

DIGITAL WELL-BEING AMONG UNIVERSITY STUDENTS: THE ROLES OF SMARTPHONE USE AND SELF-CONTROL

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Abstract: *The widespread integration of smartphones into university students' daily lives has raised increasing concerns regarding digital well-being in higher education. While smartphones support learning and communication, unregulated use may negatively affect students' emotional balance and academic functioning. Guided by a behavioural self-regulation perspective, this study examines smartphone use intensity and self-control as predictors of digital well-being among university students. Employing a quantitative, cross-sectional research design, data were collected using a structured questionnaire administered to undergraduate students. After data screening, 140 valid responses were analysed using descriptive statistics, Pearson correlation analysis and multiple regression analysis. The findings reveal that smartphone use intensity is not significantly associated with digital well-being, whereas self-control demonstrates a strong and statistically significant positive relationship with digital well-being. Further regression analysis confirms that self-control is a significant predictor of digital well-being, while smartphone use intensity does not exert an independent effect when self-control is taken into account. These findings contribute empirical evidence to the digital well-being literature by underscoring the importance of self-regulatory capacity in supporting healthy digital engagement among university students.*

Keywords: *Digital Well-Being, Smartphone Use Intensity, Self-Control, University Students, Technology Use.*

Introduction

The rapid diffusion of smartphones has profoundly transformed how university students communicate, access information and engage in academic activities. Smartphones have become integral to students' daily routines, offering convenience, connectivity and learning support. However, alongside these benefits, concerns have emerged regarding the potential impact of excessive or unregulated smartphone use on students' psychological health, academic focus and overall digital well-being (Polly, 2024; Akpen et al., 2024).

Digital well-being refers to individuals' ability to maintain a healthy, balanced and purposeful relationship with digital technologies that supports emotional, cognitive and academic functioning. In higher education contexts, digital well-being has become an important consideration as students increasingly rely on digital devices for learning, communication and leisure. Recent empirical research suggests that digital well-being outcomes are influenced not only by the amount of technology use but also by individuals' behavioural regulation and coping capacities (Prananto et al., 2025).

Among the factors frequently examined in relation to digital outcomes are smartphone use intensity and self-control. Smartphone use intensity reflects the frequency, habitual nature and pervasiveness of smartphone engagement across daily activities. While high levels of smartphone use have often been associated with distraction and reduced well-being, recent studies suggest that usage intensity alone may not necessarily lead to negative outcomes in the absence of poor self-regulation (Getenet et al., 2024).

In contrast, self-control represents individuals' capacity to regulate impulses, manage digital distractions and align behaviour with long-term goals. Empirical research consistently demonstrates that self-control plays a critical role in mitigating negative digital experiences and supporting well-being, particularly in environments characterised by constant digital stimuli (Huang & Wang, 2023).

Despite growing scholarly interest in digital well-being, relatively few studies have simultaneously examined smartphone use intensity and self-control within a single predictive framework, particularly among university students. Many prior studies focus either on technology usage patterns or on psychological traits independently, limiting understanding of their relative contributions. Accordingly, this study seeks to examine how smartphone use intensity and self-control jointly predict digital well-being among university students using correlation and multiple regression analyses.

Although smartphones are often associated with negative outcomes, their use is not inherently harmful. In fact, smartphones play a vital role in supporting communication, access to information and academic engagement among university students. However, concerns arise not from the presence of technology itself, but from how it is used. When smartphone use is unregulated or driven by poor self-control, it may disrupt students' emotional balance, reduce

academic focus and productivity, and contribute to difficulties in maintaining responsible digital behaviour.

In higher education contexts, students are continuously exposed to digital environments that demand both academic engagement and self-discipline. Without adequate self-control or digital self-regulation, frequent smartphone use may lead to distractions, procrastination and cognitive overload, ultimately affecting students' overall digital well-being. Conversely, students with strong self-control may be able to engage extensively with smartphones while still maintaining emotional stability and academic effectiveness.

Despite these considerations, existing research often treats smartphone use as a direct predictor of negative outcomes, without sufficiently accounting for individual differences in behavioural regulation. As a result, the relationship between smartphone use intensity and digital well-being remains inconclusive. Therefore, it is important to examine smartphone use intensity alongside self-control within a single analytical framework. By doing so, this study aims to clarify whether digital well-being is influenced more by the amount of smartphone use or by students' ability to regulate their digital behaviour.

Literature Review

This section reviews the existing literature on digital well-being, smartphone use intensity and self-control within higher education contexts. It critically examines previous empirical findings to identify key gaps and to develop hypotheses for the present study.

Digital Well-Being in Higher Education

Digital well-being has emerged as a significant issue in higher education due to the pervasive integration of digital technologies into students' academic and personal lives. It is commonly conceptualised as a multidimensional construct encompassing emotional, cognitive, social and academic functioning in relation to digital technology use (Das & Chaliha, 2025; Prananto et al., 2025). In university settings, digital well-being reflects students' ability to engage productively with digital tools while maintaining psychological balance and academic effectiveness.

Existing studies indicate that digital well-being is influenced not only by the extent of technology use but also by how individuals interact with and regulate their engagement with digital environments. Polly (2024) suggests that students' experiences with technology depend more on patterns of use rather than the mere presence of devices. Similarly, Akpen et al. (2024) emphasise that meaningful and purposeful digital engagement can enhance learning outcomes, whereas passive or unregulated use may lead to negative consequences. Excessive engagement with digital media has also been associated with reduced psychological well-being and increased dissatisfaction among young individuals (Twenge, 2019).

In the Malaysian context, growing attention has been directed towards the impact of digital technology on student well-being. For instance, Amin et al. (2024) highlight the psychosocial implications of smartphone overuse among university students, suggesting increased risks of stress and emotional imbalance. However, these studies often focus primarily on problematic use and provide limited insight into the role of individual behavioural regulation in shaping

digital well-being outcomes. This indicates a need for a more integrated perspective that considers both technological and psychological factors.

Smartphone Use Intensity and Digital Well-Being

Smartphone use intensity refers to the frequency, duration and habitual nature of smartphone engagement in daily activities. Early research widely associates high levels of smartphone use with negative outcomes such as psychological distress, reduced academic performance and diminished social interaction (Parizi et al., 2022). These findings have led to the general assumption that increased smartphone usage is inherently detrimental to students' well-being. However, more recent empirical evidence presents a more nuanced perspective. Satheesan (2025) argues that smartphone use does not necessarily lead to negative outcomes, as moderate and purposeful usage can enhance communication, social connectivity and emotional well-being. This suggests that the impact of smartphone use intensity may depend on contextual and behavioural factors rather than the sheer amount of usage alone.

Furthermore, inconsistencies in prior findings indicate that smartphone use intensity may not be a direct determinant of digital well-being. While some studies report strong negative effects, others highlight neutral or even positive outcomes, depending on how the technology is used. In the Malaysian setting, research has similarly reported concerns about excessive smartphone use, yet has not conclusively established a direct causal relationship with well-being outcomes (Amin et al., 2024). These contradictions highlight the limitation of examining smartphone use intensity in isolation. Previous studies have also linked problematic smartphone use to anxiety, stress and reduced life satisfaction among university students (Samaha & Hawi, 2016; Elhai et al., 2017).

Therefore, it is necessary to reconsider the assumption that high smartphone use automatically leads to poor digital well-being and to explore additional factors that may influence this relationship.

H₁: Smartphone use intensity has a significant relationship with digital well-being.

Self-Control and Digital Well-Being

Self-control is widely recognised as a critical psychological trait that enables individuals to regulate impulses, manage distractions and align behaviour with long-term goals. In digital environments, self-control plays a crucial role in determining how individuals interact with technology and manage its potential disruptions.

Empirical studies consistently demonstrate that higher levels of self-control are associated with positive outcomes, including improved academic performance, reduced stress and enhanced well-being (Huang & Wang, 2023; Amin et al., 2024). Individuals with strong self-control are better able to limit unnecessary smartphone use, avoid distractions and maintain focus on academic tasks.

In contrast, individuals with lower self-control are more likely to experience problematic smartphone use, including excessive checking, procrastination and emotional dependence on digital devices. These behaviours may contribute to reduced academic productivity and poorer emotional well-being. Behavioural patterns in technology use have also been shown to

influence well-being independently of lifestyle factors such as physical activity and diet (Rosen et al., 2014). Importantly, self-control has been identified as a protective factor that mitigates the negative effects of digital technology use.

While international studies strongly support the role of self-control in promoting well-being, Malaysian research has largely focused on smartphone addiction and its negative consequences, with less emphasis on self-regulatory mechanisms (Amin et al., 2024). This suggests a gap in understanding how self-control contributes to digital well-being beyond the context of problematic usage.

Given the consistency of findings across prior studies, self-control is expected to play a significant role in shaping students' digital well-being.

H₂: Self-control has a significant positive relationship with digital well-being.

Combined Effects of Smartphone Use Intensity and Self-Control

Recent research increasingly highlights the importance of examining both behavioural and psychological factors simultaneously to better understand digital well-being. Islambouli et al. (2024) suggest that digital well-being is influenced by patterns of intentional and regrettable smartphone use, indicating that individual self-regulation mediates the effects of technology on well-being.

Studies further reveal that individuals with high self-control can engage frequently with smartphones without experiencing negative outcomes, whereas those with low self-control may encounter adverse effects even at moderate levels of usage (Getenet et al., 2024; Prananto et al., 2025). These findings challenge the assumption that smartphone use intensity alone determines well-being and instead emphasise the role of behavioural regulation. Prior research further highlights that excessive reliance on digital platforms may contribute to addictive behaviours and reduced psychological resilience (Kuss & Griffiths, 2017; Kim, 2018).

Despite these insights, many existing studies examine smartphone use and psychological traits separately, limiting a comprehensive understanding of their combined effects. In the Malaysian context, this gap is particularly evident, as most studies focus primarily on negative usage behaviours without integrating self-control into predictive models.

Therefore, examining smartphone use intensity and self-control within a single analytical framework is essential to better understand their relative and combined influence on digital well-being. Such an approach allows for a more nuanced interpretation of how students engage with technology in digitally saturated environments.

H₃: Smartphone use intensity and self-control significantly predict digital well-being.

Summary and Research Gap

Overall, the literature indicates that while smartphone use intensity has been widely studied, its relationship with digital well-being remains inconsistent and inconclusive. In contrast, self-control has demonstrated a strong and consistent influence in promoting positive

behavioural and well-being outcomes. However, limited studies have examined these variables simultaneously, particularly within the Malaysian higher education context.

This study addresses this gap by integrating smartphone use intensity and self-control into a single predictive model to examine their combined effects on digital well-being among university students. By doing so, the study contributes to a more comprehensive understanding of digital behaviour and highlights the importance of self-regulation in shaping well-being outcomes.

Table 1: Summary of Previous Studies (Literature Review Matrix)

Author(s)	Context	Variables	Key Findings	Research Gap
Parizi et al. (2022)	University students	Smartphone use	Excessive use negatively impacts well-being	Focus on usage only
Satheesan (2025)	Students	Device use	Moderate use can be beneficial	Lacks behavioural factors
Huang & Wang (2023)	Education	Self-control	Self-control improves academic outcomes	Not specific to digital well-being
Amin et al. (2024)	Malaysian students	Smartphone addiction	Negative psychosocial effects	No integrated model
Getenet et al. (2024)	Higher education	Digital literacy & behaviour	Behaviour influences engagement	Limited focus on well-being
Current Study	Malaysian university students	Smartphone use; self-control	Examines combined effect on digital well-being	Addresses integrated gap

Methodology

This section outlines the methodological approach adopted in this study, including the research design, sample selection, data collection procedures and analytical techniques. It provides a systematic description of how the study was conducted to ensure reliability and validity of the findings.

Research Design

This study employed a quantitative, cross-sectional research design to examine the relationships between smartphone use intensity, self-control and digital well-being among university students. A survey-based approach was adopted as it enables the systematic collection of numerical data and is appropriate for examining associative and predictive relationships using statistical techniques such as correlation and multiple regression analyses.

Participants

The target population of this study comprised undergraduate students enrolled at Universiti Teknologi MARA (UiTM) Cawangan Terengganu, Malaysia. This setting was selected as it represents a relevant higher education context in which students are actively engaged in digital learning environments and frequently utilise smartphones for both academic and personal purposes.

A total of 182 responses were initially collected through an online questionnaire using a convenience sampling technique. Following data screening procedures, 42 responses were excluded due to failure to meet attention-check requirements, resulting in 140 valid responses retained for analysis. This corresponds to a valid response rate of 76.9%, which is considered acceptable for survey-based research.

Research Instrument

Data were collected using a structured questionnaire consisting of four sections. Section A captured demographic information, including gender, level of study, faculty and current semester. Sections B to D measured the key study variables: smartphone use intensity, self-control and digital well-being.

All measurement items were assessed using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The measurement scales were adapted from previously validated instruments in the literature related to digital behaviour, smartphone usage and self-regulation. Minor modifications were made to ensure clarity and suitability for the university student context.

Smartphone use intensity was measured using six items reflecting frequency of use, habitual checking behaviour, distraction during academic activities and perceived dependence on smartphones. Self-control was measured using six items assessing students' ability to regulate their smartphone use, manage distractions and maintain academic focus. Digital well-being was measured using eight items capturing students' perceived balance between digital activities and academic responsibilities, emotional comfort and control over technology use.

Data Screening and Preparation

To ensure the quality and reliability of the data, attention-check items were embedded within the questionnaire. These items required respondents to select a specific response option (e.g., "please select 1 for this statement") to confirm that they were reading the questions carefully.

A total of 42 responses failed to correctly answer one or more attention-check items and were excluded from the analysis. This exclusion reflects standard practice in behavioural research to minimise the inclusion of inattentive or random responses that may compromise data validity. The removal of these responses enhances the overall reliability and robustness of the dataset rather than indicating any flaw in the research instrument.

All measurement items were positively worded; therefore, reverse coding was not required. Composite scores for smartphone use intensity, self-control and digital well-being were computed by averaging the respective item responses.

Reliability Analysis

Internal consistency reliability was assessed using Cronbach's alpha. The results indicate satisfactory reliability for all constructs, with Cronbach's alpha values of 0.713 for smartphone use intensity, 0.812 for self-control and 0.850 for digital well-being. All values exceed the recommended threshold of 0.70, indicating good internal consistency of the measurement scales.

Validity Analysis

Construct validity was assessed using exploratory factor analysis. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy was 0.841, exceeding the recommended threshold of 0.70, indicating a high level of sampling adequacy.

Bartlett’s Test of Sphericity was statistically significant ($\chi^2 = 1029.117$, $df = 190$, $p < .001$), confirming that the correlation matrix was suitable for factor analysis.

Furthermore, all measurement items demonstrated factor loadings above the recommended threshold of 0.50, providing additional evidence of satisfactory construct validity for the measurement scales used in this study.

Data Analysis

Data analysis was conducted using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarise respondents’ demographic characteristics. Pearson correlation analysis was employed to examine the relationships among smartphone use intensity, self-control and digital well-being.

Prior to conducting regression analysis, key assumptions including normality, linearity and multicollinearity were assessed. The results indicated no violation of these assumptions. In particular, Variance Inflation Factor (VIF) values were below the recommended threshold of 5, confirming the absence of multicollinearity among the independent variables.

Finally, multiple regression analysis was performed to determine the extent to which smartphone use intensity and self-control predict digital well-being among university students.

Findings

This section presents the empirical findings of the study. An overview of the respondents’ demographic characteristics is first presented to provide context for the subsequent statistical analyses.

Table 2: Demographic Background of Respondents (N = 140)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	97	69.3
	Male	43	30.7
Level of Study	Diploma	119	85.0
	Degree	21	15.0
Faculty	Accountancy	84	60.0
	Business & Management	42	30.0
	Hotel & Tourism Management	14	10.0
Current Semester	Semester 1–2	78	55.7
	Semester 3–4	61	43.6
	Semester 5 and above	1	0.7

Note. Percentages are based on valid responses (N = 140).

Demographic Background of Respondents

This section presents the demographic characteristics of the respondents included in the final analysis. An overview of the respondents' demographic background is summarised in Table 2, based on 140 valid responses retained after data screening procedures.

Gender

With respect to gender, the sample consisted predominantly of female respondents. As shown in Table 2, 97 respondents (69.3%) were female, while 43 respondents (30.7%) were male. This distribution indicates a higher participation rate among female students, a pattern commonly reported in recent empirical studies involving higher education populations, particularly within business- and management-related academic programmes.

Level of Study

In terms of the level of study, the majority of respondents were enrolled in diploma programmes. Specifically, 119 respondents (85.0%) were diploma students, whereas 21 respondents (15.0%) were pursuing degree-level studies. This distribution suggests that the sample primarily represents students at the diploma stage of higher education, who are typically actively engaged in structured coursework and academic environments relevant to the focus of the present study.

Faculty

Regarding faculty affiliation, most respondents were drawn from business-related academic disciplines. As indicated in Table 2, 84 respondents (60.0%) were enrolled in Accountancy programmes, followed by 42 respondents (30.0%) from Business and Management programmes. A smaller proportion of respondents, 14 students (10.0%), were from Hotel and Tourism Management programmes. This distribution indicates that the sample largely reflects students from faculties where academic activities frequently involve digital platforms and technology-mediated learning practices.

Current Semester

With respect to the current semester of study, the majority of respondents were in the early to middle stages of their academic programmes. Specifically, 78 respondents (55.7%) were enrolled in Semester 1–2, while 61 respondents (43.6%) were in Semester 3–4. Only one respondent (0.7%) was in Semester 5 and above. This pattern suggests that most respondents were students who were still developing their academic routines and adapting to university-level learning environments.

Summary of Demographic Profile

Overall, the demographic profile presented in Table 2 indicates that the respondents predominantly consist of female diploma students from business-related faculties who are in the early to middle semesters of their academic programmes. This composition provides an appropriate context for examining the study variables, as the respondents represent a student population that is actively engaged in academic activities and exposed to relevant educational and digital environments examined in the present study.

Table 3: Pearson Correlation Matrix among Study Variables (N = 140)

Variable	Smartphone Use Intensity	Self-Control	Digital Well-Being
Smartphone Use Intensity	1		
Self-Control	-0.002	1	
Digital Well-Being	-0.040	0.659**	1

** $p < .01$ (two-tailed). Pearson correlation coefficients are reported.

Correlation Analysis

Pearson product-moment correlation analysis was conducted to examine the relationships among smartphone use intensity, self-control and digital well-being among university students. The results of the correlation analysis are presented in Table 3, based on 140 valid responses.

The analysis indicates that smartphone use intensity is not significantly correlated with self-control ($r = -.002$, $p = .977$). This finding suggests that the frequency or intensity of smartphone use is not directly associated with students' ability to regulate or control their behaviour in relation to smartphone usage in the present sample.

Similarly, smartphone use intensity is not significantly correlated with digital well-being ($r = -.040$, $p = .635$). Although the relationship is negative, the correlation coefficient is weak and not statistically significant, indicating that higher smartphone use intensity is not directly linked to lower digital well-being among the respondents.

In contrast, self-control demonstrates a strong and statistically significant positive relationship with digital well-being ($r = .659$, $p < .001$). This result indicates that students who report higher levels of self-control tend to experience higher levels of digital well-being. The strength of this correlation suggests that self-control plays an important role in supporting students' ability to maintain a healthy and balanced relationship with digital technology.

Overall, the correlation results reveal that self-control is the key variable associated with digital well-being, while smartphone use intensity does not show a significant direct relationship with either self-control or digital well-being. Importantly, none of the correlation coefficients exceed commonly accepted thresholds for multicollinearity concerns ($r < .80$), indicating that the variables are sufficiently distinct and suitable for inclusion in subsequent multiple regression analysis.

Table 4: Multiple Regression Analysis Predicting Digital Well-Being (N = 140)

Predictor	B	Std. Error	β	t	Sig.
Constant	1.649	0.373	—	4.415	< .001
Smartphone Use Intensity	-0.044	0.073	-.039	-0.606	.546
Self-Control	0.611	0.060	.659	10.259	< .001

Model statistics: $R = .660$, $R^2 = .435$, Adjusted $R^2 = .427$, $F(2, 137) = 52.818$, $p < .001$

Note. Dependent variable = Digital Well Being. B = Unstandardised coefficient; β = Standardised coefficient.

Multiple Regression Analysis

Multiple regression analysis was conducted to examine the extent to which smartphone use intensity and self-control predict digital well-being among university students. Digital

well-being served as the dependent variable, while smartphone use intensity and self-control were entered simultaneously as independent variables. The analysis was based on 140 valid responses and the results are presented in Table 4.

Overall Model Fit

The regression model was found to be statistically significant, indicating that the independent variables collectively explain a substantial proportion of variance in digital well-being. The model yielded a multiple correlation coefficient of $R = .660$, with an R^2 value of .435 and an adjusted R^2 of .427. This suggests that 43.5% of the variance in digital well-being can be explained by smartphone use intensity and self-control. The ANOVA results further confirm the adequacy of the model, $F(2, 137) = 52.818$, $p < .001$, indicating a strong overall model fit.

Individual Predictors

With respect to individual predictors, self-control emerged as a strong and statistically significant positive predictor of digital well-being ($B = 0.611$, $\beta = .659$, $t = 10.259$, $p < .001$). This finding indicates that students with higher levels of self-control tend to experience better digital well-being. The magnitude of the standardized coefficient highlights self-control as the most influential predictor in the model, underscoring the importance of behavioural regulation in maintaining a healthy relationship with digital technology.

In contrast, smartphone use intensity did not exhibit a statistically significant independent effect on digital well-being ($B = -0.044$, $\beta = -.039$, $t = -0.606$, $p = .546$). Although the direction of the relationship was negative, the association was weak and non-significant. This suggests that the intensity of smartphone use alone does not directly influence digital well-being when self-control is taken into account.

The regression constant was statistically significant ($B = 1.649$, $t = 4.415$, $p < .001$), indicating a baseline level of digital well-being independent of the predictor variables.

Summary of Regression Findings

Overall, the multiple regression results demonstrate that self-control is a key determinant of digital well-being, whereas smartphone use intensity does not independently predict digital well-being within the examined model. These findings suggest that students' capacity to regulate their digital behaviour plays a more critical role in promoting digital well-being than the frequency or intensity of smartphone use itself.

Discussion

This study examined the relationships between smartphone use intensity, self-control and digital well-being among university students using correlation and multiple regression analyses. The findings provide important insights into how behavioural and self-regulatory factors contribute to students' digital well-being in contemporary academic environments.

The correlation analysis revealed that self-control is strongly and positively associated with digital well-being, whereas smartphone use intensity does not demonstrate a significant relationship with digital well-being. These results suggest that students who are better able to regulate their digital behaviour, manage distractions and control their smartphone use are more likely to experience positive digital well-being. In contrast, the amount or intensity of

smartphone usage alone does not appear to directly determine students' digital well-being. This finding indicates that digital well-being is less about how frequently technology is used and more about how effectively individuals manage and regulate their digital behaviour.

The multiple regression analysis further reinforces this interpretation. When smartphone use intensity and self-control were examined simultaneously, self-control emerged as a significant positive predictor of digital well-being, while smartphone use intensity did not exert a statistically significant independent effect. This result highlights the dominant role of self-regulatory ability in shaping students' digital well-being. Students with higher levels of self-control are likely able to balance academic demands and digital engagement more effectively, reducing potential negative effects such as distraction, stress, or digital fatigue.

The non-significant effect of smartphone use intensity in the regression model suggests that the relationship between smartphone use and digital well-being is not straightforward. Rather than smartphone usage being inherently harmful, its impact appears to be contingent on students' capacity for self-regulation. This finding aligns with emerging empirical evidence suggesting that digital well-being outcomes depend more on behavioural control and mindful use than on usage intensity alone. In other words, students may engage in frequent smartphone use without negative consequences if they possess sufficient self-control to use technology purposefully and responsibly.

Overall, the findings indicate that self-control functions as a protective factor in digital environments, enabling students to maintain emotional balance, academic focus and overall digital well-being. These results contribute to the growing literature on digital well-being by clarifying that individual self-regulatory capacities outweigh usage volume when explaining well-being outcomes among university students.

Conclusion and Implications

Conclusion

This study investigated the determinants of digital well-being among university students, focusing on the roles of smartphone use intensity and self-control. Using data from 140 valid respondents and applying correlation and multiple regression analyses, the study provides empirical insights into how behavioural regulation shapes students' digital well-being in contemporary higher education contexts.

The findings indicate that self-control is a strong and significant predictor of digital well-being, whereas smartphone use intensity does not independently influence digital well-being when self-control is considered. These results suggest that digital well-being is not solely determined by the amount or frequency of smartphone use, but rather by students' ability to regulate their digital behaviour. Students with higher levels of self-control are better able to manage digital distractions, maintain emotional balance and engage with technology in ways that support their overall well-being.

Overall, the study highlights the central role of self-regulation in fostering positive digital well-being and challenges assumptions that high smartphone use intensity alone leads to negative outcomes.

Theoretical Implications

From a theoretical perspective, this study contributes to the growing digital well-being literature by demonstrating that self-control is a more influential determinant of digital well-being than smartphone use intensity. The findings support behavioural self-regulation perspectives, which emphasise individuals' capacity to manage impulses and align behaviour with long-term goals in digitally saturated environments. These results suggest that future frameworks of digital well-being should prioritise self-regulatory mechanisms rather than focusing exclusively on technology usage levels.

Practical Implications

The findings also offer important practical implications for higher education institutions, educators and student support services. First, initiatives aimed at improving students' digital well-being should focus on enhancing self-control and digital self-regulation skills, rather than solely promoting reduced smartphone use. Training programmes that emphasise time management, mindful technology use and goal-oriented digital behaviours may be particularly effective.

Second, higher education institutions may consider integrating digital well-being and self-regulation components into student orientation programmes, academic skills courses, or counselling services. By equipping students with strategies to manage digital distractions, universities can support both academic success and psychological well-being.

Finally, rather than implementing restrictive technology policies, institutions may achieve better outcomes by encouraging responsible and intentional smartphone use, recognising that technology itself is not inherently detrimental when managed effectively.

Limitations and Future Research

Despite the contributions of this study, several limitations should be acknowledged, which also point to meaningful directions for future research. Recognising these limitations enhances the interpretability of the findings and provides guidance for extending research on digital well-being in higher education contexts.

First, this study employed a cross-sectional research design, which limits the ability to draw causal inferences regarding the relationships between smartphone use intensity, self-control and digital well-being. Although correlation and multiple regression analyses enable the examination of predictive relationships, they do not capture changes over time. Future research may adopt longitudinal or panel designs to examine how students' smartphone use behaviours, self-control and digital well-being evolve throughout their academic programmes.

Second, the study relied exclusively on self-reported data, which may be subject to response bias, social desirability effects, or inaccuracies in respondents' self-perceptions. Students may under- or over-estimate their smartphone use or self-control capacities. Future studies could incorporate objective behavioural measures, such as screen-time logs or usage tracking data, alongside self-report instruments to provide a more robust assessment of digital behaviour and well-being.

Third, the sample was drawn from a single public university context, which may limit the generalisability of the findings to other institutional settings or student populations. Differences in academic culture, digital infrastructure and institutional expectations may influence students' digital behaviours and well-being experiences. Future research is encouraged to replicate the study across multiple universities, disciplines, or national contexts to enhance external validity.

Fourth, although the regression model identified self-control as a key predictor of digital well-being, the model did not include other potentially influential variables. Constructs such as digital literacy, academic stress, learning engagement, psychological resilience, or institutional support may also play important roles in shaping students' digital well-being. Future research could extend the model by incorporating additional predictors or testing mediating and moderating mechanisms to develop a more comprehensive explanatory framework.

Finally, future studies may benefit from adopting mixed-methods approaches. Qualitative data collected through interviews or focus groups could provide deeper insights into students' lived experiences with digital technology, uncovering contextual and subjective factors that quantitative surveys may not fully capture. Such approaches would complement quantitative findings and contribute to a richer understanding of digital well-being among university students.

In summary, while the present study provides valuable empirical evidence highlighting the importance of self-control in promoting digital well-being, addressing these limitations through future research will contribute to a more nuanced and holistic understanding of digital well-being in higher education.

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