

Social Media Engagement and Academic Achievement among Students in Technical Universities

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Abstract: This paper analyzes the correlation between social media activity and academic achievement among students in technical universities. The investigation, based on survey data from 150 respondents, indicates that social media has a dual function: as a means of academic improvement and as a source of distraction. Although services such as WhatsApp and YouTube facilitate cooperation and resource dissemination, their overuse and late-night utilization pose significant issues. Recommendations emphasize time management, maximizing academic usefulness, and minimizing reliance to enhance the advantages of social media in educational contexts.

Keywords: Social Media Engagement, Academic Achievement, Technical Universities, Student Performance, Digital Interaction, Educational Impact, Social Media Usage, Learning Outcome, Online Collaboration.

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I. INTRODUCTION

A. Background of the Study

In recent years, social media has become an essential component of everyday life, especially among youth, including university students. The emergence of platforms like Facebook, Instagram, Twitter, TikTok, and WhatsApp has granted students unparalleled access to online communication, networking, and information dissemination. The proliferation of cellphones and internet access has intensified the impact of social media, since students are always active on these platforms for social connection, amusement, or academic endeavors. Social media platforms function as both a source of distraction and a novel instrument for academic cooperation and resource dissemination [1].

There is increasing apprehension among educators, governments, and parents worldwide regarding the possible effects of social media on pupils' academic achievement. Some assert that social media is a valuable platform for academic engagement, providing access to educational resources, virtual study groups, and academic networking, while others argue that excessive use can detrimentally affect students' academic performance by diverting their attention

from studies [2]. In technical universities, where practical and theoretical knowledge is essential, comprehending the relationship between social media usage and academic achievement is crucial.

In Ghana, technical institutes such as Accra Technical University (ATU) have witnessed substantial increases in student enrollment and internet connectivity, leading to a concomitant rise in social media usage. According to a [3], Ghana had more than 8.8 million active social media users in January 2023, a considerable percentage of them were university students. As these platforms develop into more captivating and immersive experiences, the distinction between academic and non-academic usage becomes increasingly indistinct, necessitating an evaluation of the correlation between students' participation on social media and their academic achievement.

A multitude of research has investigated the impact of social media on students across various educational settings. Nevertheless, research within the context of technical universities, especially in Ghana, has been sparse. Technical institutions like ATU offer a distinctive combination of academic and practical learning settings, potentially affecting the impact of social media on students differently than at

other universities. Technical universities are pivotal in cultivating a proficient workforce for Ghana's industrial and technological domains; thus, comprehending the determinants of academic achievement is vital for enhancing educational results [4].

Moreover, the educational framework in Ghana, especially within technical universities, underscores the necessity for students to excel academically, since this significantly influences their job prospects and professional advancement. Practical skills, cognitive abilities, and technical knowledge are highly esteemed among technical university students, and social media involvement may differentially influence these learning dimensions [5]. The increasing use of social media by students at Accra Technical University prompts significant inquiries over its prospective effects on their academic performance.

This study aims to examine the correlation between social media involvement and academic performance among students at Accra Technical University, considering the prevalent use of social media and its possible effects on academic outcomes. This study intends to elucidate the impact of social media habits on student learning and academic outcomes within the setting of technical universities. The findings are anticipated to provide significant insights into the beneficial and detrimental impacts of social media on students and to enhance the ongoing discourse over the equilibrium between technology utilization and academic obligations.

B. Statement of the Problem

The extensive utilization of social media by students offers both advantages and obstacles. Social media facilitates students' access to academic materials, promotes collaborative learning, and enhances communication with classmates and instructors beyond the conventional classroom environment [6]. Conversely, the escalating duration dedicated to non-academic activities on these platforms prompts apprehensions regarding potential distractions, diminished concentration on studies, and subsequent adverse effects on academic performance [7].

At Accra Technical University, where students must balance practical schoolwork with academic theory, the influence of social media on academic life necessitates careful consideration. Initial observations indicate that several students allocate a considerable amount of time to social media activities that may not directly improve their academic objectives. This involvement includes regular updates, social interactions, and material sharing that frequently diminishes study time, resulting in a deterioration in academic performance [8].

Notwithstanding these apprehensions, the existing study on the impact of social media on the academic performance of students at technical universities in Ghana is insufficient. The majority of research has concentrated on conventional institutions, resulting in a deficiency of comprehension about the impact of social media on academic performance in the realm of technical and vocational education. Students at

technical institutions frequently participate in practical training, hands-on projects, and industry-related tasks, which may be differentially affected by social media usage compared to their counterparts at traditional universities [9].

Furthermore, it is necessary to examine if social media activity provides advantages that improve academic achievement. Platforms like YouTube and LinkedIn provide technical lessons and professional networking possibilities that may enhance academic performance. Understanding the equilibrium between productive and unproductive social media usage concerning students' academic achievement is essential for establishing clear recommendations for its effective utilization [10].

The issue is intensified by the absence of explicit regulations or frameworks to direct students on the efficient utilization of social media for academic objectives. This prompts essential inquiries regarding the roles of technical university administrators and instructors in instructing pupils on harmonizing social media engagement with academic obligations. Examining the correlation between social media involvement and academic performance at Accra Technical University may yield essential insights into the optimal integration of these platforms within the academic framework [11].

Due to the growing reliance on digital platforms for education and communication, it is imperative to evaluate the relationship between social media involvement and academic achievement among students at Accra Technical University. This study seeks to address the research vacuum by examining the positive and negative effects of social media on academic performance, identifying usage trends, and offering advice for students and instructors.

C. Objectives of the Study

- To examine the degree of social media participation among students.
- To evaluate the correlation between social media involvement and students' academic performance.
- To ascertain the beneficial and detrimental impacts of social media on academic achievement.

D. Research Questions

- What are the trends of social media utilization among students at Accra Technical University?
- Is there a substantial correlation between social media activity and academic performance?
- What is the students' perception of social media's influence on their academic performance?

E. Significance of the Study

The swift expansion and integration of social media in various aspects of life, particularly in education, have generated a heightened necessity to comprehend its effects on academic achievement. This study seeks to evaluate the correlation between social media involvement and academic performance among students at Accra Technical University. This research's conclusions will significantly impact students, educators, policymakers, and the wider academic community.

Examining the Impact of social media on Higher Education: Given that social media has become a fundamental aspect of students' everyday lives, it is crucial to investigate its influence on academic performance. Numerous research has demonstrated that social media may function as an effective educational instrument, facilitating cooperation and resource accessibility [12]. Conversely, excessive or non-academic engagement with social media has been associated with distractions, inadequate study practices, and diminished academic achievement [13], [14]. This study will concentrate on Accra Technical University to offer localized insights on how students at technical universities in Ghana utilize social media, therefore enhancing the existing literature on its impact in educational contexts.

Actionable Recommendations for Students and Educators: The research will offer empirical insights that will assist students in being more aware of their social media use and its possible effects on their academic achievement. Determining whether social media activity improves or undermines academic achievement would empower students to make more educated choices regarding their time allocation. The study may provide chances for educators to include social media as a pedagogical tool, employing platforms like YouTube, LinkedIn, and WhatsApp for educational objectives [15]. This may result in novel initiatives to enhance student involvement, cooperation, and academic success.

Policy Formulation for University Administrators: University administrators and policymakers will also gain from the findings. If research indicates that social media involvement adversely impacts academic achievement, institutions such as Accra Technical University may need to establish standards or provide seminars to encourage responsible social media usage among students. If the results indicate that social media improves academic performance, colleges may allocate resources to develop organized digital learning environments that utilize these platforms to promote teaching and learning [16]. The study will therefore provide a basis for future policy choices concerning the utilization of social media in educational environments.

Improving Academic Support Services: The study's findings will be beneficial for academic support services, including student counseling centers. A multitude of students find it challenging to reconcile social media involvement with their academic obligations, resulting in problems such as procrastination and diminished concentration on their studies [17]. By identifying the factors contributing to this imbalance, academic support services can offer customized interventions, such as time management workshops or digital well-being seminars, to assist students in cultivating improved habits and strategies for managing their online presence without jeopardizing their academic objectives.

This research has wider ramifications beyond Ghana, contributing to global discussions on education and technology. As technical institutions worldwide contend with the proliferation of digital technology in educational settings, the findings will provide significant insights applicable in

many scenarios. The study enhances the worldwide discourse on effectively integrating digital technologies into higher education by examining both the advantages and disadvantages of social media interaction. This is especially pertinent since universities globally are progressively adopting digital platforms for remote education and cooperation in reaction to difficulties like the COVID-19 pandemic [18].

Addressing Deficiencies in Current Literature: While several studies have investigated the impact of social media on academic achievement, a notable deficiency exists in research pertaining to technical universities in Ghana. Most current research either focuses on secondary school students or generalizes findings across all types of universities without accounting for the unique attributes of technical schools [14]. This study will address that gap by providing empirical data particular to Accra Technical University, therefore enhancing the comprehension of social media's effects on students in technical disciplines.

II. LITERATURE REVIEW

The increasing ubiquity of social media in educational environments has generated considerable interest in examining its impact on students' academic achievement. Social media sites, like Facebook, WhatsApp, Twitter, and Instagram, have grown essential to students' daily routines, presenting both possibilities and problems for academic involvement. Some studies emphasize the advantages of social media in improving cooperation, resource accessibility, and communication, while others indicate its potential for distraction and diminished academic concentration. This literature review examines the theoretical and empirical studies about the correlation between social media activity and academic performance, specifically focusing on students at technical universities such as Accra Technical University.

A. Theoretical Framework

The theoretical framework is essential for directing and underpinning research. In evaluating the correlation between social media involvement and academic performance, two principal theories that offer insight are Social Learning Theory and Uses and Gratifications Theory.

➤ Social Learning Theory (SLT)

Social Learning Theory, formulated by Albert Bandura in the 1970s, asserts that individuals acquire behaviors, values, and knowledge by seeing others in their surroundings, especially through imitation and modeling [19]. In contemporary settings, social media platforms offer a vast arena where students encounter diverse behaviors, viewpoints, and information from peers, influencers, and experts. This idea posits that students' interaction with social media may alter their attitudes towards learning, affect their academic activities, and impair their performance.

Students may engage with educational sites or groups on platforms such as Facebook, LinkedIn, or YouTube to acquire new skills or locate study tools. They also monitor

the habits and accomplishments of their peers, which might foster a feeling of rivalry or incentive. [20] emphasizes that social learning via digital platforms, such as social media, has emerged as a crucial educational instrument, particularly within collaborative learning settings. Nonetheless, SLT underscores the potential for adverse consequences; students could emulate procrastinatory practices, excessive dependence on non-academic material, or ineffective time management if their social media engagement lacks an academic emphasis.

Consequently, Social Learning Theory elucidates both the beneficial and detrimental effects of social media on students' academic achievement. Students use social media for academic advancement and engagement with educational material are likely to exhibit constructive academic behaviors, hence improving their academic performance. In contrast, those who predominantly participate in non-educational social media activities may exhibit habits that undermine their study time and concentration.

➤ *Uses and Gratifications Theory (UGT)*

The Uses and Gratifications Theory, originating from communication research in the mid-20th century, aims to elucidate how humans utilize media to fulfill their needs and attain certain objectives [21]. UGT asserts that students deliberately select social media platforms according to the gratifications they pursue, including knowledge, entertainment, social contact, or leisure.

In the academic environment, UGT posits that students utilize social media variably based on their distinct requirements, which may either facilitate or impede academic success. Students may utilize social media sites such as Twitter or Instagram to remain informed about academic news, connect with specialists, or participate in study groups, therefore enhancing their academic performance. [22] assert that students frequently utilize social media for immediate access to academic materials, peer assistance, and real-time conversations, hence augmenting their learning experience and productivity.

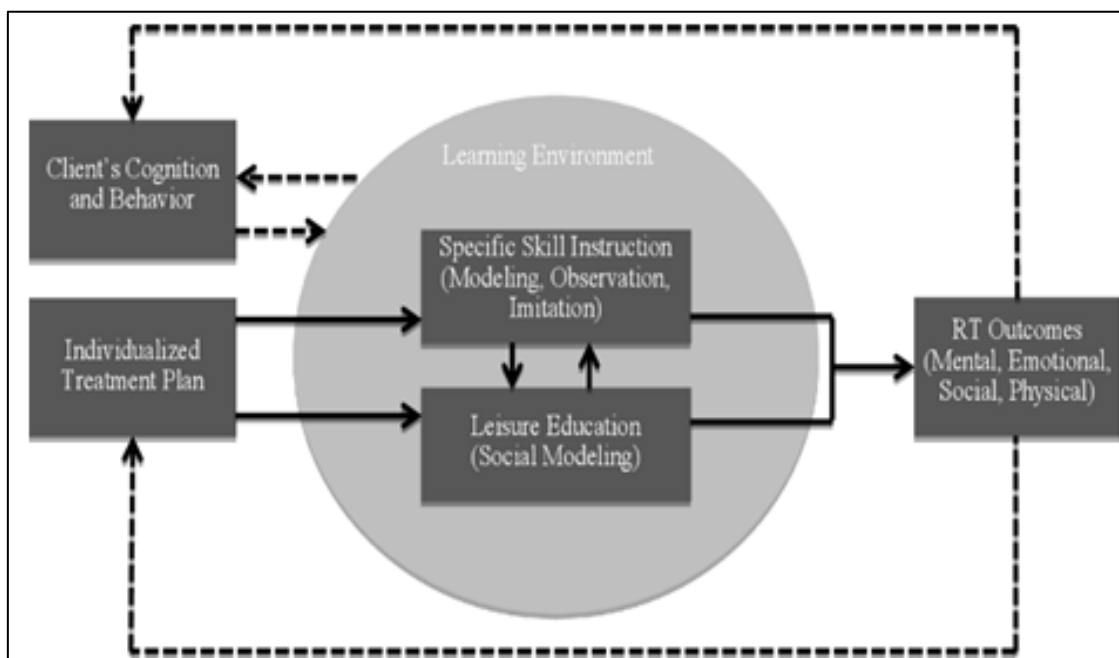


Fig. 1: Uses and Gratifications Theory (UGT)

Nonetheless, social media may fulfill non-academic purposes, such as amusement or social interaction, thus diminishing the time allocated to academic pursuits. As noted by [24], excessive engagement with social media for enjoyment, including online gaming or non-academic social networking, can detrimentally affect students' focus and study duration, resulting in inferior academic performance. Within the framework of this research, UGT is helpful in elucidating the many motivations behind students' interactions with social media and the impact of these distinct forms of engagement on their academic achievement. Students that utilize social media mostly for academic objectives may exhibit improved performance, but those who prioritize social or entertainment rewards may face a decline in academic success.

B. Consolidation of Theories

Social Learning Theory and Uses and Gratifications Theory collectively offer a thorough framework for analyzing the impact of social media activity on academic achievement. Social Learning Theory elucidates the mechanisms via which students assimilate behaviors and attitudes witnessed on social media, whilst Uses and Gratifications Theory offers understanding into students' motivations for engaging with particular material kinds. This research integrates these ideas to examine how social media influences student behavior and the underlying motives for their social media use, providing a comprehensive explanation of the link between social media participation and academic performance.

Fig. 2 depicting the fundamental principles of Social Learning Theory and Uses and Gratifications Theory. Social Learning Theory emphasizes observation, imitation, modeling, and peer influence, whereas Uses and Gratifications Theory highlights the active, goal-directed

engagement of users and the diverse needs (informational, entertainment, academic, or non-academic) that shape individual interactions with social media. These themes elucidate the various ways in which social media might influence academic achievement.

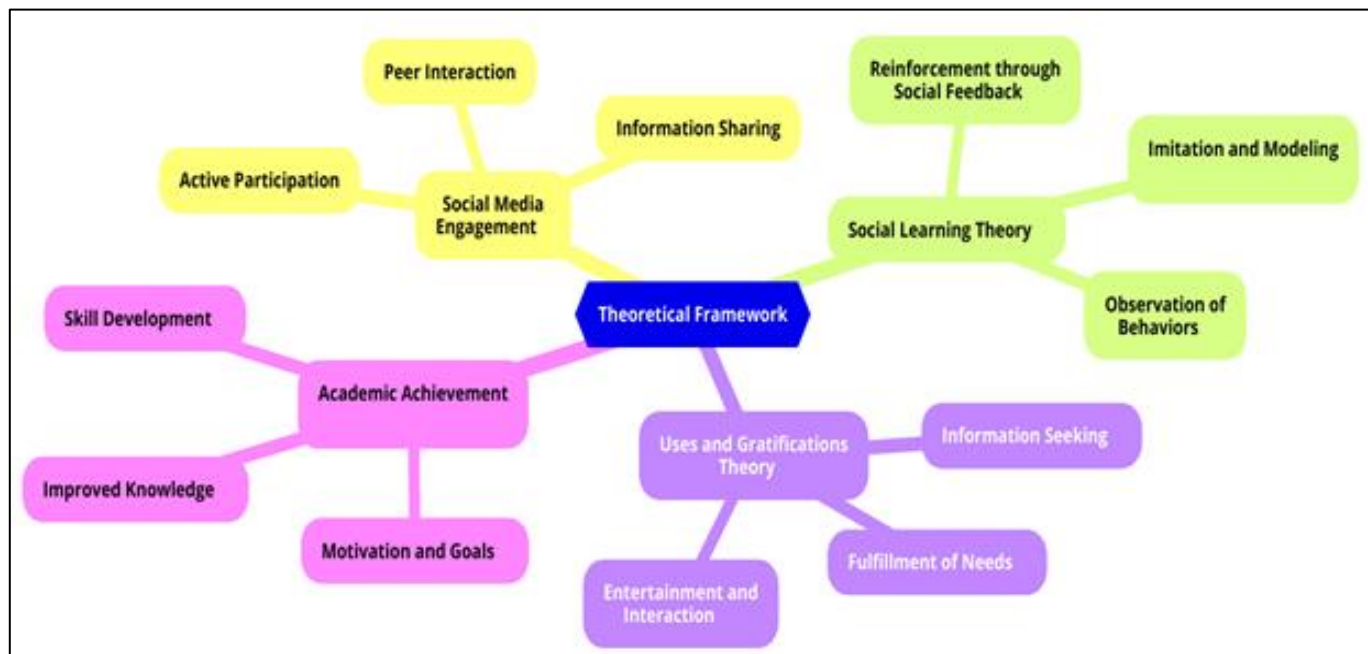


Fig. 2: Integration of Theories

➤ Empirical Research on Social Media and Academic Achievement

The correlation between social media activity and academic achievement has garnered significant study attention in recent years. Numerous research has examined how various facets of social media usage affect students' academic performance, offering a detailed comprehension of this complex relationship. This section examines empirical research done from 2019 to 2024, emphasizing their findings, techniques, and contributions to the discipline.

➤ Influence of Social Media on Academic Achievement

Numerous research has examined the overall effect of social media usage on students' academic achievement. Research by [25] investigated the relationship between social media usage and academic performance among university students in Qatar. A substantial negative association was identified, indicating that excessive engagement with social media platforms like Facebook and Instagram might detrimentally impact students' academic performance and concentration [25]. The research employed a survey methodology with a sample of 500 students, assessing the data using Pearson correlation coefficients.

Research by [26] examined Chinese college students and found that elevated social media activity correlated with diminished academic achievement. The authors employed a mixed-methods approach, integrating quantitative surveys with qualitative interviews to collect extensive data on social media usage habits and academic results [26]. Their findings indicated that students who regularly utilized social media for

non-academic activities were more prone to distractions and diminished academic performance.

➤ Social Media as an Educational Resource

Some studies emphasize the detrimental impacts of social media, while others investigate its potential advantages as an educational resource. Research conducted by [27] examined the potential of social media platforms, such as LinkedIn, and academic forums to improve students' learning experiences and academic performance. Research indicates that social media, when utilized for educational objectives, may offer important resources, enhance academic discourse, and promote collaborative learning [27]. The study comprised a survey of 300 students and employed multiple regression analysis to evaluate the effect of educational social media utilization on academic achievement.

Conversely, research conducted by [28] investigated the influence of social media on enhancing student involvement and motivation. The research indicated that platforms such as Twitter and academic blogs can enhance students' involvement with their courses, contingent upon adequate moderation and a concentration on academic content [27]. The research employed a longitudinal design with pre- and post-intervention questionnaires to assess variations in academic performance and engagement.

C. Determinants Affecting the Correlation Between Social Media and Academic Achievement

Studies have concentrated on many aspects that affect the correlation between social media usage and academic achievement. Research by [29] examined how individual

variations, including self-regulation and time management abilities, mitigate the influence of social media on academic performance. Students possessing strong self-regulation abilities exhibited reduced susceptibility to the adverse effects of social media and demonstrated enhanced management of their academic obligations. This research employed a cross-sectional survey design including 400 participants and using structural equation modeling to investigate the mediating influences.

[30] conducted a study examining the impact of social media addiction on academic achievement. The researchers discovered that social media addiction significantly predicted academic underachievement, as individuals displaying addicted behaviors had more pronounced decreases in academic performance. The research utilized a quantitative methodology with standardized questionnaires to evaluate addiction levels and academic performance.

D. Geographical and Contextual Disparities

The influence of social media on academic achievement may differ based on regional and contextual variables. [31] conducted a study examining the impact of social media usage on academic achievement across several nations, including Ghana. They noted that although social media often adversely affects kids' academic performance, the degree of influence varies according on cultural and educational circumstances [31]. The research employed a comparative analysis methodology, scrutinizing data from students across several nations to elucidate these disparities.

E. Student Engagement on Social Media

In the digital era, social media has become an essential component of students' everyday routines. This involvement includes several platforms and activities that affect students' social connections, academic experiences, and general well-being. To comprehend the impact of social media on academic achievement, it is essential to analyze students' use patterns, the platforms they utilize, and the objectives for their engagement with these platforms.

➤ *Varieties and Prevalence of Social Media Platforms Utilized*

Contemporary students employ a diverse array of social media sites. Research by [32] indicates that students favor platforms such as Facebook, Instagram, Twitter, and emerging apps like TikTok. Each platform has unique functionalities that address various dimensions of social engagement and content consumption. For example, Instagram and TikTok primarily facilitate the sharing of visual content and brief films, but Twitter and Facebook fulfill a broader range of purposes, encompassing text-based updates and community development.

The utilization rate differs across pupils. [33] research reveal that a considerable percentage of college students use their social media accounts many times daily. This continual involvement signifies a substantial degree of connectedness and contact, which may be beneficial or harmful depending on the context of social media usage.

➤ *Objectives of Social Media Utilization*

The motivations of students for utilizing social media are diverse. Research by [34] indicates that social media fulfills several functions, such as preserving social relationships, providing enjoyment, and acquiring academic information. For several students, social media serves as a principal means of maintaining contact with friends and family, therefore offering emotional support and fostering social connections [35].

Moreover, social media platforms are progressively utilized for scholarly functions. Students employ these platforms to collaborate on projects, disseminate educational information, and participate in academic conversations. Facebook groups and Twitter hashtags focused on certain academic disciplines or courses facilitate information sharing and mutual assistance among students [21]. The efficacy of social media as an educational instrument is contingent upon its integration into the learning process and the quality of interactions on these platforms.

➤ *Influence of Social Media Participation on Academic Achievement*

The influence of social media interaction on academic achievement is a subject of continuous discussion. Certain research indicate that excessive social media usage may adversely impact academic performance by diverting students' attention from their academics and diminishing their total study duration [36]. Students that excessively engage with social media may suffer diminished academic performance due to impaired focus and difficulties in time management [37].

In contrast, many studies emphasize the possible advantages of social media interaction. Social media offers students access to diverse educational resources and collaborative activities that can improve their learning experiences [38]. Social media can cultivate a feeling of community and belonging, perhaps enhancing students' motivation and involvement with their academic pursuits [39].

➤ *Perceptions of Social Media's Influence on Academic Performance*

Students' perspectives regarding the influence of social media on their academic achievement differ. Certain students perceive social media as a beneficial instrument that enhances their learning and facilitates connections with classmates and educators [40]. Conversely, others view it as a distraction that impedes their capacity to concentrate on academic responsibilities and sustain a good study-life equilibrium.

Comprehending these perspectives is essential for formulating methods to handle social media use successfully. Institutions can assist students in utilizing social media to promote, rather than hinder, their academic achievement. Conducting seminars on time management and digital literacy, together with raising awareness of the possible effects of social media, can assist students in managing their online interactions more efficiently [41].

F. Academic Achievement

➤ Definition and Assessment of Academic Achievement

Academic accomplishment denotes the degree to which a student has fulfilled their educational objectives, commonly assessed by grades, test scores, and various markers of academic performance [42]. In technical institutions, where the emphasis is on specialized skills and technical knowledge, academic performance is often evaluated through a combination of coursework grades, practical assignments, project assessments, and final examinations.

➤ Determinants of Academic Success

Academic attainment is affected by several factors, including individual student traits, instructional quality, and external influences like social media. Studies demonstrate that personal characteristics such as motivation, time management, and study habits are essential in influencing academic achievement [30]. Moreover, the caliber of instruction and the resources provided by the educational institution can profoundly influence students' learning results.

➤ Social Media and Academic Success.

Recent research has emphasized the dual impact of social media on academic performance. Social media platforms provide chances for academic involvement, cooperation, and knowledge dissemination. Students can utilize social media to establish study groups, access educational materials, and obtain academic assistance from classmates and professors [43]. Conversely, excessive or improper utilization of social media may result in distractions, diminished study time, and worse academic achievement [44].

➤ Empirical Evidence

[45] conducted a study revealing a negative link between social media usage and students' academic performance, indicating that extensive social media participation may diminish study time and result in worse grades. Research by [46] shown that, when employed strategically, social media may improve academic performance by offering supplementary learning materials and promoting academic cooperation.

➤ Challenges and Opportunities

Technical universities have the problem of reconciling the prospective advantages of social media with its associated concerns. Although social media offers useful educational tools and promotes academic cooperation, it is essential for students to regulate their usage to prevent adverse impacts on their academic performance. Institutions may contribute by offering guidelines for successful social media utilization and including digital literacy into the curriculum to assist students in adeptly navigating these platforms [47]. In conclusion, academic success at technical colleges is a complex phenomenon shaped by several factors, including the utilization of social media. Understanding the dynamics of social media's possible positive and negative effects on academic achievement is crucial for formulating solutions that promote student success. Subsequent study ought to further investigate these links and furnish evidence-based

suggestions for the incorporation of social media in educational environments.

G. Overview of Deficiencies in the Literature

➤ Deficiencies in the Literature Regarding Social Media Engagement and Academic Performance.

Notwithstanding the increasing volume of studies about social media's influence on academic performance, notable deficiencies persist, especially within the framework of technical universities in Ghana. This overview will identify these gaps, utilizing recent literature to demonstrate the necessity for more research.

➤ Limited Emphasis on Technical Universities in Ghana

The majority of research on social media and academic performance has been carried either in Western contexts or inside generic higher education environments. Research pertaining to technical universities in Ghana is limited. For example, research conducted by [48] and [49] examines the influence of social media on academic performance; however, these studies predominantly concentrate on general universities rather than technical schools, which possess unique teaching methodologies and obstacles.

➤ Lack of Longitudinal Studies

Numerous research includes cross-sectional data, illustrating the association between social media usage and academic achievement at a certain moment. There is a conspicuous absence of longitudinal research that monitor temporal changes and the enduring impacts of social media usage on academic achievement. [50] advocate for longitudinal study to comprehensively comprehend the lasting effects of social media on student learning.

➤ Insufficient Consideration of Cultural and Contextual Factors

The influence of social media on academic achievement might range markedly across various cultural and educational settings. Research conducted by [50] underscores the need of acknowledging cultural disparities when assessing the impacts of social media; nevertheless, investigations centered on the Ghanaian setting, especially within technical colleges, are scarce.

➤ Inadequate Examination of Social Media's Dual Function

Although several studies recognize that social media may exert both beneficial and detrimental influences on academic performance, they frequently fail to thoroughly examine the equilibrium of these effects. Recent study by [51] indicates a necessity for more sophisticated studies examining the influence of various social media interactions (e.g., instructional vs recreational) on academic performance.

➤ Insufficient Data on Technical Proficiencies and Performance

Considering that technical institutions emphasize practical skills and applied knowledge, it is essential to comprehend the influence of social media on these particular dimensions. Nevertheless, there is little research investigating the impact of social media on students' technical skill

development and performance. [52] identify a deficiency in comprehending the impact of social media on technical learning outcomes.

Rectifying these deficiencies will yield a more thorough comprehension of social media's function in academic environments, especially within technical universities in Ghana. By concentrating on these neglected domains, forthcoming research can provide more customized recommendations for enhancing student outcomes regarding social media utilization.

III. METHODOLOGY

This research employs a quantitative methodology, employing stratified random sampling to secure a representative sample of students from various strata within technical colleges. The objective is to examine the correlation between social media activity and academic performance among students.

A. Demographics and Sampling

The study population comprises all students enrolled in technical universities, categorized by program type, year of study, and faculty/department. Stratification guarantees that essential subgroups of the population are adequately represented in the sample.

➤ Identify the strata.

The population is categorized according to the following variables:

- Program Category: Higher National Diploma (HND) and Undergraduate Programs.
- Academic Year: Freshman, Sophomore, Junior, etc.
- Faculty/Department: Engineering, Business, ICT, Applied Sciences, etc. Stratification criteria were chosen based on their pertinence to the study aims, providing equitable representation across academic programs and levels.
- Ascertain the Size of Each Stratum Population data from the universities indicates the distribution as follows:
 - ✓ Students enrolled in HND programs: 8,000
 - ✓ Undergraduate Students: 7,000;
 - ✓ Total Population: 15,000 students.

➤ Implement Proportional Allocation:

Proportional allocation was utilized to ascertain the number of participants from each stratum, hence assuring representativeness.

Sample Size for HND Students:

$$\text{Sample Size} = \frac{\text{Population of HND Students}}{\text{Total Population}} \times \text{Total Sample Size}$$

$$\text{Sample Size} = \frac{8,000}{15,000} \times 150 \approx 80$$

Sample Size for Undergraduate Students:

$$\text{Sample Size} = \frac{\text{Population of Undergraduate Students}}{\text{Total Population}} \times \text{Total Sample Size}$$

$$\text{Sample Size} = \frac{7,000}{15,000} \times 150 \approx 70$$

The entire sample size comprises 150 students.

B. Data Collection

Data is collected using a standardized questionnaire aimed at assessing social media involvement, encompassing frequency and platform use, as well as academic performance through self-reported GPAs. The survey is administered both online and in-person to guarantee accessibility and inclusion among a representative sample.

C. Data Analysis

Statistical techniques, including descriptive statistics, correlation analysis, and regression analysis, are employed to summarize data, investigate correlations, and forecast the influence of social media activity on academic achievement. This guarantees a comprehensive comprehension of patterns and impacts.

D. Ethical Considerations

Participants grant informed consent, and their identities and confidentiality are preserved. Ethical approval is secured to guarantee adherence to study standards and safeguard participant rights. This methodology guarantees strong, dependable results while honoring participation.

IV. RESULTS

Presented below are the response representations derived from the survey data:

A. Demographic Information

The gender distribution of the 150 respondents is balanced, with 80% identifying as male and 70% as female. This equitable representation facilitates an impartial evaluation of gender-related disparities in social media utilization and academic achievement in future investigations.

The survey results exhibit a varied distribution across age demographics, 40% of respondents belong to the 18–22 age bracket, a population commonly associated with undergraduate students. Subsequently, 30% pertains to the 23–27 age demographic, presumably including graduate students or young professionals pursuing further education. Significantly, a smaller proportion of respondents are in the Below 18 (13.3%) and Above 32 (6.7%) categories, reflecting less participation from younger high school students and older adult learners. This distribution corresponds with the intended demography of technical university students, offering a pertinent framework for examining the influence of social media on academic performance.

The data reveals a wide range among academic programs and levels indicated a modest yet significant fraction of graduate students. The diminished percentages for HND III, BTech III, and BTech IV indicate a reduced number of respondents approaching the culmination of their

academic pursuits, maybe attributable to survey reach constraints or demographic factors.

This table establishes a basis for examining the impact of academic level on social media usage habits and academic achievement.

➤ Faculty of Academic Discipline

The data indicates a significant presence from the Faculty of Engineering (33.3%), highlighting the technical emphasis of the survey population. The Faculty of Business and the Faculty of Applied Sciences each account for 20% of replies, indicating equitable engagement across several specialties. The Graduate

School constitutes a little fraction (10%), corresponding with the diminished representation of postgraduate students noted in previous inquiries. Respondents from other faculties and Applied Arts constitute 16.6%, indicating specialized or underrepresented subjects. The varied faculty distribution offers a thorough foundation for analyzing the correlation between social media and academic achievement across different disciplines.

➤ Frequently Utilized Social Media Platforms

In Table 1-Q1, WhatsApp is the most utilized platform (93.3%), perhaps owing to its adaptability in enabling group interactions and academic partnerships. YouTube is closely followed at 86.7%, indicating its effectiveness as a resource for educational information and lessons. Platforms such as Facebook (60%), Instagram (46.7%), and Telegram (53.3%) exhibit substantial usage, reflecting varied preferences among

students. Notably, LinkedIn (26.7%) has comparatively lesser usage, possibly attributable to its professional orientation, which may not resonate uniformly across all student demographics. TikTok and Snapchat, recognized for their entertainment value, exhibit moderate participation, indicating that not all students utilize social media only for academic objectives.

➤ Frequency of Social Media Engagement

Table 1-Q2, A plurality of respondents (33.3%) uses their social media accounts 3–5 times daily, indicating a moderate degree of participation. Simultaneously, 26.7% of students use their accounts 6–10 times or more than 10 times per day, indicating a considerable segment engaged in extensive social media engagement. A minority (13.3%) accesses social media just once or twice daily, suggesting limited reliance or selective engagement. These patterns will facilitate the examination of relationships between usage frequency and academic achievement.

➤ Daily Hours Allocated to Social Media

A significant percentage (table 1-Q3) of respondents (33.3%) allocate 3–4 hours each day to social media, indicative of moderate consumption. Approximately 20% and 13.3% allocate 5–6 hours and over 6 hours, respectively, signifying substantial participation. At the lower end, 26.7% utilize social media for 1–2 hours, and just 6.7% indicate usage of less than 1 hour every day. The data in table 1-Q3, indicate that most students allocate considerable time to social media, potentially affecting their academic concentration and production.

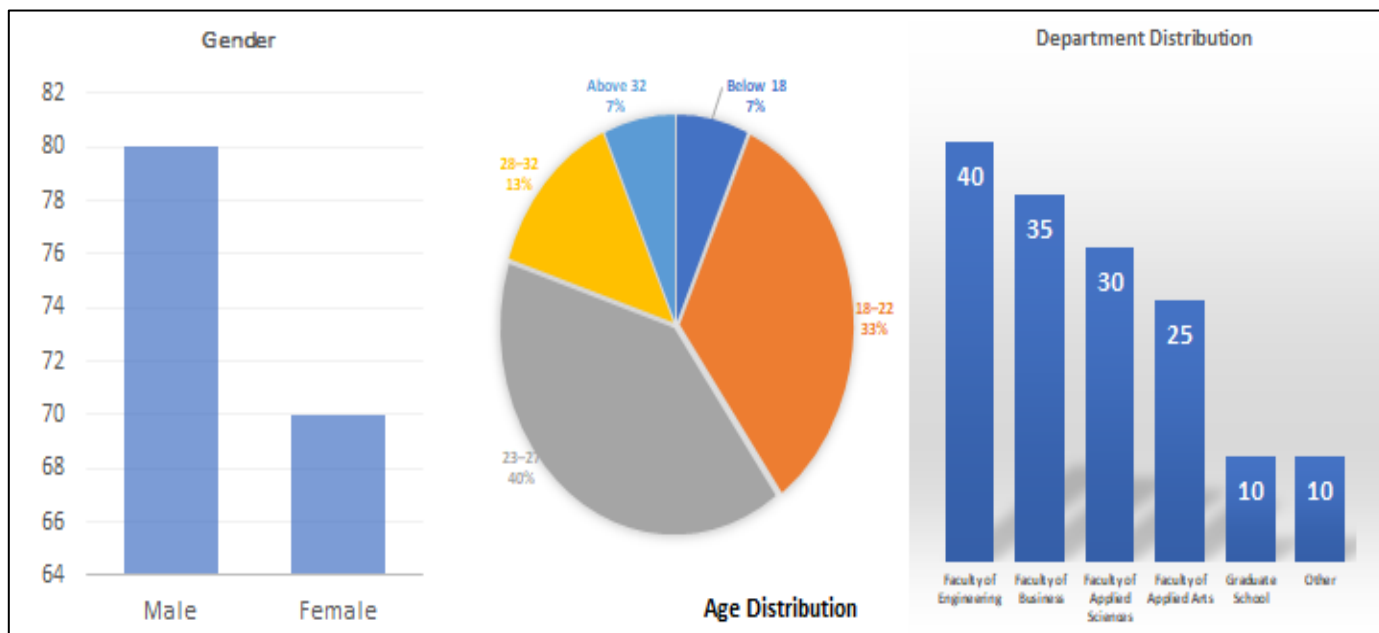


Fig. 3: Gender, Age and Departmental Distributions

Table 1: Consolidated Tables for Questions 1 – 6

Table 1: Consolidated Tables for Questions 1 – 6						
Q 1: Social Media Platforms Used Regularly			Q 4: Time of Day for Social Media Use			
Platform	Frequency	Percentage		Time of Day	Frequency	Percentage
Facebook	90	60.0%		Early Morning	10	6.7%
Instagram	70	46.7%		Afternoon	30	20.0%
Twitter/X	50	33.3%		Evening	70	46.7%
WhatsApp	140	93.3%		Late Night	30	20.0%
LinkedIn	40	26.7%		All Day	10	6.7%
TikTok	60	40.0%				
Snapchat	30	20.0%	Q 5: Main Purpose of Social Media Usage			
Telegram	80	53.3%		Purpose	Frequency	Percentage
YouTube	130	86.7%		Socializing	90	60.0%
Other	10	6.7%		Entertainment	80	53.3%
Q 2: Social Media Checking Frequency				Educational	100	66.7%
Frequency	Frequency	Percentage		News and Updates	70	46.7%
Once or twice	20	13.3%		Job Opportunities	30	20.0%
3–5 times	50	33.3%		Other	10	6.7%
6–10 times	40	26.7%				
More than 10	40	26.7%	Q 6: Impact on Study Habits			
Q 3: Hours Spent on Social Media				Impact Frequency	Frequency	Percentage
Hours Spent	Frequency	Percentage		Always	20	13.3%
Less than 1 hour	10	6.7%		Often	40	26.7%
1–2 hours	40	26.7%		Sometimes	50	33.3%
3–4 hours	50	33.3%		Rarely	30	20.0%
5–6 hours	30	20.0%		Never	10	6.7%
More than 6 hours	20	13.3%				

A majority of respondents (46.7%) as indicated in table 1, Q4, like utilizing social media throughout the evening, perhaps aligning with their leisure period post-classes. Afternoon and late-night usage are equally important, each constituting 20%, indicating varying preferences according to

schedules. A few (6.7%) engage with social media throughout the day, potentially indicating multitasking behaviors. The low participation in the early morning (6.7%) is anticipated owing to academic obligations at that hour.

Table 2: Social Media Usage Patterns: Social Media and Academic Performance, General Perceptions and Recommendations. Responses for Questions 11–23)

Question	Mean Score	Key Interpretation
Use of social media for academic purposes	4.2	High agreement
Staying informed about class activities	4.0	High agreement
Collaboration with classmates	3.8	Moderate to high agreement
Social media distracts from studies	4.3	Strong agreement
Affects concentration during study time	4.1	High agreement
Finds useful educational resources	4.0	High agreement
Late-night usage disrupts study routine	3.9	Moderate to high agreement
Social media groups aid academic growth	4.2	High agreement
Time spent on social media impacts academics	4.0	High agreement
Overlaps with study hours	4.1	High agreement
Anxiety from not checking social media	3.7	Moderate agreement
Access to academic resources via social media	4.3	Strong agreement
Belief that academic performance would improve with less social media use	4.4	Strong agreement

➤ *Primary Objectives of Social Media Utilization*

In table 1-Q5, the primary reason for social media utilization is educational (66.7%), signifying that students employ these platforms for collaborative projects, research, and academic information. Socializing (60%) and entertainment (53.3%) significantly contribute, indicating a harmonious blend of productivity and relaxation. A significant percentage (46.7%) using social media for news and updates, but a lesser fraction (20%) seeks career prospects, perhaps among upper-level or graduate students.

➤ *Influence on Study Practices*

Table 1-Q6 showed that a significant percentage of students indicate that social media occasionally (33.3%) or frequently (26.7%) influences their study habits, underscoring a complex connection. Responses indicating "rarely" (20%) and "never" (6.7%) suggest that not all students perceive social media as a distraction. Nonetheless, 13.3% of students state that social media consistently influences their study habits, highlighting a possible obstacle to good time management.

B. Social Media Usage Patterns: Social Media and Academic Performance, General Perceptions and Recommendations

These investigations (Table 2) assess several dimensions of social media's impact on academic achievement utilizing a 5-point Likert scale (1 = Strongly Disagree, 5 = Strongly Agree). This, table 2 summarizes the replies of 150 participants.

➤ *Significant Academic Utility:*

A majority of students concur that social media facilitates academic endeavors (Q11: Mean = 4.2, Q12: Mean = 4.0, Q18: Mean = 4.2), including collaboration with peers and retrieval of academic resources (Q22: Mean = 4.3). This highlights its beneficial function as an academic resource center.

➤ *Concerns Regarding Distraction:*

Responses demonstrate significant consensus on the detrimental impacts of social media, including distraction from academic pursuits (Q14: Mean = 4.3), diminished focus (Q15: Mean = 4.1), and interference with study hours (Q20: Mean = 4.1). Late-night usage was seen as somewhat disruptive (Q17: Mean = 3.9).

➤ *Social Media Dependence:*

A moderate level of agreement was noted for anxiety associated with not monitoring social media (Q21: Mean = 3.7). This indicates that certain students encounter stress associated with their social media usage.

➤ *Potential for Enhancement:*

A significant consensus (Q23: Mean = 4.4) indicates students' conviction that diminishing social media engagement may beneficially influence academic achievement. This discovery underscores prospects for enhanced time management solutions.

This detailed table (2) elucidates the advantages and disadvantages of social media use in academic settings, presenting a nuanced comprehension of its dual function as both a facilitator and a distraction.

V. DISCUSSION

A. Demographic Information and Social Media Trends

➤ *Gender Demographics*

The nearly equitable gender distribution among respondents guarantees fair representation, establishing a basis for examining gender-specific patterns in social media utilization and academic performance. This equilibrium eradicates gender bias and facilitates broader insights on time management, platform preferences, and the academic effects of social media.

➤ *Age Demographics*

The age distribution primarily represents the standard demography of technical university students, suggests that the results predominantly pertain to younger learners, which is consistent with the institution's educational background.

➤ *Curriculum and Competency Levels*

The findings indicate significant involvement from BTech students and HND students as well as postgraduate (MTech). This distribution provides an inclusive representation of both novice and advanced learners, facilitating a nuanced comprehension of how academic levels affect social media activities. Nevertheless, the negligible contribution from final-year students BTech IV, signifies a deficiency in obtaining perspectives from this cohort, which may restrict the study's thoroughness concerning their experiences.

➤ *Scholarly Divisions*

The majority of respondents are from the Faculty of Engineering, aligning with the institution's emphasis on technology. Other faculties, including Business and Applied Sciences, have significant involvement. The Graduate School's presence enhances the study by incorporating postgraduate viewpoints. This varied faculty representation enables an analysis of how academic fields influence platform choices and the academic value of social media.

B. Commonly Used Social Media Platforms Preferences and Usage Trends

WhatsApp and YouTube are identified as the most frequently used platforms, owing to their versatility for educational and leisure activities. The group communication capabilities of WhatsApp and the accessibility of instructional information on YouTube are essential elements. Platforms such as Facebook and Telegram exhibit substantial utilization, presumably owing to their resource-sharing functionalities. The very low utilization of LinkedIn underscores students' preference for social and academic engagements over professional networking.

➤ *Frequency of Engagement and Time Commitment*

Daily engagement levels are significantly up, with users visiting their accounts over five times each day. Time allocated to social media is notably substantial, investing 3–4 hours every day and an additional surpassing 5 hours. This substantial usage signifies a significant reliance, although it prompts worries regarding its effects on academic concentration and production. Late-night usage raises further worries about its possible effects on sleep habits and academic performance.

➤ *Objectives of Social Media Utilization*

Although students using social media for educational objectives, social interaction and enjoyment are also substantial motivators. This dual-purpose application highlights the difficulty of reconciling academic and non-academic pursuits. The influence of social media on study habits is apparent, indicating regular or persistent interruptions therefore, emphasizing the necessity for methods to alleviate distractions.

C. *Social Media and Scholarly Success*

➤ *Scholarly Utility*

Social media has a distinct academic advantage, with a robust agreement about its application for study and the distribution of materials. Platforms significantly improve awareness of class activities and facilitate peer cooperation, confirming their efficacy as educational instruments. Nevertheless, these benefits are contrasted with obstacles, especially with concentration and time management.

➤ *Subversive Impact*

The disruptive impact of social media is apparent, with considerable agreement on its ability to distract and reduce concentration. Late-night usage and its disruption of study hours underscore these problems. These findings underscore the necessity for intentional methods to enhance the academic utilization of social media while reducing distractions.

D. *Psychological Factors and Dependency*

A moderate degree of reliance is evidenced by students expressing concern or distraction when detached from social media. This psychological dependence may intensify its negative impact on academic focus and highlights the necessity of promoting better usage practices.

➤ *Possibility for Enhancement*

Students recognize the potential advantages of diminished social media usage suggesting that students feel that restricting their time on these platforms will improve academic achievement. This self-awareness provides an opportunity for interventions aimed at time management, prioritizing educational resources, and setting usage limits.

The results underscore the dual use of social media in academic contexts. Although it functions as an essential instrument for education and cooperation, its capacity to distract and disrupt concentration must not be overlooked. To optimize advantages and mitigate disadvantages, students

must use tailored tactics, such as establishing limits, managing time efficiently, and selecting platforms that correspond with their academic objectives. Institutions may contribute by cultivating digital literacy and encouraging equitable social media engagement.

VI. SUGGESTIONS

According to the data, the following are adapted ways for maximizing social media utilization among students to improve academic performance:

➤ *Advocate for Time Management Techniques:*

Urge students to designate distinct intervals for social media use, particularly during breaks or leisure time, to prevent conflicts with study sessions. Once more, promote the utilization of applications such as timers or screen time monitors to curtail excessive usage.

➤ *Utilize Academic Resources:*

Universities and educators should include social media platforms into educational settings. Establishing course-specific WhatsApp or Telegram groups helps enhance conversations and resource dissemination. Furthermore, advocate for the utilization of sites such as YouTube for instructional lessons and LinkedIn for professional advancement.

➤ *Mitigate Distraction Challenges:*

Conduct seminars aimed at diminishing digital distractions and enhancing concentration during study periods. Advise students to establish personal boundaries on late-night usage to enhance sleep quality and productivity.

➤ *Mitigate Dependency and Anxiety:*

Offer resources for cultivating healthy digital habits, including mindfulness techniques to diminish anxiety stemming from excessive social media usage. Additionally, promote "digital detox" intervals during examinations or intense academic times.

➤ *Enhance Awareness of Social Media's Dual Function:*

Instruct students on the beneficial and detrimental effects of social media, promoting a balanced viewpoint. Present success narratives of students who proficiently utilize social media for academic advancement while maintaining concentration.

VII. CONCLUSION

This study examines the correlation between social media activity and academic achievement among students in technical universities. The report, derived from survey responses of 150 participants, delineates significant trends, advantages, and obstacles related to social media utilization in academic settings. The principal findings are as follows:

➤ *Demographic Overview:*

Respondents are evenly distributed by gender and primarily belong to the 18–27 age range, consistent with the demographic profile of university students. Participation

among academic levels and faculties is evenly dispersed, with significant presence from engineering and business fields.

➤ *Social Media Usage Patterns:*

Elevated Engagement: Platforms such as WhatsApp and YouTube prevail in usage for both scholarly and non-scholarly objectives. **Substantial Time Commitment:** 60% of students access social media over five times each day, with many individuals dedicating 3 to 4 hours or more daily. **Varied Functions:** Social media functions as a medium for education, social interaction, and amusement, illustrating its complex significance in students' lives.

➤ *Influence on Academic Practices:*

Although social media facilitates academic endeavors (such as collaborative projects and resource accessibility), it concurrently presents distractions, with 60% indicating that it frequently or consistently disrupts their study routines.

➤ *Recognized Academic Impact:*

Students acknowledge the advantages of social media for educational reasons, including remaining informed and obtaining learning resources. Nonetheless, they also recognize its adverse impacts, such as diminished attention and conflicting study schedules.

➤ *Potential for Enhancement:*

A significant number of individuals contend that diminishing social media engagement would enhance their academic achievement, underscoring the necessity for effective techniques to achieve a balanced usage. The results highlight the dual role of social media in academic life. Although it is an essential tool for collaboration, research, and communication, its capacity to distract and disturb study habits must not be overlooked. By using focused tactics, students may enhance their social media utilization, capitalizing on its advantages while mitigating its disadvantages.

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