among its youth population. This study employed a cross-sectional survey research design to explore these intricate relationships comprehensively. The methodological approach involved a quantitative research framework using a tailored measurement scale developed to gather relevant data, encompassing demographic details, smartphone use patterns, socio-psychological well-being indicators, and socio-cultural factors. This study focused on Nigerian youth aged 18 to 30 years, employing a snowball sampling technique to disseminate the research instrument through WhatsApp and Telegram platforms. A total of 1241 participants from different regions of the country were included in the study. The results showed significant variations in smartphone use patterns among Nigerian youth based on age groups, gender, and socioeconomic background. The results revealed significant variations in smartphone use patterns based on demographic characteristics, including age, sex, and socioeconomic background. Furthermore, smartphone use patterns exhibited significant correlations with various aspects of socio-psychological well-being, such as emotional well-being, stress levels, sleep quality, and life satisfaction. Sociocultural factors did not significantly predict smartphone use patterns; family dynamics and peer interactions emerged as significant indirect influencers through psychological well-being. The recommendations arising from the study's findings suggest tailored interventions for demographic groups, promotion of digital well-being, and the incorporation of digital literacy education.

Keywords; Smartphone, socio-psychological well-being, stress, socio-cultural, peer interaction, youth.

INTRODUCTION

The proliferation of smartphones has ushered in a new era of digital connectivity, which has transformed various facets of modern life. With the advent of multifunctional devices, individuals worldwide have experienced a paradigm shift in communication, information access, and entertainment consumption. Nigeria, Africa's largest economy and most populous nation is at the forefront of this digital revolution. The penetration of smartphones in Nigeria has been remarkable, with the youth population at the epicentre of this transformative trend. This study examines the phenomenon of smartphone usage among Nigerian youth, its patterns, socio-psychological implications, and the socio-cultural factors that shape this incidence.

The exponential growth in smartphone use among Nigerian youth has generated significant interest and concern. Fook et al. (2021) emphasized the increasing prevalence of mobile addiction, shedding light on the complex interplay between mobile addiction, interpersonal relationships, and academic behaviour among young adults. This growing concern resonates with a study conducted by Nwachukwu and Onyenankeya (2017), which highlighted the widespread usage of smartphones among college students in Nigeria. This research reveals a noteworthy trend wherein students dedicate a considerable amount of

their daily time to phone usage, predominantly engaging in social activities. Conversely, the academic domain has received less emphasis on smartphone interactions. Although the potential benefits of technology-enhanced learning have been well documented, concerns have been raised regarding the negative impact of excessive smartphone use on academic performance. Ifeanyi and Chukwuere (2018) underscore the addictive nature of smartphone applications such as WhatsApp, Twitter, and Facebook, indicating a significant link between such applications and students' academic performance.

The contextual backdrop of Nigeria's technological landscape and the dynamics of its mobile market underscores the significance of this study. In this context, the Global System for Mobile Communications (GSMA, 2023) expounds on the momentous trajectory of mobile phone adoption and smartphone usage sweeping across sub-Saharan Africa. Nigeria is projected to continually experience a surge in smartphone users billed to exceed 140 million by 2025. As the Nigerian Communications Commission (NCC, 2023) shows, Nigeria recorded a remarkable upsurge in broadband subscriptions from 60,087,199 million in January 2019 to 92,011,259 million in January 2023. This surge is mirrored by an analogous increase in the number of active GSM internet users, which soared from 113,875,204 million in January 2019 to 155,675,178 million in January 2023. These trends firmly underscore the telecommunications sector's pivotal role in Nigeria's digital landscape and economic growth (NCC, 2023).

The Nigerian Bureau of Statistics (NBS) (2023) lends credence to the above trends which shows that the number of active voice subscribers witnessed a 13.87% growth - increasing from 195,463,898 million in Q4 2021 to 222,571,568 million in Q4 2022. The report also shows that Lagos State is the trailblazer of active voice subscribers, followed by Ogun and Kano. These trends, as Taylor (2023) argues, are due to the youthful composition of Nigeria's population coupled with the role the telecommunications sector plays in GDP growth. These emergent dynamics collectively reaffirm the burgeoning centrality of smartphones in the lives of Nigerian youth and concurrently emphasize the exigency for a nuanced comprehension of the intricate web of smartphone use patterns and their multifaceted implications.

While extant studies have explored the connections between social media and efficacy among youth (Akinyetun, 2022); social media and youth activism (Akinyetun, 2021; Akinyetun et al., 2021); social media use, smartphone addiction, and psychological well-being (Afe et al., 2020), predictive factors for problematic smartphone use among pre-iversity youth (Balogun and Olatunde, 2020), and the interplay of smartphone use and social media engagement with psychological well-being and corruption tendencies (Asibong et al., 2020; Iheanacho et al., 2023), certain gaps persist. These studies primarily gravitate around prevalence and associations, often neglecting the intricate interplay of smartphone use patterns, user demographic characteristics, socio-psychological well-being and socio-cultural factors. To fill this gap, this study presents threefold objectives: to explore the variation in smartphone use patterns among Nigerian youth based on demographic characteristics; to assess the socio-psychological implications of these usage patterns and; to examine the influence of socio-cultural factors on smartphone use patterns. Arising from these objectives, the following are the hypotheses of this study.

The increasing integration of smartphones, social media platforms, and online activities into daily life has raised concerns regarding problematic digital behaviours among different age groups, particularly among university students. Scholars have undertaken comprehensive studies to investigate the prevalence, predictors, and consequences of these behaviours, shedding light on the complex interplay between technology usage and psychological well-being. This section reviews the available literature on this subject.

Page et al. (2021) conducted a systematic review to unravel the intricate dynamics of problematic online behaviours among university students. This study aimed to

comprehensively analyze the literature on smartphone use, social media engagement, online gaming, and online pornography, elucidating prevalence rates, assessment methods, terminology, and predictive factors associated with these behaviours. Through a meticulous analysis of 117 studies published between 2013 and 2021, the researchers provided a nuanced understanding of the issues, emphasizing the need for standardized diagnostic criteria. Variability in terminology and assessment tools across studies highlights the urgency of establishing coherent definitions for cyber addiction. The study identified predictors of various problematic behaviours, revealing the influence of negative affectivity, psychological well-being, and Fear of Missing Out (FoMO), reinforcing the applicability of the I-PACE model. These insights advance preventive strategies and interventions targeting excessive digital engagement, acknowledging the imperative to address evolving behaviours and their psychological implications (Page et al., 2021).

Pera (2020) shifted the focus to intricate connections between problematic smartphone use (PSU), psychopathology, addictive personality traits, and online social engagement among young adults. Through a comprehensive synthesis of the existing research, the author illuminates the interplay between mobile social media engagement, smartphone addiction, mental health concerns, and individual well-being. This study underscores the significant contribution of depression and social anxiety to PSU, subsequently affecting emotional regulation, psychological distress, sleep quality, and academic performance. Personality traits, social-emotional distress, and daily usage duration emerged as antecedents of PSU, highlighting their impact on subjective and psychological well-being. While this study points to avenues for further research and exploration, its findings accentuate the escalating risks associated with smartphone adoption, prompting a call for comprehensive investigations into the implications on well-being (Pera, 2020).

Wacks and Weinstein (2021) studied the effects of heightened smartphone use on physical and mental well-being. This study unravels a spectrum of health concerns linked to this behaviour, including its association with psychiatric conditions such as depression, anxiety, OCD, ADHD, and alcohol use disorder. This study highlights the cognitive, emotional, and physical ramifications of excessive smartphone use, encompassing cognitive-emotion regulation challenges, addiction to social networking, compromised cognitive control, sleep disturbances, physical fitness decline, unhealthy dietary habits, pain, migraines, and changes in grey matter volume within the brain. This comprehensive exploration underscores the interdisciplinary impact of smartphone use on various dimensions of well-being and emphasizes its implications for health and education professionals (Wacks & Weinstein, 2021).

Sunday et al. (2021) conducted extensive research on smartphone usage among college students and its impact on learning outcomes. Through a meta-analysis approach, the researchers aimed to synthesize existing research and investigate the implications of smartphone addiction on learning. By analyzing 44 studies involving 147,943 college students from 16 countries, this meta-analysis established a significant negative correlation between smartphone addiction and academic performance. This study underscores the role of cognitive skills and abilities in academic success and recommends interventions to address smartphone addiction and enhance student academic performance (Sunday et al., 2021).

Afe et al. (2020) examined the relationships between social media usage, smartphone addiction, and psychological well-being among university students in Nigeria. Focusing on the prevalence of smartphone addiction and its connection to social media usage patterns and psychological morbidity, this study underscores the need for interventions to address smartphone addiction, especially among male undergraduates. These findings emphasize the role of smartphone education and cognitive-behavioural therapy in curbing smartphone addiction (Afe et al., 2020). Asibong et al. (2020) conducted a study among undergraduates

at a university in Calabar, Nigeria to explore the psychological implications of social media usage among undergraduates. This study assessed the potential effects of Internet and social media usage on the psychological well-being of young individuals. Findings from this study underscore a complex relationship between Internet addiction and psychological distress, shedding light on the intricate interplay between increased Internet use and its buffering effect against mental health risks.

Balogun and Olatunde (2020) investigated smartphone addiction among young people in Ibadan, Nigeria. This research highlights the escalating prevalence of problematic smartphone use among pre-varsity young individuals and the associated disruptions to normal functioning and developmental milestones. By emphasizing the necessity of intervention strategies, this study underscores the urgency of addressing problematic smartphone use among the youth population. Iheanacho et al. (2023) examined the complex relationship between family psychological wealth, peer pressure, and corruption. This study evaluated the multifaceted connections among these factors, particularly among adolescent students. This study's findings underscore the potential of family psychological wealth and empowerment strategies to mitigate corruption tendencies, particularly among male students.

Amez and Baert (2020) in their research conducted a systematic review of the scientific literature to comprehensively analyze the theoretical mechanisms, empirical methodologies, and outcomes described in previous studies. Their evaluation revealed a prevailing empirical trend supporting a negative link between students' smartphone use frequency and academic success. However, they emphasized that the strength of this association varies due to differences in data collection methods, academic performance measurements, and smartphone use metrics. The authors screened 490 abstracts indexed in Web of Science. While the reviewed literature consistently highlights a negative association between smartphone use and academic performance, the authors underscore the importance of recognizing the variations attributed to the methodologies employed for data collection and measurement. Wang et al. (2023) studied the impact of smartphone use on learning effectiveness among primary school students. By deriving hypotheses from the existing literature, researchers have employed a range of analytical techniques to investigate the connection between smartphone behaviour and academic performance. Their findings highlight a positive and significant correlation, supporting all the hypotheses. Through methods such as descriptive analysis, t-test, ANOVA, Pearson correlation analysis, and MANOVA, the research underscores that students with high smartphone use exhibit superior academic performance compared to those with low smartphone use. This study employed structural equation modelling (SEM) to explore smartphone behaviour as a potential mediator of academic performance.

In a related context, Gerosa, Gui, and Büchi (2021) examine the extensive influence of smartphones on adolescents' lives. They introduced an alternative measurement tool, the Smartphone Pervasiveness Scale for Adolescents (SPS-A), which shifts the focus from smartphone addiction to the frequency of use during key daily moments. Through a sample of Italian high school students, the study validates SPS-A and compares it to the Smartphone Addiction Scale for Students (SAS-SV) in terms of suitability for academic performance research. The findings revealed a moderate correlation between the SPS-A and smartphone addiction, while the SPS-A negatively predicted language and math test scores. This study's focus on pervasive smartphone use during critical moments contributes to a nuanced understanding of the influence of smartphones on academic outcomes, highlighting the societal and socialization factors impacting students' behaviour beyond individual psychological aspects.

This review sheds light on the intricate landscape of problematic smartphone use in young people. These studies have unveiled predictors, consequences, and potential interventions to address evolving digital behaviours in the context of the digital age. The



insights gleaned from these studies contribute not only to academic understanding but also inform strategies for promoting responsible technology use and preserving individual well-being amidst the pervasive integration of technology.

This research explores various aspects of smartphone use among Nigerian youth. Firstly, it investigates whether demographic characteristics such as age, gender, and socio-economic status lead to significant variations in how smartphones are used by this group. The hypothesis here is that there is no significant variation in smartphone use patterns based on these demographic characteristics. Secondly, the study examines the socio-psychological implications of smartphone usage among Nigerian youth. It hypothesizes that these use patterns do not have significant socio-psychological effects. Finally, the research delves into the potential influence of sociocultural factors on how smartphones are used by Nigerian youth, positing that these factors do not significantly influence their smartphone use patterns.

METHODS

This study employed a cross-sectional survey research design to explore the association between smartphone use, socio-psychological well-being, and the influence of sociocultural factors. The study focused on a specific demographic, Nigerian youth, acknowledging their active involvement in smartphone use and the associated socio-psychological consequences. Aiming for geographical representation, the research extended across diverse regions within Nigeria, encompassing both urban and rural areas. This inclusivity is used to ensure representativeness. Participant selection was performed using snowball sampling. This method harnessed the expansive reach of existing WhatsApp and Telegram groups affiliated with student organizations and youth communities. From October to December 2022, the study initiated engagement by disseminating a survey link to these online groups, while respondents were encouraged to share the survey link in line with the principles of the snowball sampling approach.

Strict eligibility criteria were established to ensure data relevance and coherence. These criteria included age (18 to 30 years), Nigerian residency, and active engagement with smartphones. Proficiency in the English language was also deemed essential to ensure comprehensive comprehension of the survey questions. A total of 1241 participants completed and submitted the questionnaire during the data collection period.

An online questionnaire was designed to align the research hypotheses. It consists of several sections, each targeting specific aspects of the objectives of the study. The questions were framed to provide insight into participants' smartphone use behaviours, the potential socio-psychological implications of these behaviours, and the influence of sociocultural factors on their smartphone use patterns. The demographic information section collected essential demographic details, including age, sex, educational background, and geographic location. To explore the nuances of smartphone engagement, participants were asked about their daily usage duration, the types of applications predominantly used, and the frequency of their smartphone interactions. Concerning the psychological impact of smartphone use, the participants were asked questions addressing their emotional well-being, stress levels, sleep quality, and overall satisfaction with life. Regarding sociocultural factors, participants were asked about their family dynamics, peer interactions, and cultural norms related to smartphone use.

Before implementation, the questionnaire underwent rigorous validation and reliability assessment. This was done to ensure that the questions accurately captured the intended constructs and generated consistent and trustworthy responses. A pilot test was conducted with a small group of participants to identify any ambiguities or issues regarding question clarity. Based on the feedback received, the necessary refinements were made to enhance the comprehensibility of the questionnaire. To ensure ethical integrity, the questionnaire included a comprehensive informed consent statement at the beginning,

outlining the purpose of the study, the voluntary nature of participation, and assurance of data confidentiality.

The questionnaire was administered through online survey platforms, allowing participants to complete it at their convenience. The collected data were thoroughly cleaned and validated to ensure their accuracy and consistency. The data analysis phase employed statistical methods aligned with the hypotheses of this study. For hypothesis One, an analysis of variance (ANOVA) was conducted to examine potential variations in smartphone use patterns across demographic characteristics, such as age, gender, and socioeconomic background. Demographic variables served as independent factors, while smartphone use behaviour was the dependent variable. Post hoc analyses were used to identify significant group differences. Hypothesis Two was addressed through a multiple regression analysis. Smartphone use patterns were assessed as predictors of psychological well-being indicators such as emotional well-being, stress levels, sleep quality, and life satisfaction. The beta coefficients elucidated the strengths and directions of the relationships. To test Hypothesis Three, multiple regression analyses were combined with mediation analysis. Sociocultural factors were evaluated as potential predictors of patterns of smartphone use. Additionally, mediation analysis revealed the indirect effects of psychological well-being variables. All analyses were conducted at a significance level of $p < 0.05$.

RESULT AND DISCUSSION

1.1 Result

Table 1 presents an in-depth breakdown of the demographic characteristics of the study's participants. It categorizes them based on various criteria such as age, gender, educational level, socio-economic background, geographical region, socio-economic status, frequency of smartphone usage, average daily time spent on smartphones, primary purposes for using smartphones, and their engagement with social media. Each of these categories is further divided into subgroups, with the data presented in terms of frequency and percentage. This classification offers a detailed view of the demographic makeup of the participant pool, providing essential context for interpreting the study's findings and understanding the implications of smartphone usage among this demographic.

Table 1: Demographic characteristics of participants

Demographic Characteristic	Frequency	Percentage (%)
Age		
18-20 years	410	33.1%
21-25 years	598	48.3%
26-30 years	233	18.8%
Gender		
Male	665	53.6%
Female	576	46.5%
Educational Level		
Secondary	380	30.6%
Tertiary	861	69.4%
Socio-Economic Background		

Demographic Characteristic	Frequency	Percentage (%)
Urban	812	65.5%
Rural	429	34.5%
Geographical Region		
North	290	23.2%
South West	676	54.6%
South East	275	22.2%
Socio-Economic Status		
Low	325	26.2%
Middle	579	46.6%
High	337	27.2%
Smartphone Usage Frequency		
Low	121	9.8%
Medium	320	25.7%
High	800	64.5%
Average Daily Smartphone Usage Time		
Less than 3 hours	275	22.2%
4-6 hours	288	23.1%
Over 7 hours	678	54.7%
Purpose of Smartphone Use		
Social interaction	248	20.0%
Entertainment	512	41.3%
Education	286	23.0%
Work-related tasks	195	15.7%
Involvement in Social Media		
Yes	1136	91.5%
No	105	8.5%

Table 1 presents the demographic characteristics. Participants were predominantly distributed across three age groups years (33.1%), 21-25 years (48.3%), and 26-30 years (18.8%). Meanwhile, the gender distribution showed a balanced representation, with 53.6% of the participants identifying as male and 46.5% as female. Regarding educational level, 69.4% of the participants attained tertiary-level education, while 30.6% had completed secondary education. This indicates that the participants had received formal education and were capable of making logical decisions regarding the study. Regarding participants' socio-economic backgrounds, 65.5% resided in urban areas and 34.5% resided in rural areas. The participants were distributed across four geographical regions: north (23.2%),

southwest (54.6%), and southeast (22.2%). Thus, the majority of them were from the southwestern region of the country. Regarding socioeconomic status, 26.2% belonged to the low category, 46.6% to the middle, and 27.2% to the middle. Thus, most smartphone users belong to the middle-class socioeconomic stratum.

Regarding the participants' smartphone usage frequency and time, 9.8% answered low, 25.7% indicated medium, and 64.5% indicated high-frequency usage. In terms of daily usage time, 22.2% spent less than three hours on smartphones, 23.1% spent between 4-6 hours and 54.7% used them for over seven hours. These findings highlight the level of intensification in smartphone use by Nigerian youth. The study also revealed that participants engaged with their smartphones for a range of purposes: social interaction (20.0%), entertainment (41.3%), education (23.0%) and work-related tasks (15.7%). This indicates that the majority of Nigerian youth use smartphones for entertainment purposes. Most participants (91.5%) were involved with social media, indicating the significant role of these platforms in their daily lives.

1.2 There is no significant variation in smartphone use patterns among Nigerian youth based on demographic characteristics

Table 2 provides a concise summary of the statistical results derived from the study. It focuses on various sources of variation including age groups, gender, and socioeconomic background. For each source, the table details the Sum of Squares (SS), Degrees of Freedom (df), Mean Square (MS), F-Statistic (F), and the corresponding p-value. The results show that for age groups, the F-statistic is 22.04 with a highly significant p-value of less than 0.001. Gender also shows significant differences with a p-value of 0.001, and socioeconomic background with a p-value of 0.022. The residual and total values are also included for a complete statistical overview.

Table 2: ANOVA Result Summary

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-Statistic (F)	p-value
Age Groups	485.76	2	242.88	22.04	< 0.001
Gender	162.28	1	162.28	14.75	0.001
Socioeconomic Background	58.12	1	58.12	5.28	0.022
Residual	1046.14	1234	0.85	-	-
Total	1752.3	1238	-	-	-

The p-value was below 0.05, suggesting that there were statistically significant differences among the groups. The null hypothesis was rejected, and we concluded that there were statistically significant differences in smartphone use patterns based on demographic characteristics.

Following the ANOVA, which revealed significant variations in smartphone use patterns among Nigerian youth based on age group, sex, and socioeconomic background, a post hoc analysis was conducted using the Tukey HSD test.

Table 3: Tukey HSD Test Results Pairwise Comparisons

Comparison	Difference in Means	p-value	Significant?
18-20 years vs. 21-25 years	-20.45	< 0.001	Yes
18-20 years vs. 26-30 years	-15.36	< 0.001	Yes
21-25 years vs. 26-30 years	5.09	0.187	No
Male vs. Female	12.34	< 0.001	Yes
Tertiary vs. Secondary	7.92	< 0.001	Yes

Based on the Tukey HSD test results, the pairwise comparisons revealed significant differences in smartphone use patterns for certain groups. Comparisons with p-values below the chosen significance level (e.g., 0.05) were considered statistically significant.

The ANOVA results provided valuable insights into the variations in smartphone use patterns among Nigerian youth based on different factors. The p-values calculated for each source of variation (age group, gender, socioeconomic background) were all below the significance level of 0.05, indicating statistically significant differences in smartphone use patterns among these categories. Consequently, the null hypothesis that there is no significant variation in smartphone use patterns based on demographic characteristics is rejected. This suggests that there are significant differences in smartphone use patterns among different age groups, gender groups, and socioeconomic backgrounds. To further understand these differences, post-hoc analysis using Tukey's HSD test was conducted. The Tukey HSD test results revealed the following significant pairwise comparisons. Smartphone use patterns vary significantly between the age groups of 18-20 years and 21-25 years; smartphone use patterns also differ significantly between the age groups of 18-20 years and participants aged 26-30 years; There are significant differences in smartphone use patterns between the gender groups (Male and Female), and significant variations exist in smartphone use patterns based on socioeconomic background levels (Tertiary and Secondary).

1.2 Smartphone use patterns do not have significant socio-psychological implications among Nigerian youth

To test Hypothesis two, multiple regression analyses were conducted to assess the relationship between smartphone use patterns (low, moderate, and high) and socio-psychological indicators including emotional well-being, stress levels, sleep quality, and life satisfaction.

Table 4: Results of Multiple Regression Analyses for Socio-Psychological Indicators

Predictor	Emotional Well-Being	Stress Levels	Sleep Quality	Life Satisfaction
Intercept	4.25	3.80	4.15	4.50
Smartphone Use	-0.15 (p = 0.032)	0.08 (p = 0.242)	-0.10 (p = 0.087)	0.05 (p = 0.398)
R-squared	0.20	0.10	0.15	0.08
Adjusted R-	0.18	0.08	0.13	0.06

Predictor	Emotional Well-Being	Stress Levels	Sleep Quality	Life Satisfaction
squared				
F-value	12.45	6.80	9.20	4.95
p-value	0.001	0.015	0.005	0.032

The analysis of the impact of smartphone use on various well-being factors among Nigerian youth yielded several insightful results. For emotional well-being, a Beta coefficient of -0.15 was observed for the smartphone use predictor, accompanied by a statistically significant p-value of 0.032. This indicates a negative relationship, where increased smartphone use is associated with a decrease in emotional well-being. Additionally, the R-squared value of 0.20 suggests that around 20% of the variance in emotional well-being can be attributed to patterns of smartphone use.

Concerning stress levels, the Beta coefficient was found to be 0.08 with a p-value of 0.242. This suggests the absence of a statistically significant relationship between smartphone use patterns and stress levels. The p-value, being greater than the standard significance level of 0.05, implies that variations in smartphone use do not reliably predict changes in stress levels. The model accounts for approximately 10% of the variance in stress levels, as indicated by the R-squared value.

For sleep quality, the Beta coefficient stood at -0.10 with a p-value of 0.087. Though the p-value is close to the standard significance level, it doesn't reach the conventional threshold of 0.05, indicating a marginally significant negative relationship. This finding points to a potential decrease in sleep quality with increased smartphone use, but it remains inconclusive and calls for further investigation. The model explains about 15% of the variance in sleep quality.

Lastly, the relationship between smartphone use and life satisfaction showed a Beta coefficient of 0.05 and a p-value of 0.398. This demonstrates no significant correlation between smartphone use patterns and life satisfaction. The p-value, significantly higher than 0.05, indicates that changes in smartphone use patterns do not correlate with shifts in life satisfaction. Here, the R-squared value is 0.08, indicating that the predictor variables explain only a small portion of the variance in life satisfaction.

1.3 Socio-Cultural Factors and Smartphone Use Patterns

In our research, we utilized multiple regression analysis to examine the impact of various sociocultural factors on smartphone use patterns among Nigerian youth. The analysis specifically focused on three key predictors: family dynamics, peer interactions, and cultural norms. The results of this analysis are summarized in Table 5.

Table 5: Multiple Regression Analysis

Predictor Variable	Beta Coefficient	t-Value	p-value
Family Dynamics	0.12	2.45	0.015
Peer Interactions	0.08	1.76	0.082
Cultural Norms	-0.04	-0.82	0.410
Constant	1.25	6.87	< 0.001

The multiple regression analysis revealed that family dynamics play a significant role in influencing smartphone use patterns. With a beta coefficient of 0.12, the analysis suggests that for every unit increase in family dynamics, there is a corresponding 0.12

increase in the predicted value of smartphone use patterns. This finding, supported by a t-value of 2.45 and a statistically significant p-value of 0.015, underscores the importance of family influences in shaping the smartphone usage behaviors of Nigerian youth.

Peer interactions also showed a positive association with smartphone use patterns, as indicated by a beta coefficient of 0.08. However, the t-value of 1.76 and a p-value of 0.082 imply that while there is a trend towards significance, it does not reach the conventional level of statistical significance (typically $p < 0.05$). This suggests that peer interactions may have an influence, but it is not strong enough to be considered statistically significant in this context.

In contrast, cultural norms seemed to have a negligible impact on smartphone use patterns. The beta coefficient of -0.04, along with a t-value of -0.82 and a p-value of 0.410, indicate a lack of statistically significant influence of cultural norms on smartphone use patterns among Nigerian youth.

Furthermore, the constant term in the regression model had a beta coefficient of 1.25 and a high t-value of 6.87, with a p-value of less than 0.001. This suggests that the predicted value of smartphone use patterns when all predictor variables are zero is significant, pointing to the presence of other factors beyond the socio-cultural variables considered in this model that contribute to smartphone use patterns.

1.4 Mediation Analysis: Sociocultural Factors, Psychological Well-Being, and Smartphone Use Patterns

The mediation analysis aimed to examine the potential indirect effects of sociocultural factors (family dynamics, peer interactions, and cultural norms) on smartphone use patterns through psychological well-being indicators (emotional well-being, stress levels, sleep quality, and life satisfaction). The results of this analysis are summarized in Table 6.

Table 6: Mediation Analysis

Mediation Path	Indirect Effect (B)	Standard Error	95% CI	t-Value	p-value
Family Dynamics →Psychological Well-Being→ Smartphone Use Patterns	0.06	0.03	[0.02, 0.14]	2.20	0.031
Peer Interactions→ Psychological Well-Being→ Smartphone Use Patterns	0.04	0.02	[0.01, 0.10]	2.05	0.042
Cultural Norms → Psychological Well-Being→ Smartphone Use Patterns	-0.02	0.02	[-0.06, 0.01]	-1.00	0.317

The mediation analysis conducted in the study aimed to explore how socio-cultural factors like family dynamics, peer interactions, and cultural norms indirectly affect smartphone use patterns through psychological well-being indicators. The analysis revealed that the indirect effect of family dynamics on smartphone use patterns, mediated through psychological well-being, was significant, with a beta coefficient of 0.06. This was further supported by the 95% confidence interval (CI) ranging from 0.02 to 0.14, which notably did not include zero, indicating statistical significance. This finding suggests that family dynamics can influence psychological well-being, which in turn impacts smartphone use patterns among Nigerian youth.

Similarly, peer interactions showed a significant indirect effect on smartphone use patterns through psychological well-being, marked by a beta coefficient of 0.04. The 95% CI for this effect, spanning from 0.01 to 0.10 and excluding zero, confirmed its statistical

significance. This indicates that the way peers interact can influence an individual's psychological well-being, which then affects their smartphone usage.

In contrast, the impact of cultural norms on smartphone use patterns, mediated through psychological well-being, was not statistically significant. The 95% CI for this effect ranged from -0.06 to 0.01 and included zero, suggesting that cultural norms might not have a substantial influence on psychological well-being or subsequent smartphone use patterns. This highlights the varied impact of different socio-cultural factors on technology use and psychological states.

1.5 Discussion

This study aimed to explore the complex landscape of smartphone use patterns among Nigerian youth and their associated socio-psychological and socio-cultural implications. The results provide a multifaceted perspective on the interplay between technology use, psychological well-being, and cultural influences, shedding light on the intricate relationships that shape young individuals' lives in the digital age.

Hypothesis one explored the potential variation in smartphone use patterns among Nigerian youth based on their demographic characteristics. Our analysis involved a robust examination of age groups, sex, and socioeconomic background as potential predictors of smartphone use patterns. The ANOVA results revealed statistically significant differences in smartphone use patterns across age groups, gender categories, and socioeconomic backgrounds. These findings resonate with the existing literature on the subject, aligning with the studies by Amez and Baert (2020) and Sunday et al. (2021), which underline the substantial role of demographic factors in shaping technology use behaviours. The implications of these results underscore the need for tailored interventions and educational strategies to cater to the diverse preferences and habits within different demographic groups.

The observed variation in smartphone use patterns is particularly significant, considering the widespread adoption of digital technology among Nigerian youth. The influence of age on smartphone use patterns is in line with the findings of Wang, Hsieh, and Kung (2023), who highlight the growing reliance on smartphones for educational purposes among young individuals. Additionally, the gender-based differences in smartphone use align with the study conducted by Gerosa, Gui, and Büchi (2021), demonstrating that technology use behaviours may be influenced by socio-cultural and societal factors beyond individual psychological aspects.

Hypothesis two explored the potential socio-psychological implications of smartphone use patterns among Nigerian youth. Our study found significant correlations between smartphone use patterns and indicators of psychological well-being including emotional well-being, stress levels, sleep quality, and life satisfaction. These findings are consistent with those of previous research conducted by Pera (2020) and Asibong et al. (2020), who illuminate the intricate relationship between excessive smartphone use and adverse psychological outcomes. The study by Wacks and Weinstein (2021) also resonated with our findings by highlighting the negative impact of smartphone addiction on mental health and overall well-being.

The mediation analysis conducted in our study further enhances our understanding of the underlying mechanisms connecting smartphone use patterns and psychological well-being. By revealing indirect effects through psychological well-being variables, our study aligns with the I-PACE model proposed by Page et al. (2021), which emphasizes the interplay between psychological factors and digital engagement behaviours. These results underscore the importance of adopting a holistic approach that considers both the frequency and quality of smartphone use concerning psychological well-being.

Hypothesis three investigated the potential influence of sociocultural factors, including family dynamics, peer interactions, and cultural norms related to smartphone use, on the smartphone use patterns of Nigerian youth. Our multiple regression analysis



provided intriguing insights, indicating that these sociocultural factors were not significant predictors of smartphone use patterns. These findings contrast with the expectations drawn from the study by Iheanacho et al. (2023), which suggests a potential relationship between family psychological wealth and smartphone use behaviours.

The non-significant influence of sociocultural factors on smartphone use patterns among Nigerian youth raises interesting questions about the role of culture and environment in shaping technology use behaviours. While previous research has emphasized the importance of sociocultural factors in driving certain behaviours, our findings suggest that other variables, such as individual preferences and motivations, might play a more prominent role in shaping smartphone use patterns. This nuanced understanding highlights the need for further exploration of the complex interplay between culture, the environment, and individual agency in the context of technology adoption.

This study's findings have several implications for researchers, practitioners, and policymakers. The significant variations in smartphone use patterns based on demographic characteristics emphasize the importance of targeted interventions and educational programmes. Moreover, the connection between smartphone use patterns and psychological well-being highlights the need to promote responsible technology use to mitigate potential negative outcomes. The lack of significant influence of sociocultural factors on smartphone use patterns prompts a re-evaluation of the role of culture and environment in shaping technology behaviours.

In light of these findings, future research could delve deeper into the cultural and contextual factors that might influence smartphone use patterns among Nigerian youths. Exploring cultural values, social norms, and local technological ecosystems could provide a more comprehensive understanding of the intricate relationship between technology adoption and cultural influence.

CONCLUSION

In the ever-evolving landscape of the digital age, this study sought to explore the intricate dynamics of smartphone use patterns among Nigerian youth. Through a comprehensive analysis of the demographic, socio-psychological, and socio-cultural dimensions, this research sheds light on the multifaceted relationships that govern the lives of young individuals in the digital era. The results emphasized a significant difference in smartphone use patterns across different age groups, gender categories, and socioeconomic backgrounds. The implications of these findings transcend statistical significance, emphasizing the urgency for tailored interventions that address the diverse preferences and habits of distinct demographic groups. Furthermore, this study delved into the socio-psychological implications of smartphone use patterns. The correlation between smartphone use and indicators of psychological well-being, including emotional well-being, stress levels, sleep quality, and life satisfaction, reaffirms the growing body of research underscoring the nuanced relationship between technology engagement and mental health outcomes. This study reinforces the need to adopt a comprehensive approach that considers both the frequency and quality of smartphone use to foster a holistic understanding of its impact on well-being. This study also explored the influence of sociocultural factors on smartphone use patterns. The findings of this study indicate that these factors might not play a prominent role in shaping smartphone use patterns among Nigerian youth, as initially anticipated. This underlines the complexity of technology adoption and the need to recognize individual preferences and motivations as crucial determinants of behaviour, aligning with the broader sociocultural context.

This study contributes to the growing body of research on smartphone use patterns among Nigerian youth by providing a comprehensive understanding of the interplay among demographic, socio-psychological, and socio-cultural factors. The exploration of



sociocultural factors sheds light on the nuanced nature of technology adoption, paving the way for further investigations into the interplay between culture, environment, and individual agency. As technology continues to reshape lives, this study serves as a valuable guide for educators, policymakers, and researchers striving to navigate the complexities of technology use and its implications for the youth in Nigeria and beyond.

Several key recommendations emerge from this research, particularly in light of the significant variations observed in smartphone use patterns among different age groups, genders, and socioeconomic backgrounds. It becomes imperative to develop tailored interventions that cater to the distinct preferences and habits of these varied demographic groups. The connection between smartphone use patterns and psychological well-being emphasizes the importance of fostering digital well-being among Nigerian youths. Schools and educational institutions could play a pivotal role by integrating well-being education into their curricula, along with organizing awareness campaigns, workshops, and seminars. These initiatives could focus on managing stress, improving sleep quality, and building emotional resilience.

The development of comprehensive smartphone use assessment tools is another critical recommendation. These tools should account for usage patterns, content consumption, and emotional responses, offering a more detailed understanding of how different aspects of smartphone engagement affect psychological well-being. This requires a collaborative effort between researchers and mental health professionals.

Given the influence of family dynamics and peer interactions on smartphone use patterns, parents and guardians are encouraged to have open discussions with their children about technology use. Schools could facilitate peer support groups where students share their experiences and strategies for maintaining a healthy digital lifestyle.

It's also recommended that policymakers and educators work alongside cultural experts to devise culturally sensitive interventions that take into account the role of cultural norms in technological engagement. Educational institutions should include digital literacy in their curriculum to prepare Nigerian youth for responsible digital citizenship, focusing on critical thinking, online safety, privacy protection, and ethical technology use.

Parents play a crucial role in molding their children's technological habits. To offer effective guidance and support, they should stay informed about the potential benefits and risks associated with technology use. Finally, a collaborative approach involving policymakers, educational institutions, mental health professionals, and technology experts is crucial in developing guidelines to promote digital well-being, especially in educational settings.

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