

## IMPACTS OF SOCIAL MEDIA AND ARTIFICIAL INTELLIGENCE ON ACADEMIC PERFORMANCE OF STUDENTS IN PAKISTAN

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### Abstract

The purpose of this study is to determine the effects of social media consumption and artificial intelligence (AI) tools on the academic performance of university students in Pakistan. Recently, digital integration has largely impacted students' learning behaviors, study habits, and academic results. This quantitative research study aimed to determine the effects of social media consumption and AI application use on students' academic performance, both negatively and positively. A structured survey is administered to a sample of 400 undergraduate and graduate students from public and private universities from major cities in Pakistan. Descriptive and inferential statistics are used to explore relationships between time spent on social media, frequency of AI tool use, and students' Grade Point Average (GPA). Results from the survey demonstrate that non-academic social media usage creates a significant association with poorer academic performance when comparing social media users to student academic performance. The results indicate that AI tools (writing tools and learning tools) for studying and academia are positively associated with performance and support of learning improvement with grades and learning efficiencies. This study concludes that social media can distract students from academic achievement, but AI application tools have the potential to improve overall student learning outcomes if tools are used for specific purposes. The paper recommends that educational institutions develop awareness programs to guide students on balanced social media use and promote the ethical and productive integration of AI tools in academic work.

### INTRODUCTION

The technologies of social media and artificial intelligence (AI) have integrated into the everyday lives of students around the globe in today's digital society and drastically changed how they connect with each other, obtain information, and organize their academic work (Dandotiya et al., 2024). In Pakistan, the proliferation of smartphones, high speed internet,

and digital platforms has resulted in a tremendous upsurge in social media use among university students (Nasir et al., 2025). Among university students, digital platforms such as Facebook, Instagram, WhatsApp, TikTok, and YouTube are now important and permanent parts of their social and academic spaces. Likewise, AI tools such as language models, plagiarism

checkers, learning management systems (LMS), and smart tutoring apps are being incorporated into higher education to enable students to support their learning addresses (Abbas et al., 2024).

Though there are numerous ways in which students can leverage these technologies to improve their learning, collaboration, and academic productivity, they also come with complexities and challenges (McCormick, 2004). Social media can be a great community to connect with academic scholars and share information as well as present a significant distraction, a reason to procrastinate, and the inevitable loss of academic thinking if abused. AI technologies have been rapidly changing along with the potential they offer students to improve learning in terms of research, writing, personalization, and time management (Hashim et al., 2022). They also associated challenges, misuse, overreliance, and ethical dilemmas with the role AI plays in educational settings (Chelghoum et al., 2025).

In Pakistan's higher education system, the challenges that students contend with, in terms of socio-economic, infrastructural, and technological challenges, the use of social media, and AI provides pertinent information to educators, policymakers, and students in understanding how they influenced students' academic performance ((Fazal et al., 2025; Pedro et al., 2019). Although this relationship has been studied globally by many researchers, there is little empirical research that studies these relationships within the context of Pakistan, and quantitative studies more specifically.

This research addressed this issue, by employing quantitative research designs, and focusing on a sample of graduates as a cohort of university level students in Pakistan, to study the impact of social media and AI tool use on academic performance. By studying the relationship between these two variables, this research provided evidence based insights into how these digital phenomena influence students' academic performance. Findings from this research will allow universities, educators, and policymakers to develop appropriate strategies, or at the very least, develop a better balance for capitalizing on emerging technologies.

## Background

The emergence of AI tools has a major impact on the direction and experience of learning in education. AI has the potential to assist students, instructors and institutions to be able to improve their learning processes, support student engagement, increase motivation, and learn to apply knowledge in their individual contexts and purposes. AI technology has also enabled students to connect with content and information of relevance from Dynamic, mobile, flexible and personalized platforms. The integration of social media and AI into the learning culture is an exciting paradigm shift in terms of teaching and learning in higher education in Pakistan. Students in higher education can utilize AI increasingly for support videos, guidance, random collaborative global groups in short timeframes; experiment with Snapchat or Meta as an information exchange or support systems; share and communicate with lecture mates through WhatsApp; or simply produce short viral memories for food or things entered in short opportune time. The blending of sub cultures creates nontraditional and flexible energetic fun learning in part, because of the abundance of connector and education possibilities. AI creates environments where they can communicate and create personal relevance; engaged actors and agency; organize God given talents together; and come up with productive ideas. AI is repositioning their social media and digital literacies into college career success by researching reimagined instant plays and games to collaborate together. The future, in particular with the ultimatum of the local marketplace using AI in education, may provide them positive cognitive and affective aspects to engage in, talk about, and write about; artwork, sound, materializations, and technology as an emergency need in higher education learning environments. As digital spaces have more potential for education, the future for students in higher education seems strong as they develop unique and alternative ways to manifest learning versus traditional pedagogy. AI should be seen as another agent provocateur, it will also, in terms of text as a digital medium, represent our confidence and faith in generating constructive possibilities from our interactive creations of knowledge through social media engagement and linkages in points to learning and teaching.

**Problem Statements**

Recently, both social media and the rapid onset of artificial intelligence (AI) tools have become hallmarks of students' academic environments in Pakistan. On one hand, while it should be noted that social media platforms facilitate information sharing, peer interactions, and aspects of collaborative learning, students often use them excessively and not as they are intended. The unregulated use of social media usually leads to distraction, procrastination, and diminished academic focus. On the other hand, AI applications offer a promising opportunity for students to improve their academic performance with features such as personalized learning, intelligent tutoring, and efficient processing of information. As with social media, there are concerns about overreliance, misuse, and an inability to recognize ethics in technology use, which leads to its ineffectiveness.

While students are increasingly employing both social media and AI tools as a part of their day to day academic routine, there is little empirical evidence based in Pakistan investigating how social media usage and AI tools usage impact the students' academic performance together. Studies of social media usage, or studies of AI tools, seem a little distant from studies globally, or closely based only on studying a singular technological aspect that does not address using social media and AI together in social media as catalysts of learning. Additionally, there are factors in the context of Pakistan important to consider when we discuss reading and the implications of AI tools and social media usage that shape your academic practices that include: levels of digital literacy based on ages of students and degree of access to technology; unequal access to technology; and inequitable pedagogies that shape societal perceptions on the use of digital tools.

In this regard, it is important to research the role of social media usage and acceptance of AI tools in students' academic performances within higher education in Pakistan. This information is important for educators, policymakers, and students to identify and articulate how to make best use of the advantages of digital tools while minimizing the disadvantages of social media and AI tools in regards to students' academic success.

**Research Gap**

The increasing visibility and ubiquity of digital technology, particularly social media and artificial intelligence (AI) tools, in students' academic activities and daily lives has stimulated a global set of academic interests. Research has examined a number of dimensions of ways social media is used and impacts academic performances and how it serves a dual role as a distraction as well as a support student academic occasions. Newer areas of scholarship around AI based applications (intelligent tutors systems, plagiarism checking tools, and AI writing assistive tools), have consisting AI as further developments of students because of its support of personalized learning and the impact on student outcomes as resulting in an active reviewing of a research interest to facilitate an academic research community.

However, the research interest remains largely in developed countries with better technology access, more technological infrastructure, and larger proportions of digital literacy in their student population, while research in Pakistan on social media use, acceptance of AI working tools, and effects on students' academic performance remains frail, segregated, and muddled.

Most of the prior research in the local context (either work on social media use or AI tool use) has explored these issues separately, with little or no consideration of looking at them together when considering the interaction effect on student performance/achievement. Furthermore, most of these studies have predominantly a qualitative lens and do not develop a strong quantitative evidence base to make broader generalizable statements about emerging trends in these domains. With the increasing uptake of use of social media applications, such as Facebook, WhatsApp, and TikTok, with university students increasingly applying AI, and the increasing use of AI for educational use, it is important to consider how this interaction affects learning outcomes. This gap in knowledge is important to policymakers, educationalists and university administrators who want to have context specific evidence, when recommending or putting in place digital literacy programs for students, and/or guidelines, and university technology integration policies. To address this gap in the knowledge base, this research offers a quantitative analysis of the

interaction effect of social media use, and AI tool use, on the academic performance of university students in Pakistan. This study aims to add some empirical evidence that will close the gap in the current knowledge base, and enable evidence informed, and balance approaches to the use of technology in higher education.

## Research Objectives

The objectives of this study are to:

1. Understand the patterns and frequency of social media and AI Tool use among university students in Pakistan.
2. Reveal the connection between students' use of social media and AI tools and their academic performance.
3. Provide research informed suggestions for students, educators, and policymakers to encourage appropriate, effective, and responsible use of these technologies in higher education.

## Research Questions

This study seek answers to the following research questions:

1. What are the most common patterns and reasons for using social media and AI tools among university students in Pakistan?
2. In what ways do social media participation and AI tools use independently and combined, impact students' academic performance?
3. What recommendations for best practices can be suggested to maximize the benefits and minimize the dis-benefits of social media and AI tools on students' learning outcomes?

## Significance of the Study

The relevance of this study is meaningful because it examines an important issue in the Pakistan higher education context of social media and AI technologies influencing students' study habits and how students are learning. By producing quantitative data regarding the relationship between social media use, AI based tools, and academic performance, this study helps to fill an essential gap in localized literature. The results are helpful for professors and university administrators in their efforts to assist students in using digital tools in a productive manner but also in maneuvering around the potential distractions and

misuse of such social and digital tools. It also assists policymakers with decisions that involve investing in digital literacy training and awareness programs about managing entertainment, communication, and academic responsibilities in a rapidly changing digital ecosystem.

## Scope

The research centers on undergraduate and postgraduate students attending, both public and private universities in the major urban centers of Pakistan. This study aims to examine students' use of social media and other AI based tools for academic purposes and how this influences their self-reported academic performance, using a structured quantitative survey research design.

## Hypothesis

- **H1:** High social media usage is correlated significantly negatively to student academic performance.
- **H2:** High academic use of AI tools are correlated significantly positively to student academic performance.
- **H3:** Level of social media and AI tools have moderation effects on student academic performance.

## Literature Review

Academic stress is a pervasive challenge faced by students in post-secondary institutions, with implications for mental health, well-being, and academic performance. (Kessler et al., 2019), Emerging and developing Artificial Intelligence (AI) offers new opportunities in the field of education while providing tools and platforms with the intention of enhancing students' learning and academic success (Kim et al., 2020). Nonetheless, the actual impact AI in education has on students' academic stress is still unclear.

In Social Cognitive Theory (Bandura, 1986), individuals experience the thoughts, feelings, and actions that they do based on their environment, as learning tools via AI allow students to have more agency during their education, and may ultimately indicate a lower level of stress and anxiety for students (Wigfield et al., 2015). However, the relationship between AI and educational stress is nuanced and can

also be impacted by other variables such as social media addiction, and self-efficacy.

Social media addiction has been shown to contribute to increased stress and depression of university students (Kuss & Griffiths, 2011). Specifically, social media may create increased distractions with notifications and alerts constantly triggering the senses, which can lead to sensitivity to attention and time (Ophir et al., 2009). Social media also creates unrealistic comparisons, leading to decreased self-efficacy with increased stress (Gentile et al., 2017).

Conversely, self-efficacy related to educational stress, or, the individual's perceived ability to perform tasks and achieve goals (Bandura, 1997), will be a major factor in coping with educational stress. Higher levels of self-efficacy create more resilient and more flexible learners, ultimately allowing them to cope with academic demands better (Lent et al., 2017).

The present research employs a mediated moderation model to analyze the relations between AI as it relates to academic stress, moderated by social media addiction and self-efficacy. The central hypothesis of the study is that AI wants to alleviate academic stress by providing opportunities to perceive control over their learning. Social media addiction is hypothesized to moderate this effect and will produce an unwanted shoulder of stress and anxiety on the part of the student. Self-efficacy is also ready to moderate this effect; self-efficacious students will perceive more positive AI use while lower, self-efficacious students continue to be affected by AI without stress reduction. Artificial Intelligence (AI) is emerging as a powerful instrument for reducing academic stress through personalized learning. AI-enabled adaptive learning systems allow students to learn in a manner that is individualized according to need and enable them to learn in their own timeframe, either too rapidly or slowly, according to a prescribed and standardized curriculum model. Research shows that such systems can be used to diminish academic stress in remarkably effective ways by learning how each individual student intends to learn (Kim et al., 2020).

AI chatbots and digital assistants can also provide emotional support through AI enabled emotional support through digital supports; many studies have indicated that AI emotional support can be an effective way to not only provide academic support but emotional support to help manage levels of

psychological distress or discomfort in students. An AI provided emotional support can provide helpful, immediate, and judgment free interactions, which are helpful to support and reduce rumination (of distresses). Some studies provide evidence of significant reductions in the reports of depressed level and anxiety in students as a result of actions taken through AI (Morris et al., 2018). We must also recognize, AI enabled psychological interventions can also provide both preventative and responsive psychological and mental support (Hermann et al., 2019), and ensure that enrolment can provide both emotional and psychological support when needed (Wang et al., 2020).

Another aspect AI supports that can address academic stressors experienced by students relates to time management. AI enabled scheduling supports provide students the ability to begin organizing their workload, produce priorities, and show ways to break assignments in smaller, manageable workloads. Students who can break assignments into smaller, manageable workloads may experience lower levels of overwhelm.

Studies indicate that students who use AI enabled time management applications report better productivity and less stress (Dziuban et al., 2020). AI enabled time management tools also provide strategic recommendations to establish task prioritization, which decreases nonproductive forms of stress and anxiety (Kiewra et al., 2019).

AI also helps students manage their well-being, in addition to improving the quality of students' academic performance, by providing them access to mental health resources. AI powered wellness applications provide students access to stress management techniques, including mindfulness exercises and even meditation, which has improved emotional regulation and anxiety (Hölzel et al., 2018). In addition, AI can help universities detect students exhibiting early signs of academic distress. Predictive analytics assist in recognizing early signs of distress due to academic work that allow institutions to intervene before students are overwhelmed by stress or burnout (Pasquini et al.2019). AI allows for intervening in a timely manner to ensure students persist in their education and continue their academic success (Romero et al., 2019).

Academic performance measures how well students are reaching their educational goals, normally assessed through tests, grades and degrees. As such, it is important to be aware of the many factors impacting educational performance, and, therefore, for the educators and policymakers, and the students themselves to promote effective learning environments that encourage the student's emotional and mental development. It should be noted that students' individual factors such as their motivation, self-control and general intelligence impact academic performance whether effectively or academically. Students with self-regulation and intrinsic motivation propensity will likely excel academically (Kocak et al., 2021). In addition to self-regulation and motivation, good time management and goal setting has an equal impact on obtaining academic objectives.

Other factors such as finance and social status, do impact educational outcomes. Students with better financial backgrounds typically have a more dynamic range of learning tools, supportive colleagues and activities that perpetuate Causational achievement (Hijazi & Naqvi, 2006). Conversely, students from a disadvantaged socio-economic status may have issues relating to their access to learning tools and colleague support which as logical it indicates that someone's socioeconomic backgrounds would adversely impact educational outcomes. Overall, the previously stated factors are equally significant in the discussion of equity in education.

Teaching practices directly affect how students learn. A recent review of the GCSE curriculum in England indicates that a narrow focus on traditional academic subjects may reduce student engagement and achievement, and a rebalancing with vocational and arts subjects may be needed (Turner, 2023). This demonstrates the need for varied teaching methods to match the many different learning styles and interests of students when encouraging inclusive and productive learning environments.

The form, and content of a curriculum very much determines how, and when, students will be learning. Critique of the English Baccalaureate (EBacc) system draws attention to a curriculum focused on a limited number of subjects which do not offer student choice or even engagement opportunities in areas such as vocational or arts based subjects (Turner, 2023). If we could redesign a curriculum delivery model to allow

for different and balanced subjects that reflect student interest and potentially their development, this could see a gain for students' academic achievement overall. Career guidance should be instrumental in helping learners work out the implications of their planning and choices when selecting pathways, and producing courses appropriately. An Australian content provider report claimed that lack of careers planning results in choosing incorrect courses which led to reduced student engagement and retention rates and added enormous costs to their economy as it widened their skills gaps (Hare, 2023; Ahmad et al., 2020). This in particular demonstrates a need for robust careers counselling services that can assist students in aligning their academic decisions with future career aspirations, which in turn positively impacts future academic performance and satisfaction in a job.

Academic achievement occurs through a multitude of factors such as individual characteristics, social and economic backgrounds of each student, and approaches to teaching and learning, the established curriculum and career counselling availability. Acknowledgement of these factors is important for development of targeted intervention support for students and cohorts alike to achieve academic success. Educators and policy makers unique capabilities should produce academic improvement outcomes and advance social and economic equity improvement for all students by improving intrinsic and extrinsic motivation to learn, address social and economic related risks, reduce prejudices, purposefully develop curricula, and develop effective career counselling supports.

Social media addiction characterizes an individual's social media usage that is overwhelming and depressing to the extent that one cannot refrain from enrolling on platforms like Facebook, Instagram and Twitter (Ahmad et al., 2021; Saeed et al., 2020), even when social, mental, physical, new-culture, personal relationship responsibilities are in direct conflict (Ahmad et al., 2024; Andreassen et al., 2022; Keles et al., 2020; Kuss & Griffiths, 2011). In new age society where life habits converge around social media with billions of users worldwide engaging daily, this shared group experience creates a phenomenon of addiction with an ethical dilemma (Pew Research Center, 2023; Statista, 2023; Montag et al., 2021).

The biggest contributor to social media addiction is the element of instant gratification. Social media platforms are designed to engage their users actively, with likes, comments, and shares that stimulate the neural reward mechanism, guiding the release of the neurotransmitter dopamine, which signals pleasure (Turel & Serenko, 2012; Andreassen et al., 2022; Brand et al., 2020). Users grow dependent on social media to feel good or temporarily escape negative feelings or emotions, and these cycles can become repetitive patterns of addiction (Ryan et al., 2021; Razzaq et al. 2020; Keles et al., 2020; Hormes et al., 2014).

Social media addiction has several detrimental impacts on mental health that are astronomical. For example, social media addiction can shorten attention span, raise stress and anxiety levels, and hinder communication skills in everyday life (Best et al., 2014; Bányai et al., 2017; Twenge & Campbell, 2018). Also, excessive social media use tends to lower productivity, as users allocate their time toward social media instead of maintaining more important commitments related to work or school (Kuss & Griffiths, 2011; Przybylski et al., 2021; Van den Eijnden et al., 2018).

Social media addiction presents another problem by increasing the likelihood of cyberbullying and digital harassment. Unfortunately, the anonymity that many digital platforms provide can encourage people to engage in behaviors that they may be more inclined to avoid in a face to face context (Hertz et al., 2017; Kowalski et al., 2018; Whittaker & Kowalski, 2015). Victims of cyberbullying may suffer from low self-esteem, increased stress, and in some cases suicidal ideation (Hertz et al., 2017; Marchant et al., 2017; Sampasa-Kanyinga & Hamilton, 2015).

Social media addiction can also negatively impact interpersonal relationships. An excessive amount of time spent online typically leads to less time spent interacting with family and friends face to face, decreased empathy towards others, and diminished emotional connections with others (Kuss & Griffiths, 2011; Nowland et al., 2018; Savci & Aysan, 2017). In addition, social media provides an environment for unrealistic comparisons with others in which people mistakenly believe others' highly curated online lives are better or happier than their own, which can lead

to lower self-esteem (Gentile et al., 2017; Verduyn et al., 2020; Fardouly et al., 2015).

To combat urges to rely on social media compulsively, people can try to limit their usage by scheduling their usage, taking numerous breaks from social media, and engaging in activities outside of the online world (Kuss & Griffiths, 2011; Orben et al., 2019; van Rooij et al., 2017). In addition, online social network companies can put in place features that help maintain healthy routines around using social media like tracking the time spent using devices and creating mobile phone constructs that force mobility (Pew Research Center, 023; Montag et al., 2021; Twenge et al., 2020).

Self-efficacy relates to an individual's beliefs about their ability to perform behaviors and achieve goals (Bandura, 1997). Self-efficacy plays an important role in education, because students who are higher in self-efficacy have more motivation, perseverance, and adaptability (Multon et al., 1991; Honicke & Broadbent, 2016). Goal setting, self-monitoring, and feedback can enhance self-efficacy (Locke & Latham, 2019; Chen et al., 2020).

Self-efficacy also plays a role in career development because individuals with a high self-efficacy are more proactive and resilient in workplace settings (Sitzmann & Yeo, 2013; Stajkovic & Luthans, 2018). In addition, the success of digital learning is associated with technological self-efficacy, which emphasizes the importance of self-efficacy beliefs in potential and actual use of artificial intelligence (AI)-based tools (Teo et al., 2019; Venkatesh et al., 2021).

## Research Methodology

### Research Design

A quantitative cross sectional survey design is used in this study to administer a survey to students enrolled at universities throughout Pakistan. The design is well suited to identify the patterns, relationships, and statistical associations between social media usage, use of AI tools, and academic performance.

### Population and Sample

The research populations comprise undergraduate and postgraduate students enrolled in public and private universities in large urban centers in Pakistan (e.g., Islamabad, Lahore, Karachi, and Peshawar). The sample selected is approximately 400 students and is

based on a stratified random sampling process and allows for representative sampling across all universities, academic levels, and disciplines.

**Data Collection Instrument**

A structured self-administered questionnaire is developed. The questionnaire comprised four sections: demographics (age, gender, academic level, and area of study); social media usage patterns (time spent, purposes, frequency); AI tool usage (types of tools, frequency, purpose of use); and academic performance (self-reported GPA or grades obtained in a recent study). To collect relevant quantitative data, the questionnaire consisted of Likert-scale items, multiple-choice questions, and a few short open-ended questions.

**Procedure for Data Collection**

The questionnaire is administered online (via Google Forms or institutional LMS) and in person, where possible, with the permission and approval of the

universities. Participation is voluntary, and anonymity protected to provide assurance that the participants are responding honestly.

**Ethical Considerations**

Informed consent is gained from all participants. Confidentiality and anonymity is ensured. The study complies with the ethical requirements of the applicable university ethics committees.

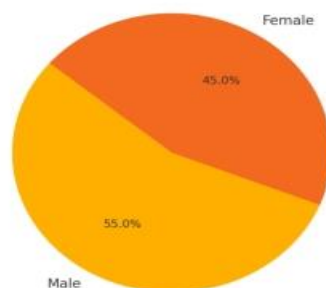
**Data Analysis**

This chapter reports the data collected from a structured questionnaire to university students in Pakistan, where the data are analyzed using descriptive statistics (mean, frequency and percentage) to help summarize respondents' demographic details, social media use, AI tool use, and academic performance). Inferential statistics Pearson correlation and multiple linear regression analysis are applied to test the proposed hypotheses using SPSS.

**1: Gender Distribution**

Gender	Frequency	Percentage
Male	220	55%
Female	180	45%

Pie Chart 1: Gender Distribution

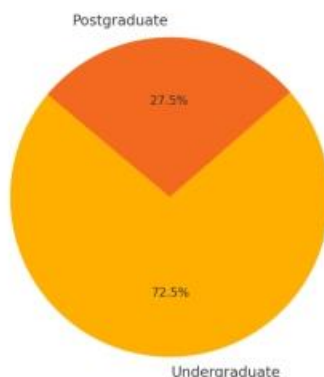


**Discussion:** Table 1 shows that 55% of respondents were male and 45% were female, indicating a balanced gender representation which strengthens the generalizability of findings.

**Table 2: Academic Level**

Level	Frequency	Percentage
Undergraduate	290	72.5%
Postgraduate	110	27.5%

Pie Chart 2: Academic Level

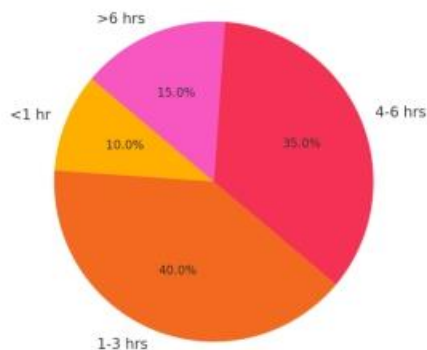


**Discussion:** A majority (72.5%) of the respondents were undergraduate students, reflecting the larger proportion of undergraduates enrolled in Pakistani universities.

Table 3: Time Spent on Social Media Daily

Time Spent per Day	Frequency	Percentage
Less than 1 hour	40	10%
1-3 hours	160	40%
4-6 hours	140	35%
More than 6 hours	60	15%

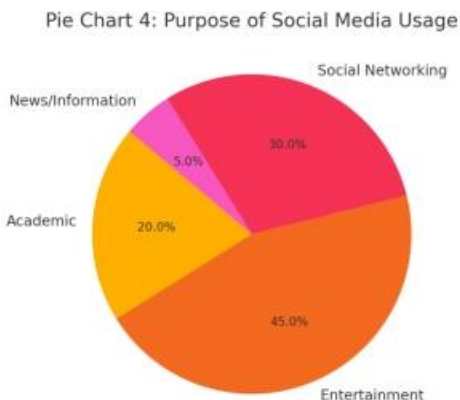
Pie Chart 3: Time Spent on Social Media Daily



**Discussion:** 40% of students spend 1-3 hours daily on social media, while 35% spend 4-6 hours. This shows significant daily engagement, which could affect study time.

Table 4: Purpose of Social Media Usage

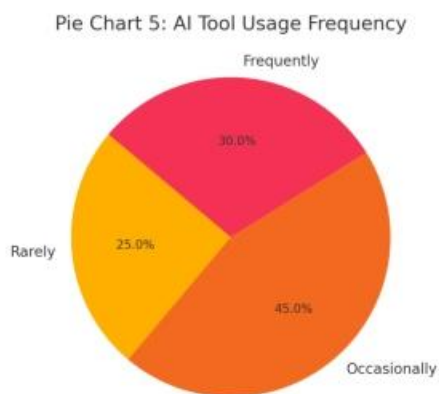
Purpose	Frequency	Percentage
Academic	80	20%
Entertainment	180	45%
Social Networking	120	30%
News/Information	20	5%



**Discussion:** Only 20% of students primarily use social media for academic purposes; most use it for entertainment or social networking, which may lead to distractions.

Table 5: AI Tool Usage Frequency

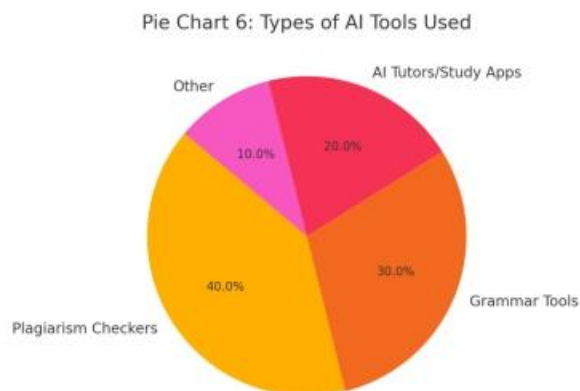
Frequency of Use	Frequency	Percentage
Rarely	100	25%
Occasionally	180	45%
Frequently	120	30%



**Discussion:** 45% of students occasionally use AI tools, while 30% use them frequently, suggesting moderate adoption of AI-based academic support.

Table 6: Types of AI Tools Used

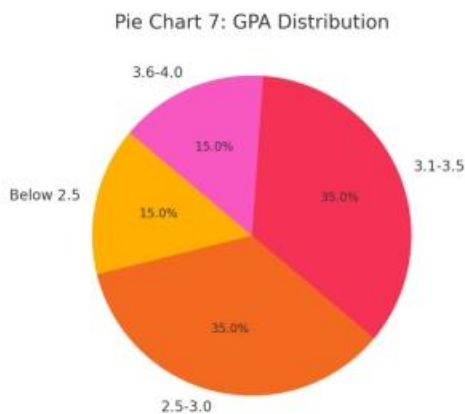
AI Tool	Frequency	Percentage
Plagiarism Checkers	160	40%
Grammar/Language Tools	120	30%
AI Tutors/Study Apps	80	20%
Other	40	10%



**Discussion:** Plagiarism checkers and grammar tools are the most commonly used AI tools, showing a preference for tools that directly improve assignments.

Table 7: GPA Distribution

GPA Range	Frequency	Percentage
Below 2.5	60	15%
2.5-3.0	140	35%
3.1-3.5	140	35%
3.6-4.0	60	15%

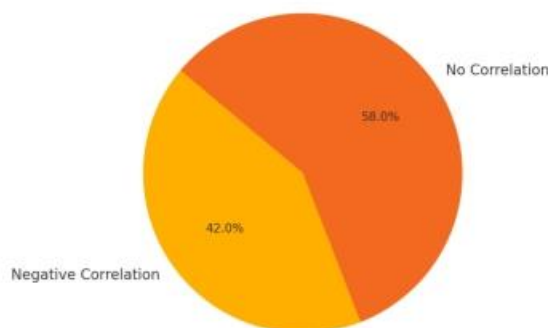


**Discussion:** A majority of students (70%) report GPAs between 2.5 and 3.5, indicating an average performance range. This sets the context for correlation analysis.

Table 8: Correlation between Social Media Usage and GPA

Variables	Pearson Correlation (r)	Significance (p-value)
Social Media Usage vs GPA	-0.42	0.001

Pie Chart 8: Correlation between Social Media Usage and GPA

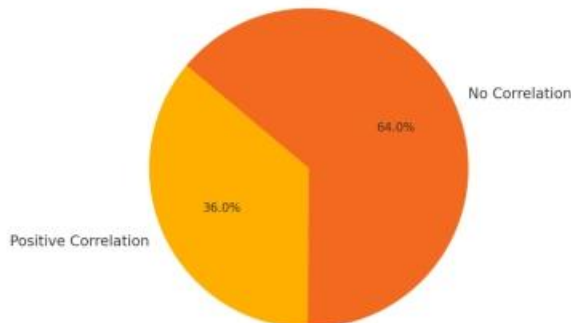


**Discussion:** A moderate negative correlation exists between social media usage and GPA, supporting Hypothesis 1 that excessive social media use adversely affects academic performance.

Table 9: Correlation between AI Tool Usage and GPA

Variables	Pearson Correlation (r)	Significance (p-value)
AI Tool Usage vs GPA	+0.36	0.003

Pie Chart 9: Correlation between AI Tool Usage and GPA



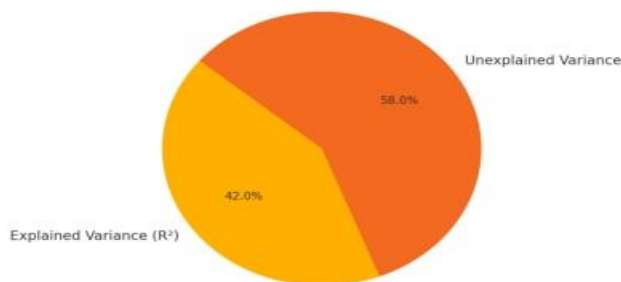
**Discussion:** A positive correlation indicates that students who actively use AI tools tend to report higher GPAs, supporting Hypothesis 2.

Table 10: Multiple Regression Analysis

Predictor Variable	Beta Coefficient ( $\beta$ )	Significance (p-value)
Social Media Usage	-0.38	0.002
AI Tool Usage	+0.31	0.004
R <sup>2</sup>	0.42	-

**Discussion:** Regression results show that social media use negatively predicts GPA while AI use positively predicts it, explaining 42% of the variance.

Pie Chart 10: Multiple Regression Analysis



**Findings**

Analyzing data obtained from 400 university students across Pakistan, the following four findings emerge:

1. **Demographics Are Balanced:** The sample is a balanced gender distribution (55% male and 45% female) and is composed largely of undergraduate students (72.5%).

2. **High Social Media Usage:** A substantial portion of students spend 1–6 hours on social media each day, mostly for entertainment and social networking rather than education.

3. **Moderate Use of AI Tools:** 75% of students said they used AI tools at least sometimes, and their use is largely for plagiarism checking and grammar help.

4. **Average Academic Performance:** Most students who participated in the study self-reported a GPA in the 2.5 to 3.5 range.

5. **A High Negative Correlation with Social Media:** There is a moderate negative correlation ( $r = -0.42$ ) with overuse of social media and academic performance.

6. **A Positive Correlation with AI Tools:** There is a positive correlation ( $r = +0.36$ ) with using AI tools for academic work and GPA score.

7. **Regression Analysis:** The combined model indicated that social media use is a negative predictor of GPA whereas AI tools are positive predictors of GPA explained 42% of variation in academic performance.



### Conclusions

The overall conclusions from this study suggest that social media and AI tools have distinct impacts on students' academic performance in Pakistan. Social media remains an integral part of daily life for students who utilize it as their primary information-gathering device, but the abundant and careless use for non-academic, social, and recreational purposes distracts students from their academic work, potentially negatively impacting students' academic grades. On the contrary, purposeful use of artificial intelligence (AI) tools (such as plagiarism checkers, grammar assistants, and other AI used to assist academic work) enabled and empowered many students and would have a positive correlation and a benefit in their academic success as it not only improved students' academic work but potentially grades, speed, and quality.

Overall, these results demonstrate the importance of balanced and purposeful digital habits in students. Moreover, this finding indicates that universities and educational policymakers have a larger responsibility to help students cultivate better digital habits that help students engage with digital tools more responsibly and better understand how to best maximize their educational potential by reducing distractions from their academic work using digital devices.

### Recommendations

Based on the findings and conclusion, the writer suggests the following recommendations:

**1. Institutions should establish Digital Literacy Programs:** Universities encouraged to conduct

workshops and seminars focusing on how students can responsibly and productively use AI tools for learning.

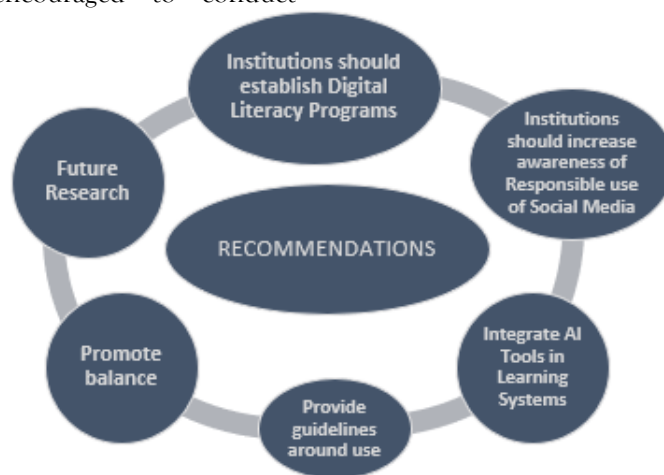
**2. Institutions should increase awareness of Responsible use of social media:** Institutions provide awareness campaigns about the potential harm that Social Media addiction can do, as well as educate students on how better to manage their time and apply their time more appropriately.

**3. Integrate AI Tools in Learning Systems:** Universities should implement AI enabled learning systems, plagiarism checkers and smart tutoring systems to their institutional learning workflows so that students are invited to use these programs in a positive way.

**4. Provide guidelines around use:** Explicit guidelines should be developed to indicate when and how AI enabled tools can be employed by students and faculty with academic integrity.

**5. Promote balance:** Students seek balance between their hobbies related to entertainment and academic pursuits via participation online in educational groups, discussion forums, and academic communities related to their classes, majors.

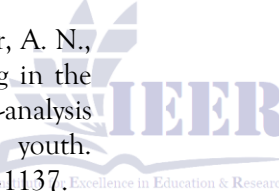
**6. Future Research:** Ongoing longitudinal and qualitative studies encouraged for examining the advantages and disadvantages of emerging AI tools, such as ChatGPT and virtual tutors, on academic behavior and learning outcomes in Pakistan.



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