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How Does Social Media Effect on Students' Health and Academic Performance Using Principal Component Analysis (PCA): Case Study of SIMAD University

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ABSTRACT

In today's digital age, the pervasive influence of social media is undeniable, with over 5 billion people globally connected to various platforms. Against this backdrop, this study delves into the causal relationship between social media usage, student health, and academic performance, focusing specifically on SIMAD University students in Somalia. Its primary objective is to comprehensively examine how social media impacts students' physical and mental well-being and their educational achievements. Employing a quantitative research approach and the data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) software, version 27. The significance level was set at α=0.05. the study utilizes Rifhd regression analysis and principal component analysis (PCA) to analyze primary data collected through a meticulously designed questionnaire administered to a randomly selected sample of stakeholders. The findings significantly highlight the connection between social media usage patterns and both student health and academic outcomes. Notably, the computed model demonstrates that even minor adjustments in the distribution of social media usage, student performance, and student health yield marginal increases, albeit with positive yet negligible values of 0.002 and 0.098, respectively. In conclusion, the study underscores the importance of self-regulation in social media usage among students, as higher levels of self-regulation are associated with improved mental well-being and enhanced academic performance.

1. INTRODUCTION

Social media (SM) has become an indispensable component of daily existence for numerous individuals, especially the youth. Social media websites are digital platforms that facilitate the connection of individuals both locally and globally, serving as a means to foster interpersonal interactions. The global number of social media users reached 3.2 billion in 2018, with an annual growth rate of up to 13%. It is projected that by 2020, around 5 billion individuals will be linked to social media platforms (Social Media Week). Adolescents and young adults employ technology in novel and inventive ways. Although they are at the developmental stage of their lives, they exhibit distinct patterns of thinking, working, and communication compared to previous generations. Nevertheless, the utilization of social media platforms has resulted in a significant number of contemporary young individuals developing a dependency on technology and experiencing social isolation [1, 2]. Without a doubt, technical and mobile devices possess favorable attributes and greatly facilitate several parts of individuals' lives [3]. The utilization of social media by students can facilitate expedient access to essential information for their academic pursuits. Excessive utilization of social media can lead to issues such as ocular strain, exhaustion, insufficient physical exercise, diminished focus, and sleep disturbances [4, 5]. Moreover, there exists a positive correlation between the amount of time individuals allocate to social media usage and their susceptibility to mental health disorders. These diseases encompass a range of significant concerns, including diminished self-esteem, eating disorders, anxiety, feelings of inferiority, and impaired concentration [6]. Adolescents who are raised in an era of technology rely on social media platforms to engage with others, resulting in a decrease in in-person interpersonal communication. Nevertheless, virtual contacts fail to impart effective social and communication skills, and the absence of in-person interactions can result in issues such as social isolation, depressive symptoms, and various mental diseases.

Social media is a useful method of communication but may be harmful to health. Social media has 'pros and cons,' but the effect depends on the individual's use of these platforms [7]. A recent study found that although students felt competent using social media platforms for academic purposes, they did not have the desire or willingness to do so; however, students with more self-regulation were better able to control social media use [6]. Another study reported that academic performance was a function of attention span, time management skills, student characteristics, academic competence, and time spent on online social networking [8]. Research suggests that college students who socialize rather than for academic pursuits mainly use social media, and the time spent on social media takes time from studying [9].

Yahaya [10] reported that addicted users of social media platforms (e.g., Facebook, WhatsApp) often devoted less time to their studies compared with non-users and subsequently had lower grade point averages [11]. That study also reported that social media use was negatively associated with students' academic performance, with this association being much more reliable than the advantages derived from using social media platforms. Another study argued that social networks divert students' attention and concentration from learning and redirect them towards non-educational activities (e.g., unnecessary chatting) [11, 12]. Previous studies have also found that social media may affect students' attention, span, memory, sleep, vision, and overall physical, mental, and social health [13]. A recent study confirmed that unnecessary use of social media platforms affected students' psychological and physical health and found that students often did not have their meals on time or get proper rest [14].

Social networking sites (SNS) experienced swift and widespread appeal in reaction to the rise and growth of the Internet. Currently, these sites are predominantly used for communication and the dissemination of information. The user population on these social networking sites (SNS) has undergone a quick and substantial expansion. Social networking sites (SNS) are frequently known as social media [15]. Social media (SM) is widely employed for the distribution of content, fostering discussions, promoting businesses, and reaping benefits over traditional media. Technology is crucial for augmenting the security and dependability of social media platforms [16]. As of January 2022, the worldwide Internet user population surpassed 4.95 billion, with over 4.62 billion actively participating in social media platforms [17]. As of January 2022, the number of internet users in India has reached 680 million, out of whom 487 million are actively engaged in using social media platforms [18].

As per the Statista Research Department [19], YouTube and Facebook are the dominant social media platforms in India. YouTube boasts a user population of 467 million, while Facebook has a somewhat smaller user count of 329 million. Research indicates that while individuals of various age groups utilize social media platforms for connecting and communicating with friends, young people, specifically students, exhibit a pronounced inclination towards these websites. Laura et al. [20] extensively employ social media (SM) for both personal and academic reasons. Furthermore, social media (SM) has played a role in the increased popularity of other online platforms like Microsoft Teams, Zoom, and Google Meet. Over the past two years, these platforms have gained popularity as preferred options for hosting virtual meetings, webinars, and online lectures. Amidst the outbreak, these platforms were widely employed worldwide to disseminate and promote knowledge among the target user population. Facebook, YouTube, Instagram, WhatsApp, and blogs are easily accessible social media platforms that function as communication channels for both public and private groups. Originally, social media platforms were developed to facilitate communication between individuals and their acquaintances and relatives. Gradually, these platforms have transformed into essential teaching tools for pupils [21]. Dzogbenuku et al. [21] assert that various educational communities employ social media platforms to enhance the process of teaching and learning. The integration of social media (SM) in educational environments has both advantages and disadvantages. Social media possesses the capacity to augment academic performance, although it can also divert students from their educational pursuits and engross them in non-academic endeavors [22].

Rahman et al. [6] investigate the influence of social media utilization on the welfare and academic accomplishments of students enrolled at the University of Sharjah. The study concluded that the utilization of social media has a noticeable effect on the academic achievement and well-being of students enrolled at the University of Sharjah. Considering the detrimental consequences of excessive social media consumption, it is crucial for universities to implement awareness campaigns and incorporate this topic into health education and awareness curricula. The objective of this study is to incorporate a causal effect model like RIFs (recentered influence functions) to examine the social media effect on the health and academic performance of students, which is the novelty of this research, and this model was not applied in the previous related studies to the best of my knowledge.

However, due to contextual factors, the direct relevance of these worldwide and Indian data to the situation at SIMAD University in Somalia may be restricted [23]. Similar to many other developing nations, social media usage and internet penetration have increased recently in Somalia. Although there may not be much precise data on social media usage in Somalia [24], anecdotal evidence points to a rising reliance on Facebook, Twitter, and Instagram among young Somalis for social contact, communication, and information sharing [25]. In addition, students face both opportunities and challenges as a result of social media's inclusion in academic environments, including institutions like SIMAD. The goal is to offer insights that are unique to the Somali setting on how social media affects academic performance and health by concentrating on students at SIMAD University. Comprehending the impact of social media on Somalian pupils is vital in order to devise focused treatments and tactics that foster favorable results in both academic and health-related areas.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

The emergence of social media platforms in the last decade has resulted in a substantial revolution in the online domain. People of all age groups are using social media platforms more and more to share their own stories, feelings, multimedia content, and different types of public information at a rapidly expanding rate [1, 6, 26]. Adolescents, specifically individuals aged 16 to 24, eagerly embraced social media platforms as a way to interact with their peers and family members, exchange information, and showcase their social status [15]. Using social media platforms in academia provides a multitude of advantages. Social networking platforms offer a fun method for students to maintain connections with their peers and professors, which helps in the acquisition of knowledge [27]. Social media enhances communication between professors and students by minimizing ambiguity and misinterpretation, eventually improving students' academic accomplishments [28].

Massive open online courses (MOOCs) have gained popularity since 2020 as a result of the COVID-19 pandemic [29]. MOOCs are typically offered at no cost and are accessible to anybody who wishes to enroll online. Several prestigious colleges offer their courses on the MOOC platform, allowing students to engage in flexible learning. Students find

them valuable for augmenting their knowledge base and facilitating job advancement. Several independent universities have formed partnerships with MOOC platforms and integrated these courses into their academic programs [30]. Besides, Rahman et al. [6] conducted a study to investigate the impact of social media usage on the well-being and scholastic achievements of students enrolled at the University of Sharjah. The study determined that social media usage had a discernible impact on the academic performance and health of University of Sharjah students. Given the adverse effects of excessive social media usage, it is imperative for colleges to establish awareness initiatives and include this subject in health education and awareness curricula.

Using social media for educational purposes has the capacity to improve academic performance, but it is crucial to recognize the associated challenges [31]. Integrating social media into academic environments may lead to students engaging in non-academic conversations as well [32]. The main reason for this diversion is its intentional design as a social networking tool [33]. Englander et al. [34] argue that the utilization of social media in academia yields a greater number of detrimental consequences compared to favorable outcomes. Social media has a significant negative impact on a student's academic achievement. Research conducted by Nalwa and Anand [35] indicates that students who are engaged in higher education are more likely to experience a greater occurrence of social media addiction, which in turn has a detrimental effect on their academic achievements. Facebook users exhibited inferior academic achievement compared to nonusers or users of other social media platforms within the social media user population. As per the findings of Kirschner and Karpinski [36], Facebook is the primary source of diversion for pupils. However, alternative research contradicts these findings and argues that students really benefit from participating in chat chats [37], as it improves their vocabulary and writing skills [38]. Social media possesses the capacity to either augment academic performance or significantly impede it. The result depends on how the students utilize it. Hence, the goal of this study is to examine the impact of social media on the well-being and academic achievement of students, utilizing a causal effect model such as Recentered Influence Functions (RIFs), which was not applied in the previous study.

Al-Rahmi et al. [39] contribute to the discourse on social media's role in contemporary higher education by emphasizing the importance of constructivist learning and task-technology fit in enhancing student satisfaction and performance. Their study underscores the need for collaborative learning opportunities, easy access to social media, and aligned performance expectations to maximize educational quality. Notably, while actual social media use predicts student performance, it surprisingly doesn't directly influence student satisfaction.

Safeer and Awan [40] underscore the importance of addressing the adverse effects of excessive social media use on students' academic success. By identifying usage patterns influenced by geography and gender, the study emphasizes the need for targeted interventions to counteract social media's negative impact on learning outcomes.

Adhikari [26] explores the widespread use of social media, particularly among youth, and its swift adoption by institutions for communication. While acknowledging its benefits in fostering global connections and cost-effective communication, the paper raises concerns about its negative effects on students, including time and energy waste. The study assesses the impact of social media specifically on Navodit College students, employing both qualitative and quantitative research methods.

Sharma and Behl [41] explore the transformative impact of technology in education, particularly focusing on how social media affects students' academic performance based on their extraversion and introversion personalities. Their study also examines the differences between postgraduate and undergraduate students, as well as gender disparities. They begin by identifying factors influencing academic performance through social media and developing a scale specifically validated for the Indian context. Data from 408 students, including 202 males and 206 females, is analyzed, with 234 in postgraduate and 174 in undergraduate programs. Using one-way ANOVA, the research uncovers significant variations between extraversion and introversion students in terms of social media's impact on academic performance, offering insights into the complex interplay between personality traits and technology usage in educational settings.

We can therefore develop a hypothesis in this regard as follows:

H1: Social media is significantly connected with a student's health and academic performance.

3. METHODOLOGY

3.1 Research design

The study employs a causal research methodology to examine the impact of social media on the health and academic performance of students. In order to elucidate the relationships between the factors, this study also concentrates on analysing a specific situation. Alternatively, while causality may be deduced, it cannot be definitively demonstrated with a high level of assurance. In addition, the causal research study is considered ideal for the objectives of this investigation since it allows for an investigation of the impact of social media on students' health and academic performance.

3.2 Sample size determination and sampling technique

The sample size will be calculated using Fisher's formula for calculating minimum sample size for this study as follows:

$$N = \frac{Z^2 P(1-P)}{d^2}$$

where, N=Minimum sample size; Z=Standard normal deviation at 95% level of confidence=1.96; P=Assumed population proportion=0.5; d=Tolerance margin of error=0.05.

Therefore,

$$N = \frac{(1.96)^2\,(0.5)(0.5)}{(0.05)^2}$$

N=384.16 approximately=384

In order to enhance the accuracy and precision of the study, the sample size of the participants will be expanded to 385. This will be accomplished by distributing 385 questionnaires to the target stakeholders, specifically, the students of SIMAD University in Somalia, using purposive sampling.

3.3 Questionnaire design

The questionnaire covers various aspects related to social media usage, including the frequency and duration of usage, preferred platforms, reasons for usage, perceived impact on academic performance and health, and behaviors related to social media use. Demographic information such as gender, age, academic year, and CGPA (Cumulative Grade Point Average) is also collected to understand the characteristics of the respondents. Likert scale items are used to measure participants' agreement or disagreement with statements related to the impact of social media on academic performance, health, and other aspects. Before distributing the questionnaire to the target sample, a pre-test was conducted with a small group of individuals, representing a diverse range of characteristics similar to the target population. The purpose of the pre-test was to assess the clarity, comprehensibility, and relevance of the questionnaire items. Feedback from pre-test participants was used to refine and finalize the questionnaire, ensuring that it effectively captured the intended information and aligned with the research questions. Content validity of the questionnaire was assessed by subject matter experts, including researchers familiar with social media usage and its impact on academic performance and health. Face validity was also evaluated to ensure that the questionnaire appeared relevant and appropriate to the target respondents. The questionnaire was reviewed to ensure that it covered all relevant dimensions of social media usage and its potential effects on students' academic performance and health.

3.4 Method of data analysis

The acquired primary data was analysed using quantitative research methods, specifically employing a regression model. The primary data for this study was collected by administering a questionnaire to randomly selected stakeholders, ensuring that there is no compulsion involved, in accordance with ethical research considerations. Meanwhile, the demographic profile of the respondents was examined using the techniques of frequency and percentage analysis. The study utilised frequencies and percentages to depict the characteristics of the respondents as derived from the survey questions. The principal component analysis was also applied as a variable reduction technique to identify the construct items that are very crucial and the ones that are less important. The data analysis was conducted using the Statistical Package for the Social Sciences (SPSS) software, version 27. The significance level was set at $\alpha = 0.05$.

3.5 Principal component analysis (PCA)

PCA is a dimensionality reduction technique used to identify patterns in multivariate data by transforming the original variables into a new set of uncorrelated variables called principal components. The mathematical model for PCA involves the following steps:

Standardization: Standardize the data to have a mean of 0 and a standard deviation of 1 to ensure that all variables contribute equally to the analysis.

Compute the Covariance Matrix: Calculate the covariance matrix of the standardized data to understand the relationships between variables.

Eigenvalue Decomposition: Perform eigenvalue decomposition on the covariance matrix to obtain the eigenvectors and eigenvalues.

Eigenvectors: These represent the directions or principal components of the data.

Eigenvalues: These indicate the variance explained by each principal component.

Select Principal Components: Sort the eigenvalues in descending order and select the top k eigenvectors corresponding to the largest eigenvalues to retain the most important components.

Transform Data: Project the original data onto the new principal component space defined by the selected eigenvectors.

PCA can be represented mathematically as follows:

Given a dataset X consisting of n observations and p variables, where X is an n × p matrix, PCA aims to find a transformation matrix W such that the transformed data Z is given by:

$$Z=XW$$

where, Z is the n × k matrix of principal components; W is the p × k matrix of eigenvectors; k is the number of principal components selected.

The eigenvalue decomposition of the covariance matrix Σ of X is given by:

$$\Sigma=VWV^T$$

where, V is the matrix of eigenvectors; W is the diagonal matrix of eigenvalues.

The principal components are then obtained by multiplying the original data X by the matrix of eigenvectors V:

$$Z=XV$$

PCA helps in reducing the dimensionality of the data while retaining most of its variance, making it easier to interpret and visualize complex datasets.

3.5.1 RIF regression: Rifhdreg

According to Rios-Avila [42], Rifhdreg is an extension of RIFs (Recentered influence functions) with robustness against outliers and provides a simple framework for analyzing the impact of changes in the distribution of X's on distribution statistics at margin which can be used to fit a linear model to capture how small changes in the distribution of the independent variables X affect v(Fy) and therefore has slight changes in the interpretation of the coefficient which is different from OLS regression.

The model can be specified mathematically with an equation as follows:

$$RIF = \{y, v(Fy)\} = x\beta + \varepsilon_i, E(\varepsilon_i) = 0$$

where, v(Fy) is the response variables which is the students' academic performance while X's is the small changes in the distribution of the independent variables identified as the social media, student health and socio-demographic factors and the β is the coefficient estimate of X's while the εi is the stochastic error term. Similarly, the same model estimation is estimated with the response variable as student's health and the independent variables as social media, academic performance and socio-demographic variables.

3.5.2 Principles of Rifhdreg model

Recentered Influence Functions (RIFs): RIFs are statistical metrics employed to evaluate the impact of independent variable modifications on distribution statistics. They offer a versatile methodology for examining causal connections and exhibit resilience in the face of outliers.

Causal inference: Causal inference is facilitated through the utilisation of the Rifhdreg model [42], which computes the effect of alterations in student health and social media utilisation on academic achievement. The ability of researchers to isolate the causal effect of social media on student outcomes is achieved through the control of confounding variables.

Robustness: The Rifhdreg model is appropriate for analysing complex relationships in real-world data due to its resistance to outliers and deviations from normality.

3.5.3 Justification for selecting the Rifhdreg model

The Rifhdreg model was selected due to its capacity to offer valuable insights regarding the causal connection that exists among student health, academic performance, and social media usage. Rifhdreg, in contrast to conventional regression models, provides robustness against outliers and deviations from normality, rendering it well-suited for examining the intricate and multifaceted effects of social media on student outcomes. Furthermore, causal inference is facilitated by the model, which empowers researchers to deduce the reasons behind the correlation between social media usage and health outcomes and academic achievement [5].

4. RESULTS

Table 1 shows that gender of the students under study consist of 233 males representing 60.5% and 152 females representing 39.5%, the students age group categories that is within 17-20 years are 181 representing 47%, those within 21-24 years are also 181 representing 47%, those within 25-28 years are 20 representing 5.2%, the student within 29-32 years is just 1 representing 0.3%, and the students above 32 years are 2 representing 0.5%, the students in the 1st year are 103 representing 26.8%, students in the 2nd year are 74 representing 19.2%, the students in the 3rd year are 117 representing 30.4% and those in the 4th year are 91 representing 23.6%, the students with semester CGPA less than 1.66 are 39 representing 10.1%, those with CGPA within 1.67-2.66 are 72 representing 18.7%, those with CGPA within 2.67-3.66 are 168 representing 43.6% and those with CGPA within 3.67-4.00 are 106 representing 27.5%, the students that spend less than 1hour on social media networking sites are 52 representing 13.5%, those that spend above 4hours on social networking sites are 81 representing 21%, those that spend within 1-2hours on social networking sites are 134 representing 34.8%, and the students that spend within 3-4hours on social networking sites are 118 representing 30.6%, the students investigated under study who feel that social media network sites had negative effect on academic performance are 51 representing 13.2%, those who believe that social had no effect on students' performance are 95 representing 24.7%, those who feel social media had positive effect on students' academic performance are 138 representing 35.8% (majority), those students who feel social media had a very negative effect on academic performance are 23 representing 6% and those students who feel that social media had a very positive effect on academic performance are 78 representing 20.3%. Meanwhile, gender on average is 1.39 with a variability of 0.49, age categories on average are 1.60 with a variability of 0.65, the average of the student's year of study is 2.51 with a variability of 1.12, the student's CGPA on the average is 2.89 with variability of about 0.93, the average hours students spend on social media sites are about 3 hours with a variability of about 1.01 hours, and the average number of students who feel social media network sites have an effect on their grade or performance is 2.95 with a variability of about 1.28.

Note: Only items that are greater or equal to 0.5 are left in the communalities and they represent construct that are valid.

Table 2 shows that all the items have communalities with extraction above 0.5, indicating that the construct items are valid and therefore measure what they are designed to measure.

Table 3 shows that the first four construct items have eigen value above 1 which indicate that they are the most crucial or important items while the other three with eigen value less than 1 are the least important items. Meanwhile, the % of variance of the item with the highest eigen value is 22.305% indicating that the construct items do not occur the problem of common method bias.

Figure 1 is the scree plot of the construct items that demonstrated the first four items with eigen values above 1 indicating the most important items and those other three items with a decline pattern had eigen value below 1, indicating that they are the least important items.

Table 1. Socio-demographic characteristics

		Frequency	Percent	Mean	Standard Deviation
Gender	Male	233	60.5	1.39	0.49
	Female	152	39.5		
	Total	385	100		
Age	17-20	181	47	1.60	0.65
	21-24	181	47		
	25-28	20	5.2		
	29-32	1	0.3		
	>32	2	0.5		
	Total	385	100		
Which year are you	Freshman (1st year)	103	26.8	2.51	1.12
	Sophomore (2nd year)	74	19.2		
	Junior (3rd year)	117	30.4		
	Senior (4th year)	91	23.6		
	Total	385	100		

What is your last semester CGPA	<1.66	39	10.1	2.89	0.93
	1.67-2.66	72	18.7		
	2.67-3.66	168	43.6		
	3.67-4.00	106	27.5		
	Total	385	100		
How many hours do you spend on these sites	<1 hour	52	13.5	2.83	1.01
	>4 hours	81	21		
	1 - 2 hours	134	34.8		
	3 - 4 hours	118	30.6		
	Total	385	100		
Do you feel social media network sites had an effect on your grade or performance	Negative effect	51	13.2	2.95	1.28
	No effect	95	24.7		
	positive effect	138	35.8		
	Very negative effect	23	6		
	Very positive effect	78	20.3		
	Total	385	100		

Table 2. Communalities

	Initial	Extraction
Do you believe that social media is essential for young people today	1.000	.681
Do you think that social media is helpful to create awareness among youth	1.000	.648
What kind of effect do you think social network sites have on teaching and learning	1.000	.712
Do you feel social media network sites had an effect on your grade or performance	1.000	.595
Do you post or respond while completing homework	1.000	.522
Do you use social network sites to discuss educational work	1.000	.833
Do you face any health problem	1.000	.798

Source: Author's computation using SPSS Software

Table 3. PCA

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1. Do you believe that social media is essential for young people today	1.561	22.305	22.305	1.561	22.305	22.305
2. Do you think that social media is helpful to create awareness among youth	1.176	16.795	39.100	1.176	16.795	39.100
3. What kind of effect do you think social network sites have on teaching and learning	1.041	14.871	53.971	1.041	14.871	53.971
4. Do you feel social media network sites had an effect on your grade or performance	1.010	14.430	68.401	1.010	14.430	68.401
5. Do you post or respond while completing homework	.860	12.288	80.689			
6. Do you use social network sites to discuss educational work	.699	9.986	90.675			
7. Do you face any health problem	.653	9.325	100.000			

Extraction Method: Principal Component Analysis.

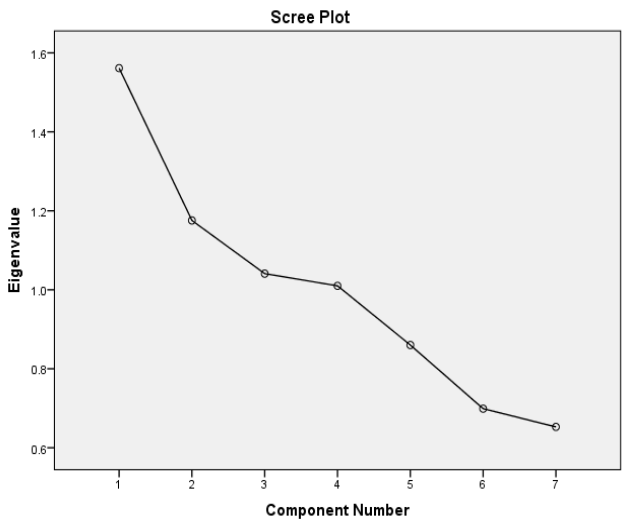

Figure 1. Scree plot

Table 4 shows that the overall Rifhdreg model has a p-value of 0.0019 which is below the 0.05 significant level, which means that we reject the null hypothesis at the 5% level, indicating that social media is significantly connected with a student's health and academic performance while accounting for socio-demographic variables like age, semester CGPA, and hours spent on social media sites. This supported the research hypothesis, and the results also suggest that the fitted Rifhdreg model is a good fit for the dataset since the overall model is statistically significant.

More so, Table 4 shows that the coefficient estimate of the students' health has a positive and significant effect on their academic performance, which suggests that students' academic performance improves greatly when they have good health, while the coefficient estimate of the social media is not statistically significant and therefore has no significant effect on their academic performance, which supports the coefficient estimate value of 0.002, indicating that with a small change in the distribution of the social media, student performance will

also rise slightly, with small value changes of 0.002 considered positive but insignificant.

Table 5 shows that the overall Rifhdreg model has a p-value of 0.0292 which is below the 0.05 significant level, which means that we reject the null hypothesis at the 5% level, indicating that social media is significantly connected with a student's health and academic performance while accounting for socio-demographic variables like age, semester CGPA, and hours spent on social media sites. Meanwhile, academic performance has a significant positive effect on the student's health, indicating that students become happier with better health when their academic performance improves greatly. Besides, the coefficient of social media is positive but has no significant effect on the student's health. Meanwhile, Figures 2 and 3 demonstrated the coefficient estimates plot of the student academic performance and student's health respectively.

Table 4. Rifhdreg model for students' academic performance, social media, student's health and other socio-demographic variables

Prob>F=0.0019			
Student's Academic Performance	**Coefficient**	**T-Statistic**	**P-Value**
Students health	0.067	3.03	0.003
Social media	0.002	0.10	0.916
Age	-0.366	-1.09	0.278
Semester CGPA	0.754	2.98	0.003
Hours spent on social media sites	0.216	0.97	0.330
Constant	11.143	8.35	0.000

Source: Author's computation using SPSS Software

Table 5. Rifhdreg model for students' health, social media, academic performance and other socio-demographic variables

Prob>F=0.0292			
Students Health	**Coefficient**	**T-Statistic**	**P-Value**
Students' academic performance	0.581	2.85	0.005
Social media	0.098	1.45	0.149
Age	-0.996	-0.87	0.384
Semester CGPA	0.556	0.76	0.446
Hours spent on social media sites	0.540	0.90	0.370
Constant	-1.663	-0.38	0.707

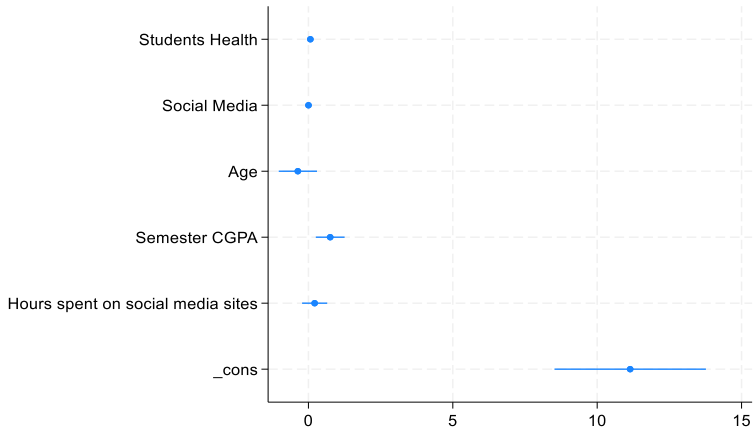

Figure 2. Coefficient estimates plot of students' academic performance and the predictor variables

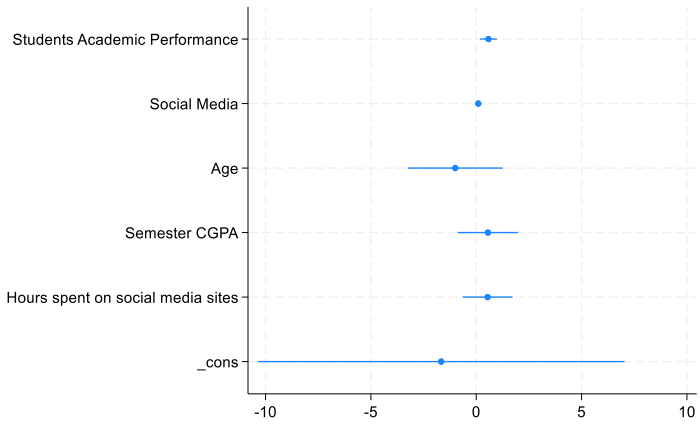

Figure 3. Coefficient estimates plot of students' health and the predictor variable

5. FINDINGS AND CONCLUSION

Based on global statistics, over 5 billion people are currently connected to social media platforms. Research has revealed the adverse consequences of excessive use of social media (SM) on students' well-being, encompassing impaired concentration, memory, sleep patterns, eyesight, and overall physical, mental, and social health. Conversely, moderate and positive use of SM has been found to have a beneficial impact on academic performance. The aim of this study is to examine the impact of social media on the physical and mental well-being, as well as the educational achievements, of students.

According to data from Table 1, 138 students, accounting for 35.8% of the total, believe that social media has a positive impact on academic performance. This result is in line with the findings of Oueder and Abousaber's (2018) study, which also found that social media enhances academic performance. Table 1 indicates that the gender distribution of the students in the study consists of 233 males, accounting for 60.5% of the total, and 152 females, representing 39.5%. In terms of semester CGPA, 39 students (10.1%) have a CGPA below 1.66. 72 students (18.7%) have a CGPA between 1.67 and 2.66, 168 students (43.6%) have a CGPA between 2.67 and 3.66, and 106 students (27.5%) have a CGPA between 3.67 and 4.00. Additionally, 52 students (13.5%) spend less than 1 hour on social media networking sites, 81 students (21%) spend more than 4 hours, 134 students (34.8%) spend between 1 and 2 hours, and 118 students (30.6%) spend between 3 and 4 hours.

Table 3 indicates that the first four construct elements have eigenvalues greater than 1, suggesting that they are the most significant or essential items. Conversely, the last three items with eigenvalues less than 1 are considered less important. The item with the highest eigenvalue is responsible for explaining 22.305% of the variance. This suggests that the problem of common method bias is not affecting the construct items.

Table 4 demonstrates a substantial correlation between social media usage and a student's health and academic performance. This correlation takes into account socio-demographic factors such as age, semester CGPA, and the amount of time spent on social media sites. Conversely, there is a notable correlation between academic achievement and student health, suggesting that students experience more happiness and improved health when their academic performance significantly improves. In addition, the coefficient of social media is positively correlated with student health, although the impact is not statistically significant. This contradicts the findings of Englander et al. (2010), who contend that the use of social media in academia is more harmful than good. According to Amin et al. (2016), who found a significant correlation between social media usage and students' academic achievement, social media has a significant negative impact on students' academic performance. The computed model indicates that tiny changes in the distribution of social media, student performance, and students' health will result in a slight increase, with positive but negligible values of 0.002 and 0.098, respectively. Hence, individuals who possess higher levels of self-regulation exhibit greater mastery over their utilization of social media, thereby leading to enhanced mental well-being and improved academic achievements. In light of this, schools and families need to work together to enhance the student's self-regulation ability, which will guide students to use social media in a moral and standardized way.

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APPENDIX

Stata do-file

```
Rifhdreg StudentsHealth StudentsAcademicPerformance SocialMedia Age SemesterCGPA Hoursspentonsocialmediasite, rif(q(10)) robust
coefplot
Rifhdreg StudentsAcademicPerformance StudentsHealth SocialMedia Age SemesterCGPA Hoursspentonsocialmediasite, rif(q(25)) robust
coefplot
```