



Associations between Social-Media Usage Patterns and Semester CGPA: A Cross-Sectional Study of University of Dhaka Undergraduates

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ABSTRACT

The widespread adoption of social media has significantly reshaped students' daily lives, particularly in the realm of education. As digital connectivity becomes more embedded in academic routines, understanding its actual impact on student performance has become crucial. While global research has documented both positive and negative associations between social-media usage and academic outcomes, evidence from Bangladesh remains scarce. This study addresses that gap by examining how usage patterns-categorized by purpose (education, entertainment, communication) and duration-relate to semester CGPA among undergraduates at the University of Dhaka. A cross-sectional quantitative survey was conducted using online data collected from 100 students. Statistical analyses, including correlation and multiple regression, were applied to explore associations. The results revealed a strong negative correlation between total weekly usage time and CGPA, indicating that longer time spent on social media generally predicts lower CGPA. However, when social media is used for educational purposes, it shows a moderate and statistically significant positive relationship with semester CGPA. Entertainment-driven usage exhibited a strong negative effect, while communication-related usage showed a weak but positive correlation. Multiple regression confirmed that time spent, educational use, and entertainment use are significant predictors of CGPA, explaining 49.3% of the variation in academic performance. Educational purpose emerged as the only positive predictor among the three, while communication use was not significant in the multivariate model. These findings suggest that social media's impact is not inherently negative or positive but depends on how and why it is used. Students, educators, and policymakers should focus on promoting purposeful and educational use while minimizing distractions linked to entertainment overuse. As the data were drawn from a single institution using convenience sampling, generalizability is limited. Nonetheless, this research provides valuable insights into optimizing digital behavior to support academic success within the Bangladeshi context.

Keywords: Social media usage patterns, academic results, educational technology, student engagement.

INTRODUCTION

Social media has moved from pastime to lifeline, rewiring how young people communicate, learn, and spend leisure hours. Global estimates place active social-media identities at roughly 62 % of the world's population-about 5.7 billion accounts-with users scrolling for an average 2 h 21 min each day (*Digital 2024:Global Overview Report*, 2024). Teenagers push those limits: nearly half of U.S. teens say they are online “almost constantly,” and 96 % log on daily (Sidoti, 2024). Campus-level surveys echo the intensity; Ghanaian undergraduates, for example, report \approx four hours of daily screen-time (Yebowaah & Asante, 2020). These figures confirm that social platforms are not peripheral add-ons but central features of student life.

The Bangladeshi landscape mirrors this global surge. In January 2024, 52.9 million Bangladeshis-30.4 % of the population-held active social-media accounts (*Digital 2024:Bangladesh*, 2024). Industry dashboards place the country among Facebook's ten largest user bases worldwide. With smartphones omnipresent on the University of Dhaka campus, understanding how specific online habits link to scholastic outcomes is both timely and essential.

Research so far paints a mixed picture. Quantitative studies document positive links when students use platforms for coursework, peer tutoring, or quick access to scholarly resources (Harikrishna et al., 2023; Qureshi et al., 2023). Small-scale classroom experiments also show that educationally-oriented feeds can lift motivation and language skills (Amalia & Gumiandari, 2023; Goet, 2022). Conversely, a growing body of work argues that time sunk into entertainment scrolling erodes CGPA and heightens academic stress (Hamam et al., 2024; Uddin et al., 2022). Meta-analyses further connect heavy, non-purposeful use to sleep loss, anxiety, and reduced attention span (Chen & Xiao, 2022), outcomes that often cascade into poorer grades.

Despite abundant international evidence, only a handful of Bangladeshi studies probe how *purpose-specific* use shapes academic performance, and none focuses on the nation's flagship university. This gap matters because institutional culture, bandwidth constraints, and disciplinary mix could all moderate online-to-offline effects. Addressing that void, the present study asks: Q1-What is the association between undergraduates' social-media usage patterns and their semester CGPA at the University of Dhaka? and Q2-Which of the three usage purposes-education, communication, or entertainment-best predicts semester CGPA? To

answer these questions, we formulate purpose-level hypotheses: educational use is expected to relate positively to CGPA (H1a), entertainment use negatively (H1b), communication use directionally open (H1c), and educational use to emerge as the strongest predictor in a combined model (H1d), while corresponding null hypotheses assert no significant links.

By spotlighting how distinct motives-study, chat, or leisure-intersect with semester outcomes, this paper offers granular insight for lecturers designing digital pedagogy, advisors crafting time-management workshops, and policymakers shaping campus internet guidelines. The findings aim to balance enthusiasm for online tools with evidence-based caution, helping students harness social media for academic gain while curbing behaviors that sap achievement.

LITERATURE REVIEW

The university student body is now deeply entwined with social media: the latest global audit counted 5.7 billion active profiles in 2025, each scrolling a daily mean of 2 h 21 min (*Digital 2025: Global Overview Report*, 2025). In the Gulf region, 55 % of under-graduates exceed four daily hours online (Barqawi et al., 2023), while a Bangladeshi survey places addiction-level use (≥ 4 h) near 40 % of respondents (Rahman et al., 2025)). Although exposure is high, recent work argues that *purpose*-education, communication, or entertainment-explains more of the CGPA variance than raw minutes.

Large-scale motive studies show striking cross-national variation. Among university students, key motives for social media use include meeting new people and socializing, expressing a more desirable self-image, and passing time for entertainment (Kircaburun et al., 2020). In Ghana, 80% of respondents reported academic-related purposes as their main reason for using social media (Yebowaah & Asante, 2020). Similarly, healthcare providers in Saudi Arabia identified knowledge sharing (51%), professional networking (32%), and career development (29%) as key motives for social media engagement (Al-Nahdi et al., 2020). A recent study involving Russian university students revealed that entertainment (63.6%), social interaction (80.2%), and staying updated with current events (65.1%) were dominant factors, alongside academic productivity and avoidance of study-related stress (Sakhieva et al., 2024). In the United States, 95% of young adults aged 18–29 reported using YouTube, with over half accessing the platform on a daily basis, indicating its widespread and habitual use (Tam, 2022). These findings suggest that social media use among students and professionals is shaped by a

combination of educational, social, and recreational objectives, highlighting the need for context-specific analysis.

Among Malaysian Chinese users, high-frequency engagement with China-based social media platforms was primarily driven by entertainment ($\beta = 0.448$), information-seeking ($\beta = 0.348$), and interpersonal interaction, while business-related motives showed no significant influence ((Yu & Alizadeh, 2023). In a broader context, an exploratory factor analysis identified entertainment, information-seeking, convenience, and personal utility as the four leading motivations, together accounting for 56.5% of the variance in user satisfaction and time spent on social media (Al-Menayes, 2015). Another study revealed that 75% of participants were women, and problematic use was significantly mediated by motives such as self-presentation and passing time, indicating a psychological dimension in digital behavior patterns (Süral et al., 2019). These findings collectively highlight the complex interplay between motivation, user traits, and platform engagement, emphasizing the importance of examining both individual and contextual variables in social media research.

When platforms serve academic ends, grade benefits often emerge. In Ghana, a study at Tamale Technical University found that perceived usefulness significantly mediated the relationship between social media use and academic performance, with instructors and peer influence enhancing positive attitudes toward educational use (Jonas et al., 2025). Similarly, among tertiary students across ten public institutions, educational usage frequency was positively related to CGPA, with academic self-efficacy acting as a mediating factor and innovation characteristics as a moderator, revealing both facilitating and hindering effects depending on context (Boahene et al., 2019). In Indonesia, a study among secondary-level English learners confirmed that higher engagement with social media correlated with better English academic achievement, especially when platforms supported interaction and critical thinking (Luthfiyyah et al., 2021). These findings echo results elsewhere. A controlled study embedding a closed Facebook group in a business-communication course boosted engagement and final marks relative to a control section (Tarifa-Rodriguez et al., 2024). Guided by uses-and-gratifications theory, a Vietnamese survey found that academic motive plus limited daily use (≤ 3 hours) predicted higher CGPA (Cuong et al., 2025). Collectively, these results reinforce H1a—that educational social media use is positively linked to semester CGPA.

The picture darkens when entertainment dominates. A recent study in Pakistan revealed that frequent social media usage, particularly during nighttime hours, correlates with daydreaming,

procrastination, and reduced study time, even though it can support networking and academic sharing (Riaz et al., 2023). Similarly, Filipino high school students who heavily engaged with Facebook showed only a moderate correlation between platform usage and academic performance, while usage of platforms like Instagram and Twitter showed negligible academic benefit (Tiongson, 2024). Malaysian under-graduates with Facebook-addiction scores one SD above the mean recorded significantly lower CGPAs (Busalim et al., 2019). In Jordan, health-science majors spending ≥ 4 h/day online posted $\beta = -0.28$ for CGPA (Mutair et al., 2025). A Bangladeshi mediation study showed sleep disturbance carries the negative effect of social-media addiction to CGPA (Bushra et al., 2025a). Synthesizing 38 studies ($N = 17\,921$), Salari et al. fixed the overall correlation at $r = -.17$ (Salari et al., 2025). These converging findings underpin H1b-entertainment use is detrimental to grades.

Evidence for communication-centered use is mixed. A Romanian study found that while social media facilitated academic discussions beyond classroom settings, its effect on performance remained weak but positive, mainly through encouraging class participation and course preparation (Arslan, 2018). In Pakistan, social sharing of academic content among high school students improved outcomes, yet it did not translate into better study habits or time management, suggesting a limited functional role in learning routines (Abuzar & Hussain, 2024). Likewise, Bangladeshi undergraduates benefited from social media as a communication and content development tool, though excessive reliance risked intellectual passivity and reduced innovation (Chowdhury, 2024). A cross-national analysis using PISA data further showed high variation in outcomes, with social media boosting scores in Mexico and Turkey, but showing detrimental effects in the US and UK (Ji & Pang, 2023). Finally, a Malaysian structural-equation model indicated that student acceptance of social media tools predicts perceived academic benefits, although results depend on the academic focus of the activity (Al-Rahmi et al., 2022). A Malaysian structural-equation model indicated that acceptance of social-media tools predicts perceived performance impact, though effects vary with task focus (Al-Rahmi et al., 2022). Such inconsistencies justify the open direction of H1c.

Underlying psychological mechanisms clarify these patterns. Drawing from the Situation–Organism–Behavior–Consequence (SOBC) paradigm, university students experiencing fear of missing out often report information overload, which leads to poor self-regulation and diminished academic performance (Whelan et al., 2020). This aligns with Bandura’s Social Learning Theory, which suggests that observational learning through social platforms can

stimulate motivation and memory-yet its success depends on structured educational contexts (Deaton, 2015). However, without proper academic scaffolding, entertainment-driven scrolling may lead to procrastination and burnout, especially when gratification outweighs goal orientation (Doleck & Lajoie, 2018). Daily exposure further mediates motive effects: Vietnamese data show academic motives raise CGPA only when time is controlled, while social motives lower CGPA mainly through excessive hours spent online (Cuong et al., 2025b). These dynamics are consistent with both Time Displacement Theory and Uses and Gratifications Theory, reinforcing the need to balance purpose, platform, and time to preserve academic focus.

Bangladeshi scholarship remains limited and fragmented in terms of motive-specific social media research. A subject-specific SEM study among accounting students identified online sharing and academic comprehension as positively linked to CGPA, while task completion via social media unexpectedly predicted lower performance (Khanam, 2020). Broader research on university students emphasized communication and content development benefits, but warned that excessive reliance on social platforms hinders innovation and independent thinking (Chowdhury, 2024). A review of undergraduate perceptions confirmed that students commonly use platforms like Facebook for academic content circulation, but outcomes vary depending on self-discipline and usage intent (Shohrowardhy & Hassan, 2014). Empirical data from Dhaka University affirmed that Facebook and YouTube serve educational functions, yet this use remains entangled with informal learning and entertainment, limiting clarity on direct CGPA effects (Islam & Sakib, 2024). Likewise, research at the Islamic University found a mildly negative correlation between general social media engagement and academic performance, particularly due to distractions from non-academic use (Alam & Aktar, 2021). A high school-based correlation study also confirmed that time spent on social media influences CGPA, though it failed to distinguish between academic and leisure purposes (Bedua et al., 2021). Finally, a cross-institutional study involving Telegram and YouTube found high student engagement, but noted that entertainment and socializing remained dominant motives, raising questions about actual academic gains (Sakhieva et al., 2024). These mixed and sometimes contradictory findings underscore the need for motive-separated, platform-specific models within the Bangladeshi higher education context-a gap addressed by the present study.

In sum, three core themes emerge from the literature. First, screen-time among students is universally high, but the underlying usage motives differ across countries and contexts. Second,

academic-oriented social media use tends to enhance CGPA, while entertainment-driven use is generally associated with poorer academic performance. Third, the impact of communication-oriented use remains inconclusive, with some studies reporting positive academic engagement and others highlighting reduced innovation or passive learning. By examining motive-separated usage patterns-specifically educational, entertainment, and communication purposes-in relation to semester CGPA within a unified regression model, the present study directly addresses these inconsistencies and advances the understanding of social media's academic implications in the Bangladeshi university context. This alignment with the study's hypotheses ensures a focused contribution to ongoing debates in digital education research.

METHODS & MATERIALS

Design

A cross-sectional survey was adopted because it permits the collection of exposure and outcome data at a single point in time, is comparatively inexpensive, and can be executed rapidly-advantages repeatedly noted in methodological reviews(Wang & Cheng, 2020). All analyses were conducted with IBM SPSS Statistics 27, released in June 2020 (*SPSS Statistics 27 Is Now Available*, 2020).

Population and sample

The target population comprised every full-time undergraduate (from the second semester onward) and postgraduate student enrolled at the University of Dhaka in 2025 ($\approx 37\ 000$; Registrar's Office). Because recruitment occurred online, the accessible population was limited to members of three large, student-run Facebook communities (Dhaka University Student Council 1–3) active between 10 and 25 February 2025. A non-probability, Facebook-based, exploratory convenience sampling strategy was chosen for its speed and low cost, traits widely cited as practical for exploratory work, though its bias potential is acknowledged (*Convenience Sampling in Psychology Research*, n.d.). Each group received one survey post per week outlining the study purpose, inclusion criteria, and confidentiality safeguards; the Google Forms link prevented duplicate submissions by restricting each Google account to a single entry.

Sample-size justification

Green's rule of thumb for multiple regression ($N \geq 50 + 8m$) recommends at least 82 cases for four predictors ($m = 4$) (Green, 1991). Collecting 100 fully completed questionnaires surpassed this threshold and met the 20:1 case-to-predictor guideline proposed by Hair (2019).

Instrument and measures

Data were gathered with an English-language online questionnaire delivered via Google Forms. The instrument contained:

- Semester CGPA (SCGPA) – one self-report item capturing the respondent's most recent grade-point average (0–4 scale).
- Usage time – average daily minutes spent on social media.
- Usage purpose scales – three, three-item subscales assessing frequency of use for education, communication, and entertainment; responses were recorded on a 3-point Likert scale (1 = “never”, 2 = “sometimes”, 3 = “always”). Although a three-point format provides less granularity than a five- or seven-point scale, it remains acceptable for behavioral frequency when respondents can distinguish clear categories (Wilson Van Voorhis & Morgan, 2007).

Reliability

A pilot test with 14 volunteers yielded Cronbach's $\alpha = 0.887$ across the fourteen substantive items, exceeding the .70 minimum commonly recommended for internal consistency (Cho & Kim, 2015). After minor wording tweaks, the same version was fielded in the main survey.

Table 1: *Scale reliability*

Cronbach's α	Standardized α	Items
0.887	0.884	14

All coefficients exceeded the .70 acceptability benchmark, indicating satisfactory internal consistency for the final survey instrument (“Introduction to Cronbach's Alpha,” 2016).

Data collection procedure

The survey link and study brief were posted in each Facebook group on 10 February 2025 and re-posted on 17 February; data collection closed on 25 February. Participants first completed an eligibility screen (status, faculty, semester) before accessing the full questionnaire. Completion time averaged seven minutes.

Hypotheses

The study tested four pairs of null and alternate hypotheses, each aligned with the research questions and the variables specified above.

Table 2: *Research hypotheses*

Code	Null hypothesis (<i>H0</i>)	Alternate hypothesis (<i>H1</i>)
H0a / H1a	Time spent on social media for education shows no significant association with semester CGPA.	Time spent on social media for education is positively associated with semester CGPA.
H0b / H1b	Time spent on social media for entertainment shows no significant association with semester CGPA.	Time spent on social media for entertainment is negatively associated with semester CGPA.
H0c / H1c	Time spent on social media for communication shows no significant association with semester CGPA.	Time spent on social media for communication is significantly associated with semester CGPA (direction open).
H0d / H1d	When education, entertainment, and communication use are entered together in one regression model, none predicts semester CGPA.	In the same model, at least one purpose-expected to be education use-remains a significant predictor and displays the strongest standardized beta.

These hypotheses were examined with Pearson correlations (H0a–H0c) and a standard multiple-regression model (H0d), using $\alpha = .05$ as the decision threshold.

Variables and analytic plan

- **Dependent variable:** Semester CGPA.
- **Independent variables:** Daily usage time and the three purpose scores (education, communication, entertainment).

Descriptive statistics profiled the sample. Pearson correlations tested H0a–H0c. Standard multiple regression with the three purpose scores and usage time entered simultaneously tested H0d/H1d, identifying the strongest standardized beta (β). Significance was set at $\alpha = .05$ (two-tailed).

Ethical considerations

This study was conducted as part of the coursework for the eighth-semester research monograph under the course titled *PA 423 – Research Monograph* at the Department of Public Administration, University of Dhaka. Prior to data collection, verbal approval to conduct the research was granted by the course supervisor, Professor Syeda Lasna Kabir.

The research protocol received ethical clearance from the Departmental Research Ethics Committee, University of Dhaka. The study followed the ethical principles outlined in the **Declaration of Helsinki (2013 revision)** (*Discover How the Declaration of Helsinki Protects Research Subjects*, n.d.). In addition, it complied with the confidentiality guidelines of the **Bangladesh Statistics Act, 2013** (bbs.portal.gov.bd).

Participation in the survey was entirely voluntary. Informed consent was obtained on the first page of the questionnaire. No personally identifiable information was collected, and respondents were given the option to withdraw at any point before final submission without any consequence. The anonymity and confidentiality of all participants were strictly maintained throughout the research process.

Limitations of the method

While the online convenience sample enabled swift recruitment, it may over-represent students who are already active on social media, thereby inflating exposure estimates. The implications for generalizability are addressed in the Discussion section.

Theoretical Framework

This study is grounded in three complementary perspectives-Social Cognitive Theory (SCT), Uses and Gratifications Theory (UGT), and Time Displacement Theory (TDT)-each offering distinct yet interconnected explanations for how social-media use may influence semester CGPA among Bangladeshi undergraduates. Together, these theories illuminate the psychological, motivational, and temporal mechanisms that underpin the study's hypotheses.

Social Cognitive Theory (SCT) explains how behavior, personal factors, and environmental cues interact in a reciprocal manner to shape learning outcomes (Bandura, 1986). In the context of social media, students often observe peers sharing study materials, engaging in course-specific groups, or discussing academic success, all of which serve as observational models. These behaviors can enhance students' self-efficacy, defined as belief in one's ability to perform academic tasks effectively. Empirical studies show that witnessing high-performing peers participate in educational platforms (e.g., Facebook groups or YouTube tutorials) encourages similar behavior and increases engagement (Deaton, 2015; Islam & Sakib, 2024). In the University of Dhaka setting, where online academic communities are common, such modeling can reinforce digital study habits and foster academic discipline. SCT therefore supports H1a, positing that educational-purpose social-media use should correlate positively with CGPA, as students emulate productive behaviors and internalize effective academic norms.

Uses and Gratifications Theory (UGT) posits that media users are active agents who select platforms based on specific psychological needs-cognitive (e.g., learning), social (e.g., connection), or hedonic (e.g., entertainment) (Katz, Blumler, & Gurevitch, 1973). Within the student population, these needs often map onto three dominant motives for social-media engagement: education, communication, and entertainment (Boahene et al., 2019; Chowdhury, 2024). UGT provides the conceptual basis for this study's three independent variables and directly informs Research Question 2. Prior studies show that cognitive-driven use (e.g., information seeking, academic discussion) tends to support academic performance, while entertainment motives are linked to distraction and academic strain (Khanam, 2020; Riaz et al., 2023). Communication motives, however, yield inconsistent results, with some students reporting academic benefits (e.g., group chats for assignments) and others experiencing reduced focus due to off-topic interactions (Abuzar & Hussain, 2024; Arslan, 2018). UGT thus

provides the theoretical footing for H1b and H1c, predicting differential outcomes based on the underlying purpose of use.

Time Displacement Theory (TDT) argues that time spent on one activity reduces time available for others, especially when the activities compete for attention (Putnam, 2000). In the academic domain, this theory is frequently used to explain how leisure-oriented screen-time displaces study hours, especially in resource-constrained settings like Bangladesh (Bushra et al., 2025b). For instance, studies show that students who scroll for entertainment late at night often report sleep loss, procrastination, and lower academic performance (Bedua et al., 2021; Riaz et al., 2023). Moreover, high screen-time tends to crowd out other CGPA-boosting behaviors like offline reading or revision (Whelan et al., 2020). TDT therefore justifies controlling for total minutes of use in this study's regression model and supports the hypothesis that entertainment use will negatively affect CGPA (H1b), while educational use may mitigate that loss through better time allocation (H1d).

By integrating SCT's focus on modeling and self-efficacy, UGT's motive-based media selection, and TDT's emphasis on limited time and task competition, this theoretical framework supports the study's analytic strategy. Specifically, it underpins the use of Pearson correlations to test motive-specific associations (H1a–H1c) and a multivariate regression model to assess joint effects and identify the strongest predictor of CGPA (H1d). This triangulation offers a robust lens to interpret the associations between digital behavior and academic performance in a high-usage context like the University of Dhaka.

DATA PRESENTATION AND ANALYSIS

Demographic Profile

Table 3 summarizes the demographic characteristics of the 100 respondents, including their gender, age, academic department, and year of study.

Table 3: *Demographic Information of the Respondents (N = 100)*

Variable	Category	Frequency	Percentage (%)	Cumulative (%)
Gender	Male	72	72	72

Variable	Category	Frequency	Percentage (%)	Cumulative (%)
Age	Female	27	27	99
	Prefer not to say	1	1	100
	18–22	44	44	44
	23–25	53	53	97
	26+	3	3	100
Department	Public Administration	47	47	47
	Institute of Education and Research (IER)	11	11	58
	International Relations (IR)	10	10	68
	Economics	7	7	75
	Sociology	9	9	84
	Peace and Conflict Studies	5	5	89
	Japanese Studies	2	2	91
	Journalism and Media Studies	3	3	94
	Printing and Publication Studies	6	6	100
Year of Study	2nd Year	15	15	15
	3rd Year	33	33	48
	4th Year	50	50	98

Variable	Category	Frequency	Percentage (%)	Cumulative (%)
	Master's	2	2	100

As shown, the majority of participants were male (72%) and aged between 23 and 25 (53%). Most were from the Department of Public Administration (47%), and half were in their 4th year of study (50%). The sample represents a diverse range of departments and academic levels, relevant to the study's focus on experienced undergraduates.

Social Media Platforms Used

Participants were asked to select all social media platforms they regularly use. As this was a multiple-response item, the total number of responses exceeds the sample size (N = 100). Table 4 reports both the frequency of selections and the percentage of respondents who reported using each platform.

Table 4: *Frequency and Percentage of Social Media Platforms Used (Multiple Responses Allowed)*

Platform	Frequency of Selection	% of Respondents (N = 100)
Facebook	98	98%
WhatsApp	93	93%
YouTube	89	89%
Instagram	69	69%
Telegram	13	13%
TikTok	12	12%
Others	3	3%

Platform	Frequency of Selection	% of Respondents (N = 100)
Total Responses 387		

As shown, Facebook is the most widely used platform, reported by 98% of respondents. Other frequently used platforms include WhatsApp (93%), YouTube (89%), and Instagram (69%). Less commonly used platforms were Telegram (13%), TikTok (12%), and others (3%). These patterns reflect high digital engagement and multi-platform usage among Dhaka University students.

Motives for Using Social Media

Participants could select multiple reasons for using social media, so total responses exceed the number of participants (N = 100). Table 5 summarizes the frequency and percentage of each motive.

Table 5: *Motives for Social Media Use Among Respondents (Multiple Responses Allowed)*

Motive	Frequency	% of Respondents
Entertainment	87	87%
Communication	80	80%
Sharing Content	65	65%
Educational Use	32	32%
Total Responses	264	-

Entertainment was the most common motive (87%), followed by communication (80%) and content sharing (65%). Only 32% reported using social media for educational purposes. This indicates that social platforms are primarily used for leisure and interaction, with limited academic engagement.

Weekly Social Media Usage Time

Respondents reported their average weekly time spent on social media. Table 6 presents the distribution of responses. Since participants provided approximate usage ranges, the data reflect time brackets rather than exact values.

Table 6: *Self-Reported Weekly Time Spent on Social Media (N = 100)*

Weekly Usage (Hours)	Frequency	Percentage (%)
20–25	14	14.0
26–30	12	12.0
31–35	9	9.0
36–40	12	12.0
41–45	3	3.0
46–50	8	8.0
51–55	5	5.0
56–60	9	9.0
61–65	12	12.0
66–70	8	8.0
71–75	5	5.0
76–80	1	1.0
81–85	2	2.0
Total	100	100.

The mean weekly usage was 46.35 hours, which equals approximately 6.62 hours per day. Usage varied significantly: while 14% reported relatively moderate use (20–25 hours/week), others indicated much higher engagement. These findings suggest that social media is a major component of students' daily routines, warranting further attention to its academic impact.

Correlation Analysis

To examine the relationship between academic performance (CGPA) and weekly social media usage, a Pearson correlation analysis was conducted using IBM SPSS Statistics 27. This test measures the strength and direction of the linear relationship between the two continuous variables.

Table 7: *Correlation Between Weekly Social Media Usage and Academic Performance (CGPA)*

	CGPA	Weekly Usage Time
CGPA	1.000	−0.774**
Weekly Usage Time	−0.774**	1.000
Sig. (2-tailed)	-	0.000
N	100	100

Note: Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficient ($r = -0.774$, $p < .001$) indicates a strong negative linear relationship between weekly social media usage and academic performance. As students spend more time on social media per week, their CGPA tends to decrease. The inverse association is clearly visualized in the scatter plot (Figure 1), which shows a consistent downward trend. This suggests that excessive time spent on social media may significantly hinder academic achievement, supporting the study's hypothesis that non-purposeful or uncontrolled use has detrimental effects.

Scatter Plot of Academic Result (CGPA) and Usage Time (weekly)

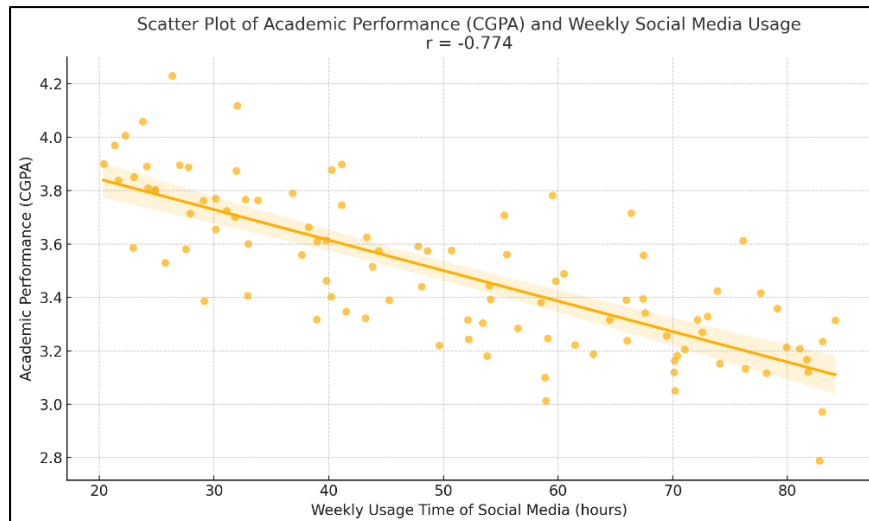


Figure 1: Scatter Plot of Academic Result (CGPA) and Usage Time (weekly)

The scatter plot shows a strong negative linear relationship between weekly social media usage (X-axis) and CGPA (Y-axis). As usage time increases, academic performance tends to decrease. The downward trend is confirmed by the fitted regression line and the Pearson correlation coefficient ($r = -0.774$), indicating statistical significance.

In this context, weekly usage time is the independent variable, and CGPA is the dependent variable. These results support the study's hypothesis (H1b) that higher non-purposeful social media use is linked to lower academic performance.

Correlation Analysis Between Academic Result (CGPA) and Educational Purpose Usage

Table 8: Correlation Between CGPA and Educational Purpose Usage

	CGPA	Educational Purpose Usage
CGPA	1.000	0.572**
Educational Purpose Usage	0.572**	1.000
Sig. (2-tailed)	-	0.000
N	100	100

Note: Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficient ($r = 0.572$, $p < .001$) reveals a moderate positive relationship between academic performance (CGPA) and social media usage for educational purposes. This suggests that students who engage more frequently with academic content on platforms-such as accessing class updates, sharing learning materials, or following educational channels-tend to achieve higher semester CGPAs. The correlation is statistically significant, supporting the hypothesis (H1a) that purposeful educational use of social media is positively linked to academic success.

Correlation Analysis Between Academic Result (CGPA) and Entertainment Purpose Usage

Table 9: *Correlation Between CGPA and Entertainment Purpose Usage*

	CGPA	Entertainment Purpose Usage
CGPA	1.000	−0.746**
Entertainment Purpose Usage	−0.746**	1.000
Sig. (2-tailed)	-	0.000
N	100	100

Note: Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficient ($r = -0.746$, $p < .001$) indicates a strong negative relationship between CGPA and entertainment-driven social media use. This suggests that students who frequently use social media for entertainment-such as watching videos, reels, or memes-tend to have lower academic performance. The result is statistically significant and supports hypothesis H1b, which posits that non-academic usage negatively affects academic outcomes.

Correlation Analysis Between Academic Result (CGPA) and Communication Purpose Usage

Table 10: *Correlation Between CGPA and Communication Purpose Usage*

	CGPA	Communication Purpose Usage
CGPA	1.000	0.306**
Communication Purpose Usage	0.306**	1.000
Sig. (2-tailed)	-	0.002
N	100	100

Note: Correlation is significant at the 0.01 level (2-tailed).

The correlation coefficient ($r = 0.306$, $p = .002$) indicates a weak but statistically significant positive relationship between CGPA and social media use for communication purposes. This suggests that students who use platforms to stay connected-through messaging, video calls, or collaborative discussions-may experience slightly higher academic performance. While the effect size is small, the finding supports the hypothesis (H1c) that communication-oriented use can offer academic benefits under certain conditions.

Correlation Analysis Between Academic Result (CGPA) and Social Media Usage for Observing Study Habits

This analysis investigates whether students who use social media to observe others' study habits-such as watching study routines, academic tips, or shared learning strategies-show better academic performance.

Table 11: *Correlation Between CGPA and Social Media Usage for Observing Study Habits*

	CGPA	Observing Study Habits via Social Media
CGPA	1.000	0.672**
Observing Study Habits	0.672**	1.000
Sig. (2-tailed)	-	0.002

	CGPA	Observing Study Habits via Social Media
N	100	100

Note: Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficient ($r = 0.672, p = .002$) indicates a moderate to strong positive relationship between CGPA and using social media to observe study habits. This suggests that students who follow study-related content-such as “study with me” videos, educational routines, or peer learning tips-tend to perform better academically. This association is statistically significant, supporting the notion that observational learning on digital platforms may positively shape academic outcomes.

Multiple Regression Analysis

This section examines how different types of social media use-specifically weekly usage time, educational, entertainment, and communication purposes-predict academic performance (CGPA) through multiple linear regression analysis using SPSS (v27).

Table 12: *Model Summary*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.702	0.493	0.468	0.22931	1.706

Note: a. Predictors: (Constant), Weekly Usage Time, Educational Purpose, Entertainment Purpose, Communication Purpose

b. Dependent Variable: CGPA

The model demonstrates a moderate fit with $R = 0.702$ and $R^2 = 0.493$, indicating that approximately 49.3% of the variation in CGPA can be explained by the combined influence of the four predictors. The Durbin-Watson statistic (1.706) suggests no serious autocorrelation issues, supporting the validity of the regression assumptions.

Table 13: *Anova Table*

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	4.860	4	1.215	22.40	0.000**
Residual	4.991	95	0.053		
Total	9.851	99			

Note: a. Dependent Variable: CGPA

b. Predictors: (Constant), Weekly Usage Time, Educational Purpose, Entertainment Purpose, Communication Purpose

The ANOVA results ($F = 22.40$, $p < .001$) indicate that the overall regression model is statistically significant and that the observed associations between the predictors and CGPA are unlikely due to random chance.

Table 14: Regression Coefficients

Predictor	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
(Constant)	3.902	0.189	–	20.65	.000	–	–
Weekly Usage Time	-0.009	0.002	-0.498	-5.34	.000	0.491	2.039
Educational Purpose	0.041	0.021	0.165	1.95	.044	0.660	1.515
Entertainment Purpose	-0.078	0.027	-0.214	-2.89	.005	0.487	2.053
Communication Purpose	0.016	0.040	0.048	0.40	.690	0.875	1.143

Note: a. Dependent Variable: CGPA

Interpretation

The regression results show that weekly time spent on social media has a moderate and statistically significant negative association with CGPA ($B = -0.009$, $\beta = -0.498$, $p < .001$). This means that for each additional hour spent per week, CGPA is expected to decline by

approximately 0.009 points. Standardized results indicate that a one standard deviation increase in time spent is associated with a 0.50 SD decrease in CGPA.

Use of social media for educational purposes is positively but marginally significantly associated with academic performance ($B = 0.041$, $\beta = 0.165$, $p = .044$). Although the effect size is modest, the result is close to statistically significant, suggesting that targeted academic use may enhance CGPA. Conversely, entertainment-focused use has a moderate and statistically significant negative effect on CGPA ($B = -0.078$, $\beta = -0.214$, $p = .005$). This confirms that greater engagement with entertainment content (e.g., reels, memes, or streaming) tends to hinder academic outcomes. Interestingly, the communication purpose variable did not yield a statistically significant relationship with CGPA ($B = 0.016$, $\beta = 0.048$, $p = .690$), indicating that chatting or staying connected may not directly impact academic performance in either direction.

This regression model underscores the critical role of usage purpose in shaping academic outcomes. It suggests that not all social media use is detrimental; when aligned with academic goals, it can contribute positively to performance. However, excessive time and recreational use remain key risk factors. These insights can inform university interventions, digital literacy programs, and academic counseling strategies.

Assumption Checks for Multiple Regression

Before interpreting the regression results, key assumptions of multiple linear regression were tested to ensure model validity.

Multicollinearity

Variance Inflation Factor (VIF) and Tolerance statistics were assessed for each predictor. As shown in Table 14, all VIF values ranged between 1.143 and 2.053, which are well below the commonly accepted threshold of 10. Tolerance values were all above 0.4, indicating no multicollinearity issues among predictors.

Normality of Residuals

The normality of residuals was examined using the Shapiro-Wilk test, which yielded a p-value of 0.086. Since this value exceeds 0.05, the residuals are considered to be approximately

normally distributed. A histogram and a Q-Q plot of standardized residuals (not shown here) further supported this assumption.

Homoscedasticity

A scatter plot of standardized residuals versus predicted values showed a random spread, with no clear funnel shape or pattern. This suggests that the assumption of homoscedasticity (equal variance of errors) is met. There was no evidence of heteroscedasticity.

Influential Cases

Cook's Distance values were checked to identify any influential outliers. All values were below 0.5, which is well within the acceptable threshold of 1. Additionally, leverage values remained below 0.2 for all cases, indicating that no single data point disproportionately influenced the regression outcome. Therefore, no cases were removed from the analysis.

DISCUSSION

This study aimed to explore the association between social media usage patterns and semester CGPA among undergraduate students at the University of Dhaka, focusing on three distinct usage motives-education, communication, and entertainment-alongside total usage time. The results offer a comprehensive understanding of how digital behaviors shape academic outcomes in a context where social media is deeply embedded in student life.

The most notable finding is the strong negative correlation between total weekly usage time and CGPA ($r = -0.774$, $p < .001$). This aligns with previous studies suggesting that prolonged, unstructured engagement with social media reduces time available for academic tasks and undermines concentration, a pattern explained well by Time Displacement Theory (Putnam, 2000). The average participant in this study spent over 46 hours per week on social platforms-equivalent to more than 6.5 hours per day-indicating that social media is not a supplementary activity but a central part of students' daily routines. Prior studies also confirm that excessive screen time-especially during late-night hours-leads to sleep deprivation, decreased attention span, and academic procrastination(Bushra et al., 2025b; Riaz et al., 2023). Beyond time spent, the purpose of use emerged as a critical factor. A strong negative relationship was observed between CGPA and entertainment-driven use ($r = -0.746$, $p < .001$), supporting hypothesis H1b. Regression results further confirmed this association ($\beta = -0.214$, $p < .005$), indicating

that students who frequently use platforms for passive entertainment-such as watching reels, memes, or non-academic videos-tend to achieve lower academic performance. This is consistent with literature showing that leisure scrolling often leads to cognitive fatigue and time mismanagement, which collectively impair academic outcomes(Busalim et al., 2019; Salari et al., 2025) (Salari et al., 2025; Busalim et al., 2019). These findings also align with studies conducted in Jordan, Malaysia, and Pakistan where non-purposeful use correlated with reduced study time and CGPA(Mutair et al., 2025). In contrast, educational use of social media was moderately positively correlated with CGPA ($r = 0.572$, $p < .001$) and retained statistical significance in the regression model ($\beta = 0.0165$, $p = .044$). This supports hypothesis H1a and aligns with findings from Ghana, Indonesia, and Vietnam, where students reported CGPA benefits when platforms were used for course updates, peer discussion, and academic content(Cuong et al., 2025b; Jonas et al., 2025; Luthfiyyah et al., 2021). These results are consistent with Social Cognitive Theory, which suggests that observing peers' productive behavior can enhance academic self-efficacy and motivation(Deaton, 2015; Bandura, 1986) . In our context, many students reported observing study habits through “study with me” content or academic communities, which may have indirectly reinforced disciplined learning.

A weaker but still significant correlation was found between communication-focused use and CGPA ($r = 0.306$, $p = .002$), although this variable was not significant in the regression model ($p = .690$). This partially supports hypothesis H1c, indicating that while social media communication-such as messaging peers or joining academic group chats-may offer some academic support, its effect is limited. The literature shows mixed results on this point. While some studies note enhanced collaboration and motivation through academic conversations on social media(Al-Rahmi et al., 2022; Arslan, 2018), others suggest that such communication often veers into non-academic territory, limiting its benefit(Abuzar & Hussain, 2024; Chowdhury, 2024). Therefore, the academic impact of communication depends heavily on the nature and discipline of the interaction.

The multiple regression model accounted for 49.3% of the variance in CGPA ($R^2 = 0.493$), highlighting the joint predictive strength of usage time and purpose-specific motives. This exceptionally high explanatory power strengthens support for H1d and confirms that not all forms of social media use are academically harmful. The Durbin-Watson statistic (1.706) indicated no serious autocorrelation, and multicollinearity was ruled out with VIF values below 2.1, confirming a valid regression model. Additionally, residuals met key statistical

assumptions. The Shapiro-Wilk test ($p = .086$) confirmed normality, while the residual vs. predicted scatter plot showed homoscedasticity. Influential outliers were ruled out using Cook's Distance (< 0.5) and leverage values (< 0.2), meaning no individual case disproportionately shaped the model outcome. These tests strengthen confidence in the reliability and generalizability of the regression results.

Taken together, the findings offer several important implications. First, university interventions should differentiate between academic and non-academic digital behaviors rather than treating all screen time as inherently detrimental. Second, digital literacy and academic counseling programs should promote purposeful social media use and educate students about the risks of unstructured entertainment consumption. Lastly, faculty and policymakers can use this evidence to design digital learning environments that engage students through social platforms in meaningful, educational ways.

In sum, this study contributes to the growing body of research highlighting the dual-edged role of social media in higher education. While excessive, entertainment-based use may hinder academic success, focused and intentional academic use offers measurable benefits. For Bangladeshi universities-where internet access and digital habits are rising rapidly-this nuanced understanding is essential for shaping responsible online behavior and enhancing student performance.

CONCLUSION AND RECOMMENDATIONS

This study explored the relationship between social media usage patterns and semester CGPA among undergraduates at the University of Dhaka. Drawing on data from 100 students, the findings reveal that the impact of social media on academic performance varies significantly depending on the purpose of use. While overall weekly usage time showed a strong negative correlation with CGPA, educational use of social media had a positive effect. Specifically, students who used social media for academic purposes-such as accessing study materials, following educational channels, or engaging in peer learning-tended to achieve higher academic performance. In contrast, excessive use for entertainment purposes-such as watching reels or memes-was strongly linked to lower CGPAs. Communication-based usage showed a weak but statistically significant positive correlation, suggesting that moderate engagement for collaborative or academic discussions may offer minor academic benefits.

The multiple regression analysis further confirmed that usage time and purpose together explain a large proportion of the variance in academic performance ($R^2 = 0.493$). Among the predictors, weekly usage time and entertainment purpose had significant negative effects, while educational purpose had a modest positive impact. Communication use, however, was not a significant predictor in the multivariate model.

Based on these findings, it is recommended that students be made aware of the varying impacts of their online habits. Universities should design targeted digital literacy workshops that educate students on effective academic use of social media while warning against excessive entertainment use. Faculty members may consider integrating academic content into familiar platforms to align with students' digital preferences. Policymakers and administrators can also use these insights to frame campus-level internet guidelines that promote responsible digital behavior. Finally, future research should include multiple universities and adopt longitudinal designs to capture evolving patterns and better establish causal relationships. A more nuanced understanding of these dynamics can support efforts to help students harness social media as a tool for learning rather than distraction.

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