

The impact of technology on academic procrastination among Vietnamese students

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ABSTRACT

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In recent years, the rapid development of technology has brought numerous positive changes to students' learning and research processes. However, alongside technology's conveniences, the influence of online learning environments, social networks, and entertainment applications has made it increasingly easy for students to become distracted and neglect their studies, leading to negative impacts - particularly academic procrastination, which results in declining educational performance. This article aims to identify the influencing factors and the role of technological factors in academic procrastination among Vietnamese students. Analyses using Cronbach's Alpha, EFA, KMO, and Linear Regression on a dataset collected from a survey of 839 students across various universities in Vietnam have confirmed three factors in the adjusted research model: Social Media Usage (SCM), Video Gaming (VDG), and Streaming Platform Usage (WOV), which have profound effects on Academic Procrastination (PIL). These factors significantly influence Academic Procrastination (PIL), with Video gaming showing the most substantial impact on male students (Beta = 0.352) and Streaming platforms affecting female students most notably (Beta = 0.221). This study suggests various methods to reduce academic procrastination brought on by students' excessive technology usage. In particular, the study emphasizes the value of creating interactive educational resources and planning courses on time management and efficient use of technology. Essential elements of the suggested approach also include developing customized time management apps, including digital literacy and self-control into the curriculum, and starting extensive public awareness campaigns. It's also crucial to work with tech companies to create solutions that are easy to use and promote efficient time management.

1. Introduction

A study conducted at the University of Vermont revealed that 46% of surveyed students admitted they "often" or "always" procrastinated in completing assignments, while approximately 30% delayed studying for exams (Solomon & Rothblum, 1984). Another Solomon and Rothblum (1984) survey found that up to 50% of students procrastinated at least half the time when

performing academic tasks. Similarly, Akinsola et al. (2007) emphasized that 80% to 95% of university students frequently procrastinate, especially during periods close to completing essays or final assignments. According to various studies, 30% to 60% of American students were recorded as having habitual procrastination tendencies (Rabin et al., 2011), with Steel (2007) suggesting the figure could be even higher. These statistics demonstrate that students are particularly susceptible to the habit of procrastination. On the global scale, studies show that around 50% of college students procrastinate consistently and chronically, 75% consider themselves procrastinators, and 80% - 95% procrastinate. Schools are no strangers to procrastination. Students in high school, college, and beyond are prone to procrastination. 53% of high school students, 53% of undergraduate students, and 61% of graduate students are frequent procrastinators. Procrastination amongst undergraduates is most common when writing term papers (46%), followed by weekly readings (30%) and studying for tests (28%) (Todorov, 2024).

Several factors contribute to procrastination among students, such as academic pressure and unfavorable environments, but the rapid development of technology stands out as a significant driver. The increasing influence of the Internet is profoundly reshaping people's daily lives, dominating their time and attention (Musetti & Corsano, 2018). This trend, in turn, leads to using digital devices, browsing social media, and playing games, which often distract students from focusing on essential academic tasks. A study conducted by the National Institute of Mental Health in Vietnam in 2021 showed that over 51.3% of young people aged 10 - 24 spend more than 03 hours daily on the Internet, primarily through mobile devices, engaging in social media, online gaming, and video streaming (TTXVN, 2023). The allure of technology leads students to dedicate more time to non-academic activities, exacerbating procrastination behaviors. While technology provides substantial benefits for education - such as convenient access to online materials and support tools like AI - it also creates distractions. Particularly during the Covid-19 pandemic, the shift to online learning accelerated the use of platforms like Zoom and Google Meet. However, the prevalence of technology has persisted, with many students continuing to use these applications for entertainment rather than studying. The studies conducted with undergraduate students have reported that the tendency to postpone academic tasks increases along with the level of problematic internet use (Aznar-Díaz et al., 2020; Hayat et al., 2020).

In Vietnam, existing research highlights that academic procrastination among students is associated with various factors, ranging from learning environments to technology. Nguyen et al. (2021) pointed to peer influence as a contributing factor to procrastination, while another study underscored the psychological aspects affecting students at the University of Economics Ho Chi Minh City (Nguyen, 2021). These studies mainly describe the general impact without delving deeply into specific technology-related issues. In contrast, recent studies worldwide often focus on the effects of particular technologies, such as social media or online learning platforms, on procrastination behavior. For instance, a study by Xie et al. (2023) explored the relationship between short video addiction and academic procrastination among university students. Moreover, research in Vietnam is limited by small sample sizes and a lack of regional representativeness. At the same time, international studies typically have larger scales and cover a wider range of student groups. Thus, this study addressed the research gap in Vietnamese studies by analyzing the impacts of specific emerging technologies with a larger sample size.

Thus, procrastination among students may be influenced by numerous dimensions. This study focuses on the impact of using entertainment technology - specifically social media, video games, and video streaming - on academic procrastination among Vietnamese students. The

study aims to provide deeper insights into how technology affects academic procrastination behavior among Vietnamese students. Based on that, the study recommends stakeholders (students, families, schools, and policymakers) minimize the negative impacts of using entertainment platforms on academic procrastination among students, thereby improving their learning attitudes and enhancing the quality of higher education in Vietnam.

2. Theoretical framework

2.1. Academic procrastination

According to Rothblum et al. (1986), academic procrastination is the irrational and dysfunctional delay in completing academic tasks, often accompanied by anxiety and adverse outcomes such as poor academic performance and deteriorating health. Steel (2007) and Simpson and Pychyl (2009) support this definition, emphasizing that procrastination is not merely a delay in planned academic tasks but also causes long-term adverse consequences. Additionally, it has been observed that most students experience discomfort when deliberately postponing their studies, even though they know it needs to be done (Nguyen et al., 2021). These studies suggest academic procrastination is a common behavior, reflecting a conflict between awareness and action. Despite the negative consequences of procrastination, including discomfort and long-term effects on academic outcomes, students continue to engage in it.

Based on this, our study defines academic procrastination as delaying or failing to complete academic tasks as planned, even when students are fully aware of their importance. This behavior is often linked to anxiety, fear of failure, or a lack of interest, leading to negative consequences such as stress, time pressure, decreased academic performance, and adverse effects on mental health.

2.2. Digital entertainment platforms

Technology-based entertainment encompasses activities such as video games, virtual worlds, online role-playing games, entertainment-driven social media, and, to a lesser extent, traditional mass media (Hayden, 2018). Digital Entertainment (DE) includes online gaming, wireless gaming, participating in online fan forums for sports or music, and other forms of consumer-to-consumer interactive entertainment. These activities involve interaction between humans and computers or among individuals via the Internet (or wireless networks) (Das & Gochhait, 2021). According to the Digital Entertainment publication, Kumar defines digital entertainment as using electronic devices and platforms (Das & Gochhait, 2021).

From these definitions, our study identifies digital entertainment platforms as technology-based entertainment activities in which users interact with devices or online communities.

2.3. Overview of the impact of digital entertainment platforms on students academic procrastination

The rapid advancement of technology has made the development of platforms like social media, video games, and online video streaming services.

Digital entertainment platforms offer numerous opportunities for entertainment and social connection and profoundly impact students' study habits and behaviors. Social media, playing video games, and watching online videos can reduce students' focus and extend the time needed to complete academic tasks. These factors create continuous distractions, increasing the likelihood of procrastination. The relationship between academic procrastination and technology usage has been documented in numerous studies.

Consuming content on these platforms can be time-consuming and distract students from academic tasks (Reinecke et al., 2018). When users, particularly students, become engrossed in entertainment content, the tendency to procrastinate on crucial academic work becomes more prevalent.

Specifically, the widespread popularity of social media platforms like Facebook, Instagram, and TikTok has created highly engaging environments for users, especially young people. Research indicates that social media serves as a form of entertainment and a potential distraction source, delaying task completion (Roberts & David, 2016). Frequent use of social media can impair concentration, leading to procrastination in academic activities among students.

Social distractions, including interactions with friends, media consumption, and social networks, significantly contribute to increased procrastination and reduced focus (Dewitte & Schouwenburg, 2002). Social media platforms amplify this issue by fostering online networks through features like likes, comments, and algorithm-driven feeds, which provide instant gratification and promote compulsive scrolling (Hofmann & Gómez, 2017; Obar & Wildman, 2015). While social media can support learning by facilitating information sharing, its improper use often exacerbates procrastination. For instance, frequent Facebook use combined with low self-control is a major predictor of procrastination, accounting for 40% of its variance (Meier et al., 2016). Furthermore, social media's impact is often indirect, with Internet addiction acting as a mediator (Nwosu et al., 2020). In Vietnam, studies reveal that 80.7% of students at Hue University show signs of Facebook addiction, which correlates significantly with academic procrastination (Ho, 2024). Additionally, 85% of these students report spending 05 - 07 hours daily on social media, leading to distractions and reduced academic focus (Cu, 2023). These findings underscore the detrimental effects of uncontrolled social media use on academic performance and time management.

Video games have become popular entertainment, particularly among young people, due to their addictive and highly engaging nature. Increased time spent on gaming reduces motivation and academic efficiency, negatively impacting students' academic outcomes. Rusyadi (2013) indicates a strong link between online gaming addiction and academic procrastination, as excessive gaming hinders time management and reduces focus on schoolwork. Yeh et al. (2017) have shown that spending excessive time on video games can result in distractions and delays in completing academic tasks. Video games, designed with rewards, leveling systems, and multiplayer engagement, encourage escapism and competition, often diverting attention from academic priorities (Nordby et al., 2019). This trend is reflected in the shift from traditional games to modern alternatives, as evidenced by increasingly empty playgrounds and the decline of conventional game competitions (Mubarak et al., 2022). In Vietnam, studies highlight the time-wasting nature of non-academic gaming and its direct impact on academic performance. Dang (2013) confirmed that gaming addiction exacerbates procrastination and negatively affects academic outcomes. Do and Nguyen (2024) found that excessive gaming delays essential tasks.

Online video streaming platforms such as YouTube, Netflix, and similar services have become increasingly common and accessible. While these platforms offer immediate entertainment, they often lead to procrastination in academic tasks (Krivonogova et al., 2022; Yeh et al., 2017). This behavior stems from prioritizing immediate over delayed rewards, which hinders self-directed learning and productivity (Miyake & Kane, 2022; Steel, 2007). The dual impact of these platforms is evident, as they provide access to tailored educational content but

also pose risks when overused. Excessive consumption of short videos has been linked to increased anxiety and depression, worsening academic procrastination, and memory issues (Xia et al., 2023). In Vietnam, Do and Nguyen (2024) reported that 26% of students spend over three hours daily on non-academic streaming, decreasing academic performance and heightened procrastination. However, with effective time management, these platforms can be utilized as valuable tools for education and skill development.

Messaging applications are primarily designed for direct and concise communication, distinguishing them from social media platforms, which continuously suggest engaging content. Unlike video games or streaming platforms that leverage rewards and captivating visuals to sustain user engagement, messaging apps typically require only brief attention spans and lack such addictive features. While these apps play a crucial role in modern communication, they generally do not exhibit the inherent potential to induce procrastination among students, as is frequently observed with social media, video games, and video streaming platforms.

2.4. Research model

Based on the overview, we propose a research model with the following hypotheses:

H1: Social Media Usage (SCM) impacts academic procrastination among students

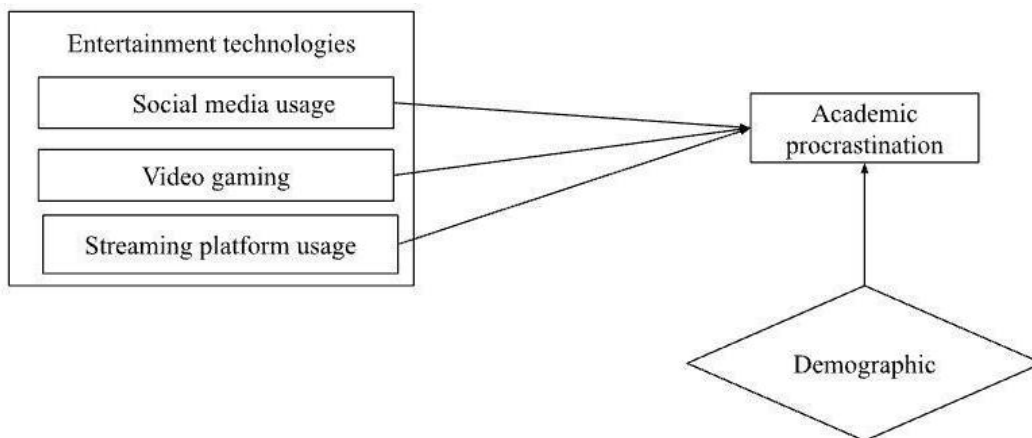
H2: Video Gaming (VDG) influences academic procrastination among students

H3: Streaming Platform Usage (WOV) positively contributes to academic procrastination among students

H4: Demographic factors affect academic procrastination among students

Figure 1

Research Model



Note. Research team (2024)

3. Research method

The research team developed the study model and measurement scales by analyzing theories and reviewing multiple studies. To refine the measurement scales and survey questionnaire, the team conducted qualitative research, including in-depth interviews with six experts in the field of education. These interviews aimed to enhance the measurement scales and design the quantitative questionnaire. The research team revised the scales based on expert feedback to ensure they were comprehensible to respondents. They also logically adjusted each scale to ensure students understood the research questions clearly.

Data were recorded and saved on a computer during the interviews to ensure no critical findings were missed. The content of these sessions aimed to gather expert evaluations of the quality of each scale in the preliminary questionnaire. This provided the team with a basis for refining and finalizing the scales for the study. The team presented each scale corresponding to individual independent variables in the model to the experts to validate the preliminary scales through the following questions:

Have the scales listed above been phrased accurately and clearly? If not, how should they be revised?

Should any scales be added or removed for this variable?

All experts unanimously agreed on the appropriateness of the scales and related variables for the study. However, some scales, which were adapted from foreign-language sources, required adjustments to specific academic vocabulary to make them more accessible to the respondents. Additionally, some scales with potentially confusing or similar phrasing received feedback and were modified to reduce ambiguity.

After refining the questionnaire with expert input, the research team distributed the survey online (via Google Forms) and on paper to students across Vietnam. Over one month, 858 responses were collected. Of these, 839 responses were deemed valid and provided sufficient information for subsequent research steps, while 19 invalid responses were excluded. The exclusion criteria included selecting more options than allowed, providing incomplete answers, or selecting identical responses for all questions. The exclusion of these responses was necessary to maintain the integrity and reliability of the dataset. The team ensured the exclusion process was objective and based solely on predefined criteria, avoiding potential bias. Furthermore, the excluded responses were minimal and unlikely to compromise the representativeness or validity of the findings.

Although the survey did not target a specific gender, most responses came from female participants (72.5%), while male participants accounted for 27.5%. This gender imbalance is a notable characteristic of the sample and may reflect the demographics of the survey distribution or the respondent population. While the analysis aims to assess general trends, the imbalance may limit the ability to draw robust conclusions about gender-based differences in technology use. Future studies could consider stratified sampling or weighted analyses to address such imbalances and explore gender-specific insights more comprehensively.

Regarding academic year, the most significant proportion of responses came from fourth-year students, representing 55.6% of the sample. Second-year and third-year students accounted for 13.2% and 22.6%, respectively, while only 6.9% were first-year students, with the remainder being postgraduates. Regarding tuition fees, most students (45.9%) reported an annual tuition range of 10 to 30 million VND. Additionally, 32.3% of students fell into the 30 to 60 million VND range, while 12% reported tuition costs of 0 to 10 million VND. Meanwhile, 7.9% of students had tuition fees between 60 and 100 million VND; the remaining reported tuition fees exceeding 100 million VND annually.

All valid responses were processed using SPSS 27.0 to conduct the necessary steps, including reliability analysis, Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA), linear correlation analysis, and regression analysis to examine the relationships between independent and dependent variables.

The qualitative insights gathered from the six educational experts were fully integrated into the study's outcomes. These insights informed the refinement of measurement scales and the design of the survey questionnaire, ensuring the questions were theoretically grounded and practical for the respondents. As mentioned earlier, the existing Vietnamese studies overlooked specific technology dimensions in this study. Thus, modification of measures was needed. That helped adapt the scale to our research topic and the context of Vietnam. Then, the team carefully evaluated and incorporated expert recommendations, enhancing the comprehensiveness and reliability of the study's tools and subsequent findings.

4. Research results

4.1. *The current state of academic procrastination among Vietnamese students*

The overall average score across the nine scales is 3.43, indicating a relatively high level of academic procrastination among students. This suggests that procrastination is not limited to isolated situations but occurs frequently, driven by various factors ranging from external distractions to a lack of motivation for tasks that students find unappealing.

Table 1

Students' Assessment of Their Academic Procrastination

Item	Mean
I always complete academic tasks before the deadline	3.83
I often start tasks later than my peers	3.24
I get distracted by more interesting things when I should be doing homework	3.73
I procrastinate, starting academic tasks that I dislike	3.51
I hesitate when beginning new academic tasks	3.30
I often find excuses to avoid doing a particular academic task	3.44
I do not stick to the study plans I've made	3.45
I delay progress even when I know the academic task is essential and needs to be started	2.95

Note. Summary of the author's results (2024)

The data reveals specific aspects of academic procrastination among Vietnamese students. The highest average score 3.83, pertains to the statement, "I always complete academic tasks before the deadline," indicating that many students tend to meet deadlines, reflecting a certain level of responsibility in their studies. However, the high average score of 3.73 for the statement "I get distracted by more interesting things while I should be studying" demonstrates that external factors easily sidetrack students. Additionally, "I delay starting academic tasks that I don't like" has an average score of 3.51, indicating that procrastination is more likely to occur when students find tasks unappealing.

Other factors have average scores ranging from 3.24 to 3.45, reflecting habits such as delaying the start of tasks, failing to adhere to pre-established study plans, and frequently finding excuses to postpone academic work. Notably, "I still procrastinate even when I know the task is

important and needs to be started” has the lowest average score of 2.95. This indicates that when students recognize the importance of a task, they are less likely to procrastinate, although the behavior persists. With an overall average score of 3.43, the results highlight the widespread tendency for procrastination among students, particularly when they are drawn to other attractive factors or confronted with tasks they find unenjoyable.

4.2. The impact of digital entertainment platforms on academic procrastination among Vietnamese students

4.2.1. Measuring the reliability of Cronbach's Alpha scale

Table 2

Results of Verifying the Reliability of the Scale

Factor	Cronbach's Alpha coefficient	Cronbach's Alpha if the item deleted	Number of variables removed
Social Media Usage (SCM)	0.802	0.539 - 0.669	0/4
Video Gaming (VDG)	0.919	0.711 - 0.855	0/5
Streaming Platform Usage (WOV)	0.641	0.309 - 0.563	0/5
Academic Procrastination (PIL)	0.897	0.330 - 0.766	0/9

Note. Summary of the author's results (2024)

Cronbach's Alpha analysis was conducted to eliminate unreliable scales. The results indicate that all variables have reliable Cronbach's Alpha coefficients (> 0.6). According to Nunnally (1978), all scales meet the required standards, with the item-total correlation coefficients for the variables in each scale exceeding the threshold (> 0.3).

4.2.2. Exploratory Factor Analysis (EFA)

Table 3

Results of the KMO Test for Independent Variable

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.807
Approx. Chi-Square	5037.032
Bartlett's Test of Sphericity	df
	66
	Sig.
	.000

Note. Summary of the author's results (2024)

The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy reached a value of 0.807, surpassing the 0.5 threshold, indicating the necessity of factor analysis in examining the data. As the Sig value of Bartlett's test of sphericity is 0.000, which is less than 0.05, there is a significant correlation among the observed variables within each factor.

Table 4*Results of Exploratory Factor Analysis (EFA)*

	Rotated Pattern Matrix		
	Component		
	1	2	3
VDG3	.894		
VDG4	.888		
VDG1	.878		
VDG2	.823		
VDG5	.812		
SCM4		.829	
SCM3		.788	
SCM2		.760	
SCM1		.689	
WOV3			.853
WOV2			.846
WOV1			.549

Note. Summary of the author's results (2024)

These results demonstrate that the observed variables are mainly consistent with the concept proposed by the research team. Therefore, all factors meet the criteria for application in subsequent analyses.

4.2.3. Testing mean differences between male and female students

Male and female student groups may exhibit differences in how they utilize entertainment tools. To address this question, the research team conducted a One-Way ANOVA test, with the results presented below:

Table 5*One-Way ANOVA Test Based on Gender Groups*

Variable name	Sig (Levene Test)	Sig (Anova Test)	Sig (Robust Test)	Conclusion
Academic Procrastination (PIL)	0.507 > 0.05	0.091 > 0.05		No difference between the two gender groups
Social Media Usage (SCM)	0.068 > 0.05	0.007 < 0.05		There is a difference between the two gender groups
Video Gaming (VDG)	0.105 > 0.05	0.000 < 0.05		There is a difference between the two gender groups
Streaming Platform Usage (WOV)	0.295 > 0.05	0.008 < 0.05		There is a difference between the two gender groups

Note. Summary of the author's results (2024)

Due to the differences observed among the three types of digital entertainment platforms, the research team decided to separate the biological male and female groups for linear regression analysis. This approach aims to determine whether there are differences in the impacts of digital entertainment platforms between the two biological gender groups.

4.2.4. Linear correlation analysis and regression analysis

The research team conducted a linear correlation analysis (Pearson's correlation coefficient, r) to examine the linear relationship between students' academic procrastination and the independent variables for both male and female students. The significance value for this relationship was Sig = 0.000 (< 0.05), indicating that the relationship is statistically significant and can be further analyzed using multiple linear regression analysis.

4.2.4.1. The impact of digital entertainment platforms on academic procrastination among male students

The authors performed multiple linear regression analyses on the male biological gender group, with the results in Tables 6 and 7.

Table 6

Coefficient of Determining the Model Fit

R	R Square	Adjusted R Square	Durbin-Watson
0.455	0.207	0.196	1.621

Note. Summary of the author's results (2024)

Table 6 shows an Adjusted R Square value of 0.196, indicating that the independent factors included in the regression analysis explain 19.6% of the average variance in the dependent variable. This suggests that while variables such as male students use of digital entertainment platforms contribute to explaining academic procrastination, a significant portion of the variance (80.4%) is influenced by other unexplored factors, such as individual characteristics (e.g., time management skills, motivation), environmental conditions (e.g., family or peer influences), or contextual variables (e.g., academic workload or access to learning resources). The Durbin-Watson test result of 1.621, falling within the acceptable range of 1.5 to 2.5, confirms no violation of the assumption of autocorrelation (Gujarati & Porter, 2003; Nakhaei & Jafari, 2015). The ANOVA variance analysis yielded a Sig = 0.000 (< 0.05), indicating that the regression model fits the dataset and the included variables are statistically significant. Therefore, while the findings suggest that male students use of digital entertainment platforms is a contributing factor to academic procrastination among students in Vietnam, the relatively low Adjusted R Square value highlights the need to explore additional variables to improve the model's explanatory power and develop a more comprehensive understanding of the factors influencing academic procrastination.

Table 7

Coefficient of Regression Equation B

	B	Std.Error	Beta	t	P-Value (Sig)
Constant	1.566	0.324		4.829	0.000
SCM	0.185	0.088	0.144	2.102	0.037
VDG	0.256	0.046	0.352	5.632	0.000
WOV	0.095	0.064	0.103	1.488	0.138

Note. Summary of the author's results (2024)

The standardized linear regression model is rewritten as follows:

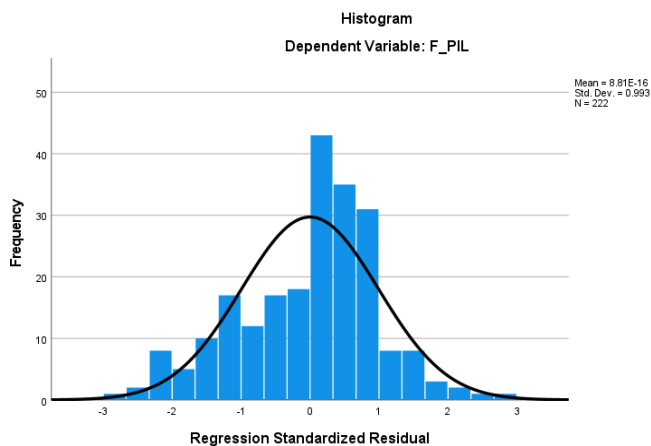
$$Y = 0.144*SCM + 0.352*VDG \quad (1)$$

The results reveal that only two factors - Social Media and Video Games - positively influence students' procrastination levels. Social Media (0.144) has a minor impact, meaning that for every unit increase in Social Media Usage (SCM), the average level of academic procrastination increases by 0.144 units. Meanwhile, Video Games (0.324) exert a much stronger influence, indicating that for every unit increase in video game usage, the level of academic procrastination among male students increases by 0.352 units.

The frequency distribution chart shows that the standard distribution curve overlaps well with the histogram. The mean is very close to zero (Mean = 8.81E-16), and the standard deviation is approximately 1 (Std.Dev = 0.993), suggesting that the residual distribution is approximately normal and that the assumption of normal distribution of residuals is not violated.

Figure 2

Frequency Histogram of the Research Data Set of Male Students

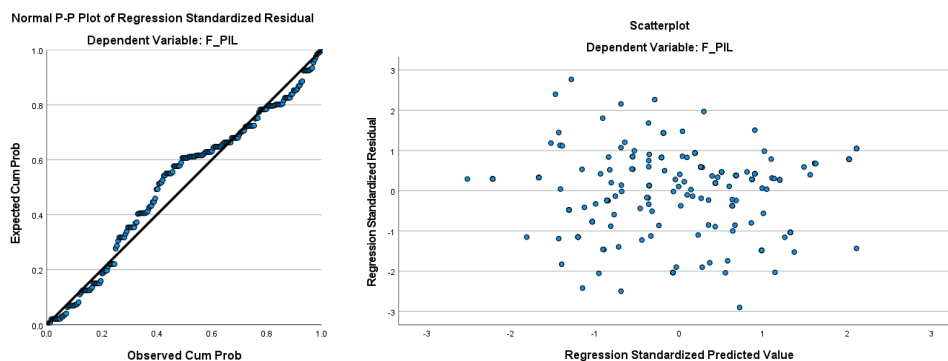


Note. Summary of the author's results (2024)

The P-P plot further shows that the residual data points are distributed close to the expected diagonal line, confirming that the assumption of a normal distribution of residuals is upheld. The scatterplot of standardized residuals is concentrated around the zero line, indicating that the assumption of linearity is not violated.

Figure 3

P-P Chart (Left) and Data Scatter Chart (Right) of Male Students



Note. Summary of the author's results (2024)

4.2.4.2. The impact of digital entertainment platforms on academic procrastination among female students

Next, the authors conducted multiple linear regression analyses on the female biological gender group, with the results presented in Tables 8 and 9.

Table 8

Coefficient of Determining the Model Fit

R	R Square	Adjusted R Square	Durbin-Watson
0.370	0.137	0.133	1.852

Note. Summary of the author's results (2024)

Table 8 shows an Adjusted R Square value of 0.137, indicating that the independent factors included in the regression analysis explain 13.7% of the variance in the dependent variable. This relatively low value suggests that while variables like female students use of digital entertainment platforms contribute to explaining academic procrastination, a significant portion of the variance (86.3%) remains influenced by other unexplored factors, such as personal traits (e.g., self-regulation, motivation), environmental influences (e.g., family or peer pressure), or contextual elements (e.g., access to educational resources). The Durbin-Watson test result of 1.852, falling within the acceptable range of 1.5 to 2.5, confirms no violation of the assumption of autocorrelation (Gujarati & Porter, 2003; Nakhaei & Jafari, 2015). The ANOVA variance analysis yielded a Sig = 0.000 (< 0.05), indicating that the regression model fits the dataset and the included variables are statistically significant. Therefore, while the findings suggest that female students' use of digital entertainment platforms contributes to academic procrastination among students in Vietnam, the low Adjusted R Square value underscores the need to investigate additional variables to enhance the model's explanatory power and achieve a more comprehensive understanding of this phenomenon.

Table 9

Coefficient of Regression Equation B

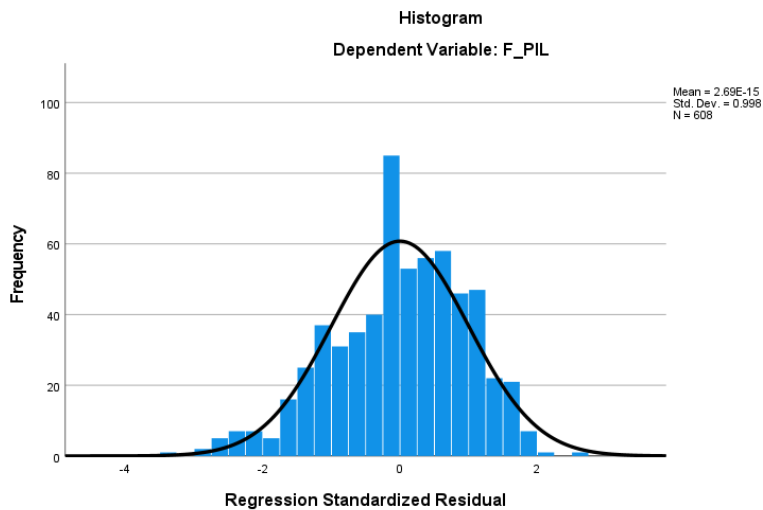
	B	Std.Error	Beta	t	P-Value (Sig)
Constant	1.724	0.220		7.845	0.000
SCM	0.142	0.050	0.112	2.840	0.005
VDG	0.145	0.030	0.192	4.894	0.000
WOV	0.209	0.039	0.221	5.399	0.000

Note. Summary of the author's results (2024)

The standardized linear regression model is rewritten as follows:

$$Y = 0.112*SCM + 0.192*VDG + 0.221*WOV \quad (2)$$

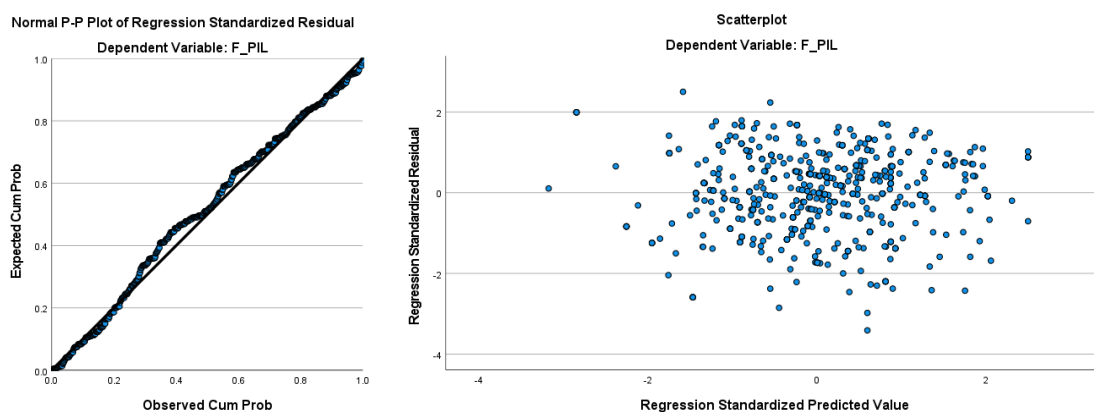
The results show that all three factors - Social Media, Video Games, and Online Videos - positively influence procrastination among female students. Among these, watching online videos has the most significant impact on procrastination, where for every unit increase, the procrastination level of female students increases by 19.2%. This is followed by Video Games and Social Media, which have lesser effects on the procrastination of this group, with positive influences of 14.5% and 14.2%, respectively.

Figure 4*Frequency Histogram of the Research Data Set*

Note. Summary of the author's results (2024)

The frequency distribution chart shows a standard distribution curve overlapping with the frequency histogram. The mean value is close to zero (Mean = 2.69E-15), and the standard deviation is approximately 1 (Std.Dev = 0.998), indicating that the residual distribution is approximately normal and the assumption of normal residual distribution is not violated.

The P-P plot also illustrates that the residual data points are distributed close to the expected diagonal line, further supporting that the assumption of normal residual distribution is not violated. The scatter plot of standardized residuals is mainly concentrated around the zero line, confirming that the assumption of a linear relationship is not violated.

Figure 5*P-P Chart (Left) and Data Scatter Chart (Right)*

Note. Summary of the author's results (2024)

5. Conclusions**5.1. Conclusion**

Based on the research findings, it can be observed that the use of digital entertainment media impacts the level of academic procrastination among Vietnamese students.

Video games

Video games notably affect academic procrastination (coefficient = 0.324), particularly among male students. This group is often associated with competitive, challenging, and conquering activities, which video games are designed to fulfill. The scale shows that students frequently play video games during their free time (Mean = 3.42), feel relaxed while playing (Mean = 3.74), and perceive certain positive benefits, such as games helping improve life skills (Mean = 3.30). However, lower average scores for statements like “Video games are a part of my life” (Mean = 3.05) and “An indispensable habit” (Mean = 2.96) indicate that only some students consider video games an essential activity. This suggests that, while not all students are addicted to video games, academic procrastination may stem from prolonged gaming sessions and the engrossing nature of the games. These findings are consistent with studies by Mubarak et al. (2022), Yeh et al. (2017), and Rusyadi (2013), which emphasize that video games, due to their high appeal and addictive potential, impair time management and increase academic procrastination. Video games demand more time than social media and provide instant gratification, making students prioritize gaming over academic tasks. This explains why video games have a more substantial impact than social media and highlights the need for effective management strategies to mitigate procrastination caused by video gaming.

In contrast, the influence of video games on female students is comparatively minor, as indicated by a coefficient of 0.192. However, compared to male students, female students engage with video games less frequently and are less attached to them. The scale reveals relatively low average scores for statements like “I often play video games during my free time” (Mean = 2.62) and “Playing video games is an indispensable habit of mine” (Mean = 2.22), indicating that female students do not spend excessive time or rely heavily on video games. However, the higher average score for “I feel relaxed when playing video games” (Mean = 3.07) suggests that female students still view video games as an effective stress relief or entertainment method. Because their gaming time is less frequent, the impact of procrastination may result from unplanned gaming sessions that extend longer than expected. Furthermore, unlike the study by Hinsch and Sheldon (2013), our findings show that the influence of video games depends not only on usage frequency but also on individual characteristics such as gender and purpose of use. While the impact of video games on academic procrastination among female students is less pronounced than among males, it still exists, reflecting differences in purpose and usage patterns.

The study reveals significant gender disparities in the influence of digital entertainment on academic procrastination, particularly with video games. Video games play a substantial role in procrastination for male students due to their competitive and achievement-oriented features, which align with male preferences. Male students typically demonstrate higher engagement and prioritize gaming, leading to prolonged sessions that interfere with academic obligations. Conversely, female students exhibit limited gaming engagement, often treating it as a casual or stress-relieving activity rather than a primary hobby. Their procrastination is more frequently associated with online video consumption, where blending academic and entertainment purposes complicates effective time management.

Watching online videos

Watching online videos significantly impacts academic procrastination among female students, with a coefficient of 0.192. This activity captures their attention not only due to its entertainment value but also for its ability to provide information and knowledge. High average

scores for statements such as “I watch online videos to learn what I need to know” (Mean = 3.87) and “I often watch online videos longer than planned” (Mean = 3.67) reveal that although students may initially turn to videos for academic purposes or valuable information, they can easily get drawn into watching longer than intended. Furthermore, the statement “It is difficult for me to go a day without watching online videos” (Mean = 3.32) indicates a certain level of dependency on this activity. The combination of academic intent and the appeal of online content makes it difficult for female students to manage their time, leading to academic procrastination. This finding expands on previous studies such as those by Reinecke et al. (2018), which highlighted the distracting nature of entertainment content on platforms like YouTube, and Xia et al. (2023), which linked excessive consumption of short videos to negative states like anxiety, depression, and impaired prospective memory - factors that could increase academic procrastination but lacked gender-specific analysis. Our study indicates that female students watch videos for entertainment and to seek information, yet a lack of time control often leads to overuse. This finding underscores the allure of online video platforms, where personalized algorithms drive procrastination tendencies, providing an essential contribution to understanding the technological impact on student learning behaviors.

Another key finding is the significant impact of watching online videos on academic procrastination among female students, compared to its negligible influence on male students. This difference can be attributed to distinct usage patterns and motivations. Female students often turn to online videos to acquire knowledge, fulfill academic needs, and seek entertainment. The personalized algorithms of video platforms, such as YouTube, frequently lead to extended viewing sessions by seamlessly transitioning from educational content to related or entertaining videos. This “rabbit hole” effect disproportionately impacts female students, who may initially have academic intentions but spend excessive time on these platforms due to their engaging and visually appealing content.

Social media

Social media mildly impacts academic procrastination (coefficient = 0.144), reflecting a lower level of influence than other factors. The scale shows that students frequently use social media (Mean = 4.11) and value its role in personal and social life. Statements like “Social media is helpful for me” (Mean = 3.79) and “Social media is essential for youth” (Mean = 3.91) indicate that students perceive social media not only as a tool for entertainment but also as offering practical benefits. However, this positive perception may lead to a natural habit of using social media, sometimes to the extent that they struggle to recognize when its use exceeds necessity. While social media does affect academic procrastination, its impact is not particularly strong because students often use it in short bursts, easily alternating between entertainment and educational tasks. This minimizes its negative influence unless students lack planning or fail to control their habits effectively.

Social media mildly affects academic procrastination among female students (coefficient = 0.112), indicating that its impact is not overly significant when it is a popular activity. The scale shows high average scores for statements such as “I frequently use social media” (Mean = 4.25) and “Social media plays an important role in societal development” (Mean = 4.17), demonstrating that female students frequently engage with social media and deeply understand its importance in modern life. However, social media does not appear to cause severe procrastination because female students tend to use it to maintain social connections, seek useful information, or support academic tasks rather than solely for

entertainment. This helps mitigate negative impacts, although procrastination may still occur if time usage is not well-controlled.

Similar to previous studies by Rozgonjuk et al. (2018), Meier et al. (2016), and Hinsch and Sheldon (2013), which acknowledged that social media use can contribute to procrastination by creating distracting environments and fostering mobile device habits, our research finds that the impact of social media on academic procrastination (coefficients = 0.112 - 0.144) is relatively mild. This may be because students use social media quickly and recognize its positive value, such as facilitating communication and learning. When social media's influence is relatively light, it suggests that students have not yet reached the point of addiction or heavy dependence on these platforms. This aligns with Nwosu et al. (2020), who argued that social media use only becomes problematic when it exceeds control and negatively impacts personal life and academic performance.

Additionally, the findings highlight differences in impact between male and female students, supplementing earlier studies such as Steel (2007), which emphasized the role of demographics in procrastination behavior. This finding is consistent with Türel and Dokumaci (2022), who argued that cultural and social factors can alter how students approach technology and learning behaviors.

However, these findings should be interpreted cautiously due to potential exceptions and biases. For instance, some male students with strong time management skills or less interest in gaming might not experience significant procrastination, while female students heavily engaged in video games might display patterns similar to their male counterparts. Likewise, the impact of social media could be underestimated for students who use platforms excessively or are deeply influenced by peer or cultural pressures. Additionally, algorithm-driven personalization on online platforms may amplify procrastination tendencies in ways not fully captured by the current analysis.

The limited explanatory power of the regression models (13.7% for female and 19.6% for male students) suggests that while digital entertainment platforms contribute to academic procrastination, a substantial portion of the variance remains unexplained. This gap can partly be attributed to cultural norms and socio-economic conditions specific to Vietnam. In Vietnamese culture, where academic achievement is highly valued and often linked to family pride and societal status, students may face significant pressure to perform well. This cultural emphasis may drive students to seek escapism through digital entertainment, leading to procrastination. However, the same cultural context might also encourage students to self-regulate more effectively, thereby mitigating the influence of digital platforms on their academic behavior. These competing dynamics reflect the complexity of how cultural norms shape procrastination behaviors, explaining why the variance explained by the models remains limited.

Furthermore, Vietnam's socio-economic diversity also contributes to the unexplained variance. Students from urban areas with greater access to advanced technology may exhibit different procrastination patterns than those from rural or less affluent regions, where access to digital platforms might be more restricted. This disparity suggests that socio-economic conditions mediate the impact of digital entertainment on procrastination, adding layers of variability that the current models do not fully capture. Additionally, factors like family structure, educational environments, and peer influences - shaped by Vietnam's collectivist culture - may significantly impact students' procrastination behaviors but are not directly

included in the analysis. These observations underscore the need for future research to incorporate broader cultural and socio-economic variables to understand the unexplained variance in academic procrastination better.

These considerations underscore the complexity of digital media's role in academic procrastination and highlight the need for further research to account for individual, cultural, and contextual variations. By exploring these nuances, future studies can build a more comprehensive understanding of how digital entertainment shapes student learning behaviors, particularly within the unique socio-cultural landscape of Vietnam.

5.2. Recommendations

Based on research findings, several recommendations have been proposed to minimize the impact of digital entertainment on academic procrastination among Vietnamese students. These recommendations focus on fostering healthy habits, raising awareness, and providing tailored support for specific groups, including male students, female students, families, schools, and policymakers. This ensures that all aspects of students' lives are addressed and improved.

Video games have the most significant impact on procrastination among male students. Therefore, specific measures are needed to help male students control and manage their gaming time effectively. Male students should be encouraged to set clear plans for study and recreation, establish specific time limits for gaming, and use time management applications or smart reminders to monitor their usage. Engaging in alternative activities such as sports, clubs, or academic projects can also help reduce their focus on video games. Moreover, workshops and short-term courses on self-discipline can equip male students with skills to regulate and balance study and recreation effectively.

Watching online videos has been identified as the primary cause of procrastination among female students. Female students should be guided to build purposeful habits for online content consumption. For instance, they should learn to create structured video-watching plans, set time limits, and prioritize educational content. These measures can be implemented using browser extensions or time-tracking apps. Additionally, participating in time management and prioritization skills courses is crucial for improving their ability to balance study and recreation. To make online time more productive, female students should be encouraged to utilize concise, creative, and engaging educational materials instead of unnecessary entertainment content. Joining study groups or peer support programs can also provide female students with motivation and peer supervision to stay focused and avoid academic procrastination.

Families are critical in guiding and supporting students to use their time effectively and balance study and recreation. Parents should assist students in establishing and adhering to scientific study plans, ensuring a balance between study and recreation. Participating in healthy recreational activities with their children, such as sports or hobbies, can also help reduce dependency on digital media. Furthermore, establishing healthy living habits, including consistent meals, sleep, and study schedules, can improve students' time management capabilities. Families can also utilize monitoring applications to supervise and limit their children's digital media usage, ensuring academic tasks are prioritized.

Schools play a supportive role in helping students use technology responsibly and effectively. Educational workshops and events can be organized to raise students' awareness of the negative impacts of excessive video gaming and online video watching. Schools should also

provide practical tools and techniques for students to manage distractions. Extracurricular activities like programming courses, art workshops, or science fairs can offer beneficial recreational options. Schools should integrate courses on self-regulation and digital technology usage into the official curriculum to help students develop practical digital management skills. Finally, close collaboration with families to monitor academic progress and provide timely support will improve students' learning outcomes.

Educational authorities and policymakers need to provide systemic solutions to address academic procrastination. One solution is to develop and trial time management applications tailored for students, integrating features like time tracking, time limits, and goal setting. Examples include Forest, Trello, RescueTime, and Focus@Will. Additionally, nationwide programs should be implemented to raise awareness of the negative impacts of excessive digital media consumption while providing practical strategies for balanced technology use. Collaborating with technology developers and internet service providers to design constructive platforms is also necessary. Finally, supporting regular research and evaluations will ensure policies are implemented based on real data and achieve long-term effectiveness.

Further research and experimentation are necessary to develop solutions suited to specific groups. Pilot programs can be conducted in schools to test the effectiveness of time management tools, skill courses, and other interventions. These trials should include diverse student groups across geographical areas and educational levels. Regular feedback collection and performance indicator analysis will help refine and improve these solutions. Based on the results of pilot programs, large-scale, flexible frameworks tailored to various student groups can be developed to reduce academic procrastination effectively.

5.3. Limitations and directions for further research

This study has some limitations. First, the independent variables in the regression models explain only 13.7% of female and 19.6% of male students of the variation in academic procrastination, indicating that a substantial portion of the variance remains unexplained. This highlights other influential factors not included in the current analysis, such as psychological well-being, academic pressure, or personal motivation. These unexamined elements may play a critical role in shaping procrastination behaviors. Future research should prioritize exploring these additional factors to address the limitations of the explained variance and provide a more holistic understanding of academic procrastination.

Second, the sample is limited to Vietnamese students, making generalization difficult. Cultural, social, and educational factors may significantly impact procrastination behaviors. Comparative international studies could uncover cross-cultural differences and provide more tailored solutions.

The composition of the sample, comprising 72.5% female participants, presents a limitation when examining gender differences in technology use. While this imbalance does not compromise the study's overall objective of analyzing general trends, it may skew findings toward behaviors more characteristic of females, thereby underrepresenting male perspectives. Consequently, conclusions about gender-specific differences might lack precision and generalizability. Future research could mitigate this issue by employing a more balanced sampling approach or implementing statistical weighting techniques to ensure a more representative analysis of both genders.

SCIENTIFIC CONTRIBUTION

The manuscript clearly identifies a research gap; the manuscript extends and refines existing theories; the manuscript provides new empirical evidence; the manuscript applies rigorous/improved research methods; the manuscript has clear practical and policy implications; the manuscript opens new directions for further research.

AUTHOR CONTRIBUTIONS

CRedit: **Phi Thi Hong Linh**: Conceptualization, Project Administration, Writing - Review & Editing; **Nguyen Vu Tien Duc**: Resources, Writing - Findings; **Nguyen Hoan Chau Anh**: Methodology, Supervision; **Le Dieu Thu**: Investigation, Formal Analysis; **Nguyen Khanh Linh**: Data Curation, Writing - Original Draft; **Nguyen Mai Phuong**: Visualization, Validation.

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