From likes to anxiety: The effect of social media usage and in-formation overload on university students' mental health

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Abstract

The widespread and excessive usage of social media among university students has caused significant awareness about its impact on mental health, specifically when connected with information overload. This study explores the interrelationship between social media usage and information overload on university students' mental health disorders (stress, anxiety, and depression). Based on theoretical frameworks such as Cognitive Load Theory and Social Comparison Theory (SCT), the study explores how pervasive usage of social media contributes to mental health disorders with the mediating role of information overload. This mediator factor (information overload) offers a more thorough theoretical understanding of the underlying processes through which social media platforms (SMPs) can influence mental well-being. A quantitative research design survey surveyed 420 higher education students, and the data obtained was analyzed with PLS-SEM. The findings disclose that social media usage and information overload are linked to higher levels of stress, anxiety, and depression. The study underlines the dual function of social media usage as both a means of connection and a driver of mental health disorders, highlighting the urgent need for approaches to mitigate the adverse impacts of information overload. These outcomes have significant implications for mental health professionals, professors, and higher education policymakers in advancing interventions to foster the well-being of university students in the information age.

Keywords: Anxiety, Depression, Information overload, Mental health, Social media usage, Stress, University students.

Competing Interests: The author declares that there are no conflicts of interests regarding the publication of this paper.

Transparency: The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the deanship of the scientific research ethical committee, King Faisal University (project number: KFU250992, date of approval: 28 June 2024).

1. Introduction

In the information age, social media is increasingly becoming a main part of our daily lives, particularly for higher education students who are among the most active and heavy users of social media platforms (SMPs) [1-4]. The total number of users of SMPs in Saudi Arabia (SA) is 37.1 million, which represents 99% of the total SA population (37.47 million). The average daily time spent on the internet in SA is about 7 hours, with 3 of those hours used on SMPs. The most frequently used SMPs in SA are WhatsApp, Instagram, Twitter (X), Telegram, and Facebook, in that order [5]. These SMPs provide university students with great opportunities to engage in social activities and interactions, share daily information, and enjoy some entertainment [6]. However, the intensive usage of SMPs also raises critical concerns about their possible influence on mental health, as noted by Berryman, et al. [3], especially when associated with diverse information overload [7]. Information overload is a problem that can occur when individuals are faced with an excessive amount of information, making it difficult to understand and make decisions [8]. This issue is increasingly prevalent in the digital age, where the continuous flood of information from various sources can overwhelm individuals' ability to process it, leading to stress, depression, anxiety, and other mental health disorders [9, 10]. This paper investigates the impacts of SMP usage and information overload on university students' mental health, based on existing literature, to offer a comprehensive interpretation of this complex phenomenon.

Higher education university students face an incremental phase of self-development as they transition from adolescence to adulthood [11]. This stage in the life cycle is regularly portrayed by substantial emotional, social, and academic challenges, causing students to be vulnerable to some mental health disorders [12, 13]. According to the American Psychological Association (APA) [14], the incidence of mental health disorders among university students has been progressively increasing, with stress, anxiety, and depression being the most common symptoms. This might be due to high academic pressure, financial stress, and the significant impact of using social media platforms (SMPs) [3]. While SMPs provide several benefits, they have also been blamed for worsening the mental health of university students, particularly when associated with social comparison, cyberbullying, and information overload [15]. The high volume of available information on SMPs can be overwhelming, causing processing and analysis problems. This can lead to what is known as cognitive overload, where individuals struggle to process the information they are exposed to, resulting in adverse mental health disorders such as stress and anxiety [16, 17]. An empirical study conducted by Misra and Stokols [18] argued that information overload is linked with high-stress levels and low academic performance among university students. Constant exposure to information on SMPs can cause a phenomenon known as "FOMO" (fear of missing out), where university students feel compelled to stay continuously online and informed, which might intensify stress and anxiety. Although several previous studies have investigated the impact of SMP usage on mental health [3, 19-23], no studies have tested information overload as a mediator that can worsen the impact of SMPs on the mental health disorders of university students.

Notwithstanding the adverse impact of using SMPs and information overload on students' mental health, it is significant to acknowledge that SMPs also provide several benefits when appropriately used. SMPs can offer social and peer support, share good and bad experiences, ask for advice and reviews, reduce feelings of isolation, and provide academic advice [17, 24]. However, the merits of using SMPs must be compared and weighed against the probable risks, specifically mental health disorders.

Testing the interconnection relationships between SMPs' use, information overload, and mental health disorders is crucial for designing helpful interventions and support programs for university students in SA. This paper aims to investigate the direct impact of social media usage on mental health disorders and the indirect effect through information overload, which might further improve our understanding of the dynamic interrelationships in the pervasive information age and provide insights into possible strategies for mitigating the adverse impacts of SMPs and information overload on the mental health of university students. After the previous introduction, this paper is structured to start with the theoretical background and hypotheses formulation and justification, followed by research methods to illustrate the employed scale, the data collection procedures, and the employed data analysis techniques, which were then explained and elaborated. Accordingly, the results of the study were presented and discussed, and the implications and limitations of the study were explained.

2. Theoretical Background and Hypotheses Justification

This study combines the Cognitive Load Theory (CLT), and the Social Comparison Theory (SCT), to justify the impacts of social media usage and information overload on university students' mental health. CLT is a framework that explains how the human brain receives, processes, retains, and recalls the exposed information. It was first introduced by Sweller [25] and is extensively implemented in education and interaction between humans and computers [26, 27]. CLT is described by the idea that human working memory has a restricted capacity, and extreme cognitive load may deter learning and decision-making [28, 29]. The theory argues that instructional techniques would be developed to enhance cognitive resources by eliminating unnecessary load and improving meaningful understanding [30].

Additionally, the Social Comparison Theory (SCT) introduced by Festinger [31] can be used to understand the impact of social media usage and information overload on mental health. SCT argued that people have an internal drive to assess themselves by comparison with relevant others in regard to their abilities, successes, and environments [32]. This comparison might result in an upward or downward Social Comparison. University students are continuously subjected to standardized and idealized images of others' lives, fostering upward comparisons that might fuel anxiety, stress, and minimize self-esteem Appel, et al. [33] which might lead to feelings of social exclusion, leading to Fear of Missing Out (FOMO) [34]. FOMO is a psychological state caused by social comparison and refers to the anxiety that might arise when people suppose that others have valuable or enjoyable circumstances that they are missing [35, 36].

2.1. Social Media Usage and Information Overload

Using social media among university students is raised by the need for social connections, sharing information, and academic achievement. In SA, for instance, platforms like Instagram, Twitter (X), Telegram, and Facebook are extensively used for educational and personal interests, with university students spending over three hours daily on these SMPs [37]. Recent evidence emphasizes social media usage's dual effect and key role in university students' lives. On the one hand, it opens ways to educational achievements and promotes peer connections [38]. On the other hand, overloading SMPs can cause interruptions and procrastination and minimize academic achievement and productivity Alwagait, et al. [39]. Al-Menayes [40] identified that students who regularly use SMPs are more likely to suffer from information overload, as they are continuously subjected to several diverse social, academic, and entertainment-related subjects.

The structure of SMPs promotes substantial information overload. Algorithms that spotlight attracting content and the addictive features of endless scrolling foster persistent usage, encouraging the amount of information students are subjected to Karr-Wisniewski and Lu [41]. Moreover, the multitasking approach related to SMPs further complicates the problem, as university students repeatedly switch between multiple diverse platforms and different tasks, minimizing their brain's ability to process such substantially different information [37]. Therefore, we can assume that

Hypothesis 1 (H1): Social media usage can positively and significantly impact information overload

2.2. Information Overload and Mental Health

In the digital era, higher education students are continuously subjected to a vast and diverse volume of information from academic platforms and SMPs social media. Stress is one of information overload's greatest and most pressing psychological impacts [42]. University students are required to manage a large number of academic tasks, handle numerous deadlines, and stay connected with digital networks. The continual flood of information can overthrow cognitive abilities, causing high-stress levels Li and Khan [10] and Reis [42]. Misra and Castillo [43] argued that students who repeatedly multitask and use extreme digital content showed higher stress levels. Furthermore, extreme exposure to online diverse information may disrupt student time management and minimize productivity, which fosters more stress, hence we can argue that:

Hypothesis 2 (H2): Information overload can significantly impact stress (as a dimension of mental health disorder)

Anxiety is another key mental health issue related to information overload. When university students try to stream, prioritize, and understand huge amounts of diverse unrelated information, they may encounter decision immobilization, FOMO, and a feeling of inadequacy [44]. Research by Marsh, et al. [45] highlighted that extreme usage of SMPs causes anxiety among students. The high pressure to stay connected, informed, and accomplish good academic performance can lead to persistent emotional exhaustion and anxiety, therefore we can propose that:

Hypothesis 3 (H3): Information overload can significantly impact anxiety (as a dimension of mental health disorder)

Prolonged subjection to overwhelming diverse information can also lead to feelings of depression among higher education students [10]. Extreme digital usage, specifically on SMPs and academic sources, can contribute to burnout and helplessness [46]. The failure to manage and recall essential information efficiently can reduce academic self-efficacy, which is related to depressive disorder [47]. Furthermore, Montag, et al. [48] argued that passive information usage, specifically on SMPs, is linked to increased depressive disorders due to continual subjection to distressing or negative subjects; therefore we can assume that:

Hypothesis 4 (H4): Information overload can significantly impact depression (as a dimension of mental health disorder)

2.3. Social Media Usage and Mental Health

Regular engagement with SMPs may contribute to high stress levels among higher education students [49, 50]. The continual pressure to keep informed and updated, respond immediately to messages, and participate in online forums and discussions may be overwhelming [51]. A study conducted by Dhir, et al. [52] highlighted that compulsive SMPs are related to higher stages of stress due to digital exhaustion and information overload. Furthermore, the idealistic portrayal of peer lifestyle and success on SMPS can generate performance pressure, further worsening stress levels [53].

Anxiety is another substantial mental health issue that is related to excessive social media use [54]. Moreover, cyberbullying and passive online participation can foster social anxiety and cause withdrawal from face-to-face real interactions [35]. According to a study conducted by Vannucci, et al. [55] higher social media participation is related to high symptoms of anxiety disorder in higher education students.

Long exposure to SMPs may also foster depression among higher education students. The strong tendency to make a comparison between oneself and standardized unrealistic online images can cause a feeling of failure and reduced self-esteem [56]. Furthermore, interrupted patterns of student sleep time due to late-night SMPs usage can lead to mood disorders and depression Levenson, et al. [57] Accordingly, we can propose that:

Hypothesis 5 (H5): The usage of SMPs can significantly impact stress (as a dimension of mental health disorders).

Hypothesis 6 (H6): The usage of SMPs can significantly impact anxiety (as a dimension of mental health disorders).

Hypothesis 7 (H7): The usage of SMPs can significantly impact depression (as a dimension of mental health disorders).

3. Research Methods

3.1. Study Scale

The developed conceptual framework of this work was tested with a self-structured questionnaire. All the scales employed were attained from previous valid and reliable measures. The questionnaire was structured to include numerous but connected sections. Section one is an introduction to identify the aim and objectives of the survey, and a detached sub-section is used to gain participants' consent to engage in the survey. Section Two was developed to attain some demographic

data about participants such as age, gender, and study level. Section three was designed to measure the study's main dependent, and independent variables. To measure social media usage, three items multidimensional scale was adopted from Maier, et al. [58] sample item includes "I pay too much attention to my friends' posts on social media". Similarly, information overload was measured with four items derived from Zhang, et al. [59] sample item is "There is too much information about my friends on social media so I find it a burden to process". The 21- Items Scale (DASS-21) of mental health disorders was employed in our study to operationalize mental health. The DASS-21 scale evaluates mental health symptoms with 21 variables. It is the short version of the Lovibond and Lovibond DASS scale [60].

Nevertheless, this version is widely used by scholars in various contexts (i.e. [61-65]). The DASS-21 was established to assess people's adverse feelings over the last 7 days. The measure has three main sub-dimensions (stress, depression, and anxiety), with seven variables for each. Participants were asked to assess the level of agreement for each item using a 4-level Likert scoring method, with 0 indicating "no agreement" and 3 indicating a "high level of agreement." The employed study scale is attached to Appendix 1.

Seven professionals assessed each variable in the designed survey to ensure the face validity of the employed scale, and all the questionnaire items were pre-piloted with 11 university students. Only a few slight corrections to the wording of the questionnaire were made, though the items of the questionnaire and employed terms were adequately interpreted and clearly understandable. Consequently, it can be proposed that the study scale has face and content validity.

3.2. Sampling

The study population consists of all university students in KSA who use SMPs. The targeted sample for this paper was university students from five Saudi regions. The five universities that were targeted are: "King Faisal University" (East), "Taibah University" (West), "Imam Mohammad Ibn Saud Islamic University" (at the center), "North Border University" (North), and "Jazan University" (South). The questionnaire was developed to be publicized through the universities' official emails and SMPs during October and November of 2024. The participants were sampled using a non-probability sampling method with convenience sampling techniques. To facilitate the process of collecting the required data, 50 trained enumerators were recruited. The researcher supervised an online session with the 50 recruited enumerators to clarify the study's objectives and ethical concerns. Enumerators were trained on how to obtain informed consent and respond to any concerns or inquiries before voluntarily completing the structured questionnaire. These sessions also highlighted the main issues of sensitivity and confidentiality regarding the collected data. Accordingly, 1,100 questionnaires were distributed, and 700 were adequate for data analysis, resulting in a response rate of 63%. The demographic characteristics of the respondents exhibit diversity within the study sample. Gender was adequately balanced, with 47% male and 53% female participants. The majority (90%) of the participants were between 17 and 25 years old, and all were daily users of SMPs.

Lindell and Whitney [66] argued that "common method variance" (CMV) can exist the entire questionnaire sections were filled by the same respondent. This issue can raise some concerns about scale validity [67, 68]. Hence, as suggested by Reio, the current study implemented two key strategies to deal with this issue: (1) procedural structure and (2) statistical analysis. Several procedural processes as suggested by Podsakoff, et al. [69] have been conducted to reduce the CMV issue. These procedures tried to minimize response biases such as agreement tendency biases, positive or negative bias, and solo scale design; and reduce the exhibition of items in patterns or knowing-answer-impacts. Additionally, this paper statistically tests CMV with Harman's one-factor method. The results support the absence of this issue as one factor extracted to interpret less than 50 % of the variance, thus confirming that CMV is not a concern in our study.

3.3. Data Analysis Techniques

The "Partial Least Squares" (PLS) approach was adopted to test the justified conceptual framework. PLS-SEM has some main advantages over other techniques of data analysis: (1) it is a theory-oriented approach (exploratory, not confirmatory) (Chin [70] and Hair, et al. [71]), (2) it suits cause-effect evaluation (Hair, et al. [72]), and (3) it is less restricted by assumptions of sample size and normality (Henseler, et al. [73]). SmartPLS 4.0 software was employed. As per Henseler, et al. [73] suggestions, the process of data analysis is conducted in two main steps: the first stage aims to evaluate the measurement model for reliability and validity, followed by the second step to test the structural model for hypotheses evaluation.

4. Results

4.1. Step Number One: Measurement Model Assessment

To evaluate the reliability and validity of PLS-SEM, the measurement model (named in PLS-SEM the outer model) was evaluated according to Leguina [74] indicated metrics which comprise "indicator loadings", "composite reliability" (CR), and "average variance extracted" (AVE) for each dimension. The item loadings, CR, Cronbach's α, and AVE are shown in Table 1. The scale reliability has shown acceptable results, as all the outer factor loadings (FL) are above the suggested value of 0.5 Chin [70] with FL ranging from 0.829 and 0.972. Additionally, all CR scores are above the value of 0.70 as suggested by Sarstedt, et al. [75] where anxiety obtained the highest score of 0.982 and information overload had the lowest score of 0.838, indicating satisfactory reliability. Convergent validity is also confirmed since all the AVE values exceeded the threshold of 0.50, which is the lowest recommended value suggested by Fornell and Larcker [76]. As shown in Table 2, the square root of AVE (bold values) was more significant than the correlation between that construct and any other construct in the model, which further confirms discriminant validity, the cross-loading results in Table 3 give additional evidence for

discriminant validity as each item is loaded highly to each pre-determined factor [77]. Finally, the last column of Table 1 showed that all VIF values were found to be below a threshold of 5.0, indicating no multicollinearity issue in the study mode.

Table 1.
Psychometric values of the research scale.

Scale	item name	item loading	[C.R]	"Cronbach's a"	[AVE]	[VIF]
Mental Health disorder						
Anxiety			0.976	0.974	0.866	
	Anzi1	0.947				1.333
	Anzi2	0.924				3.991
	Anzi3	0.921				1.469
	Anzi4	0.923				1.187
	Anzi5	0.947				1.548
	Anzi6	0.938				1.600
	Anzi7	0.914				1.004
Depression			0.968	0.965	0.829	
	Dprsn1	0.956				1.318
	Dprsn2	0.891				4.181
	Dprsn3	0.891				1.887
	Dprsn4	0.890				1.959
	Dprsn5	0.934				3.818
	Dprsn6	0.905				3.121
	Dprsn7	0.904				3.146
Stress			0.974	0.971	0.854	
	Strs1	0.972				2.025
	Strs2	0.914				1.227
	Strs3	0.913				1.282
	Strs4	0.916				3.720
	Strs5	0.951				1.548
	Strs6	0.967				3.582
	Strs7	0.829				2.940
Information overload			0.838	0.838	0.675	
	IO1	0.745				1.626
	IO2	0.839				2.025
	IO3	0.830				4.051
	IO4	0.866				4.412
Social media usage			0.896	0.890	820	
	SMU1	0.914				3.155
	SMU2	0.939				3.723
	SMU3	0.863				2.104

Table 2.
Fornell-Larcker criterion.

	Anxiety	Depression	Information Overload	Social Media Usage	Stress
Anxiety	0.931				
Depression	0.566	0.910			
Information Overload	0.569	0.596	0.821		
Social Media Usage	0.501	0.587	0.622	0.906	
Stress	0.505	0.696	0.590	0.727	0.924

Table 3.
Cross loadings.

	[Anxiety]	[Depression]	[Information Overload]	[Social Media Usage]	[Stress]
Anzi1	0.947	0.550	0.560	0.475	0.497
Anzi2	0.924	0.528	0.497	0.431	0.432
Anzi3	0.921	0.535	0.493	0.435	0.451
Anzi4	0.923	0.480	0.516	0.472	0.450
Anzi5	0.947	0.573	0.587	0.502	0.527
Anzi6	0.938	0.554	0.541	0.474	0.484
Anzi7	0.914	0.459	0.504	0.467	0.436
Dprsn1	0.559	0.956	0.596	0.603	0.683
Dprsn2	0.494	0.891	0.571	0.550	0.642
Dprsn3	0.487	0.891	0.532	0.475	0.620
Dprsn4	0.478	0.890	0.510	0.473	0.599
Dprsn5	0.529	0.934	0.567	0.572	0.654

	[Anxiety]	[Depression]	[Information Overload]	[Social Media Usage]	[Stress]
Dprsn6	0.542	0.905	0.511	0.529	0.624
Dprsn7	0.510	0.904	0.501	0.523	0.607
IO1	0.529	0.523	0.745	0.493	0.481
IO2	0.434	0.499	0.839	0.543	0.549
IO3	0.447	0.423	0.830	0.469	0.422
IO4	0.453	0.500	0.866	0.528	0.473
SMU1	0.451	0.526	0.576	0.914	0.663
SMU2	0.492	0.573	0.585	0.939	0.696
SMU3	0.415	0.493	0.527	0.863	0.613
Strs1	0.491	0.654	0.586	0.738	0.972
Strs2	0.452	0.642	0.529	0.629	0.914
Strs3	0.451	0.641	0.530	0.635	0.913
Strs4	0.465	0.645	0.521	0.668	0.916
Strs5	0.489	0.654	0.557	0.699	0.951
Strs6	0.481	0.653	0.566	0.728	0.967
Strs7	0.432	0.619	0.526	0.589	0.829

The accumulative results extracted from Tables 1,2 and 3 showed satisfactory discriminant and convergent validity. Accordingly, we can conduct the second stage of analyses to test the research hypotheses in the structural model.

3.2. Step number two: Structural model evaluation

A 5,000 bootstrapped subsamples approach in PLS-SEM was run to test the research hypotheses as suggested by Hair, et al. [72]. The whole model was then assessed with the criteria suggested by Henseler, et al. [73] which include, R^2 "coefficient of determination", and Q^2 "Stone-Geisser". To measure good model fit (GoF), the "standardized root-mean-square residual" (SRMR) was calculated [70]. The SRMR is 0.051, which is below the value 0f 0.80 and is considered acceptable [74]. The R^2 value is 0.359 for Anxiety; 0.432 for depression; 0.599 for stress; and 0.387 for information overload which, according to Henseler, et al. [73] is at adequate and acceptable level. The Q^2 values that explain the model's predictive capacity were recorded at 0.248 for Anxiety; 0.341 for depression; 0.522 for stress; and 0.385 for information overload, hence above zero value and representing a strong predictive capacity of the developed model [75].

After confirming the goodness of fit and the developed model's predictive power, the inner model's research hypotheses were evaluated. Figure 1 and Table 4 contain all the path coefficients of the model. Social media usage was found to have a direct and significant impact on information overload (0.622, t=31.717, p<.001); stress (0.586, t=10.824, p<.001); anxiety (0.239, t=4.904, p<.001); and depression (0.353, t=8.577, p<.001), confirming H1, H5, H6, and H7. Accordingly, information overload was found to have a direct and significant impact on stress (0.255, t=6.097, p<.001); anxiety (0.420, t=9.894, p<.001); and depression (0.377, t=9.013, p<.001), supporting H 2, H3, and H4.

Figure 1.
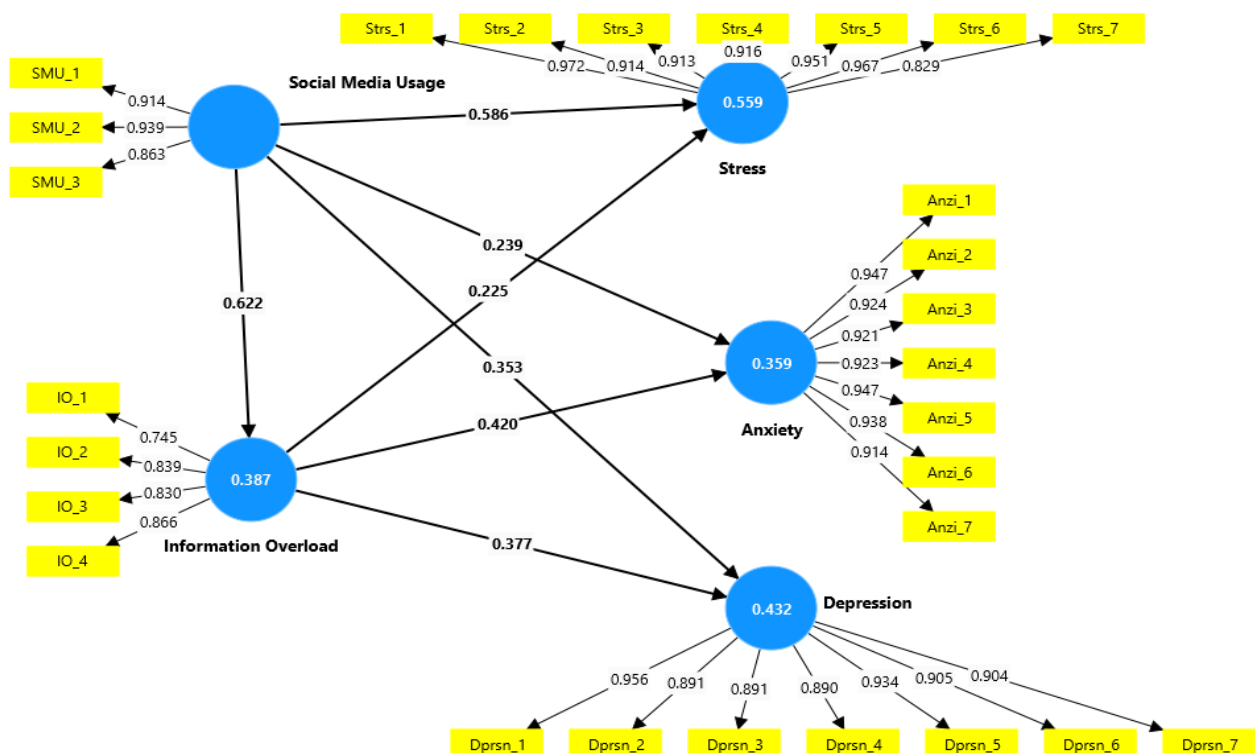The research model.

Table 4.
Direct, indirect and total effects of the research hypotheses.

Direct relationships	β	t	p
Social Media Usage -> Information Overload (H1 supported)	0.622	31.717	0.000
Information Overload -> Stress (H2 supported)	0.225	6.097	0.000
Information Overload -> Anxiety (H3 supported)	0.420	9.894	0.000
Information Overload -> Depression (H4 supported)	0.377	9.013	0.000
Social Media Usage -> Stress (H5 supported)	0.586	10.824	0.000
Social Media Usage -> Anxiety (H6 supported)	0.239	4.904	0.000
Social Media Usage -> Depression (H7 supported)	0.353	8.577	0.000
Indirect relationships			
Social Media Usage -> Information Overload -> Anxiety	0.261	10.287	0.000
Social Media Usage -> Information Overload -> Depression	0.234	9.372	0.000
Social Media Usage -> Information Overload -> Stress	0.140	6.041	0.000
Total effects			
Social Media Usage -> Anxiety	0.501	14.624	0.000
Social Media Usage -> Depression	0.587	20.619	0.000
Social Media Usage -> Stress	0.727	20.258	0.000

The results also revealed the indirect and total effects where social media usage impacted mental health disorders through information overload. More specifically, social media usage was found to have an indirect and significant impact (0.261, t=10.287, p<.001) on anxiety through information overload, with a total significant path coefficient of 0.501. Similarly, social media usage was found to have an indirect and significant impact (0.234, t=9.372, p<.001) on depression through information overload, with a total significant path coefficient of 0.587. Finally, social media usage was found to have an indirect and significant impact (0.140, t=6.041, p<.001) on stress through information overload, with a total significant path coefficient of 0.727.

5. Discussion

The results of this paper shed light on the complicated interrelationships among social media use, information overload, and university students' mental health disorders (stress, depression, and anxiety). The results are consistent with previous literature, suggesting that extreme usage of social media may contribute to worsened stress, anxiety, and depressive disorders among university students [21, 56]. The widespread nature of social media platforms (SMPs), paired with the continual flood of information, generates a situation where university students are regularly exhausted, causing cognitive fatigue and a feeling of emotional distress [46]. This study further contributes to improving our understanding of this phenomenon by employing information overload as a mediating factor, which might worsen the negative mental health disorders linked with prolonged engagement with SMPs. The study findings declare that unregulated and excessive use of SMPs can intensify information overload. The constant and consistent streaming of notifications, news, and content from diverse platforms can overwhelm university students, causing cognitive fatigue, decreased student attention, and difficulties in processing information [46]. This result is consistent with previous studies that argue that social media is a significant cause of digital disruption, mainly among university students, who are regularly required to manage academic, personal, and social duties [78, 79].

The results of this paper disclosed a significant direct influence of using social media on the mental health disorders of university students in SA, specifically with regard to the increased level of stress, depression, and anxiety. These outcomes are consistent with an expanding body of worldwide studies that emphasize the psychological concerns of extreme social media usage [21]. Nevertheless, this paper delivers key insights into the unique social and cultural context of SA, where usage of social media has dramatically surged in the last few years, driven by very high internet speed levels and the extensive usage of SMPs such as Snapchat, Instagram, and Twitter (X). One of the main results of this paper is the high and strong link between excessive social media usage and high levels of stress. University students who declared that they are on daily intensive usage of SMPs were more likely to have high levels of stress in academic achievements, social peer comparisons, and "fear of missing out" (FOMO). This aligns with previous studies that recognized FOMO as a key driver of stress [2].

The paper also emphasized the critical role of social media in worsening anxiety disorder among SA university students. Participants who experienced frequent usage of social media showed a higher level of anxiety; this might be due to the pressure to retain a positive image online. This result is confirmed by recent research papers that argued that intensive usage of social media can increase anxiety levels, particularly in a context where social image and family reputation are highly valued [80]. Likewise, the study declared a significant link between the usage of social media and depressive disorder among SA university students. Participants who showed excessive social media usage were more likely to have a sense of loneliness, decreased self-esteem, and vanished hope. This result is consistent with Vogel, et al. [16] study, which found that social media usage might be a key factor that causes depression.

The findings also highlighted the significant indirect influence of the usage of social media on mental health disorders among SA university students through the mediating role of information overload. While the direct impacts of intensive usage of social media on anxiety, stress, and depression have been broadly investigated by Twenge, et al. [56] this study stipulates further a nuanced understanding of how information overload plays a critical intermediary role in these

relationships. The findings declared that extreme use of social media can contribute to an overwhelming flood of information, which, in turn, worsens mental health disorders among SA university students. These results are mostly relevant in the SA context, where SMPs penetration is among the highest worldwide, and university students are increasingly subjected to a deluge of digital subjects [81].

The study has several practical and theoretical implications. This paper contributes to the extended body of argument about the psychological impacts of using SMPs by exploring the mediating role of information overload and its effects on mental health. While previous literature has mainly focused on the direct link between social media use and mental health disorders (Primack, et al. [21]), this study proposes a more nuanced conceptual framework that takes into account extreme information consumption as a mediator to provide a comprehensive theoretical framework to understand how the usage of SMPs can indirectly (through information overload) worsen stress, anxiety, and depression disorders. This mediator factor (information overload) offers a more thorough theoretical understanding of the underlying processes through which SMPs can influence mental well-being. By integrating information overload into the model, this study proposes that prolonged exposure to excessive and unfiltered information—ranging from news updates and personal posts to advertisements and conflicting viewpoints—creates a cognitive burden that overwhelms individuals. This cognitive strain leads to mental fatigue, decision paralysis, and increased emotional distress, thereby exacerbating mental health disorders. Furthermore, the indirect pathway, through information overload, introduced in this conceptual framework is consistent with the Cognitive Load Theory (CLT), which proposes that excessive information load can impair the ability of people to control emotions and make rational decisions, which might further intensify the feeling of anxiety, stress, and depression. By highlighting the mediating role of information overload, the study offers a more holistic understanding of how SMPs interact with other psychological factors, encouraging a more actionable and refined theoretical framework for further research opportunities and practical interventions.

Practically, universities in South Africa should develop training courses for digital literacy as part of their national curriculum to provide the necessary skills to control information overload among university students. This should include training sessions on evaluating online content, employing advanced surfing techniques, and organizing digital information efficiently. By improving digital literacy, universities can encourage students to employ social media platforms (SMPs) more mindfully and decrease the cognitive burden linked with extreme information exposure. Furthermore, the results emphasized the urgent need for mental health programs to support university students in dealing with SMPs and information overload; this might help university students progress toward healthier mechanisms to deal with information overload [78]. Student campaigns can be held at the university level to induce awareness about the probable risks of extreme social media usage and foster healthier online practices. These campaigns might highlight the significance of establishing boundaries, such as controlling screen time and participating in offline behaviors. By fostering mindful SMP usage, universities can assist students in balancing being connected and defending their mental health. Designing 'tech-free' zones on campus might be a good idea to eliminate the usage of SMPs.

While this paper introduced some valuable insights, it has some limitations. One main limitation is the geographical context of collecting the study data, as the paper primarily obtained data from five specific regions in KSA. This regional context may limit the generalizability of the results to broader populations (universities). Additionally, the cross-sectional approach that was adopted in this study to collect the data might limit the ability to infer causal interrelationships between the study variables. Future research opportunities should use a longitudinal approach to investigate these relationships over a long period and detect possible factors that can mitigate the adverse effects of extreme social media usage. Furthermore, the study depends on a self-reported data technique, which might be subject to respondents' biases such as personal desirability or recall mistakes. Future studies could combine more objective measures to produce a more precise evaluation of SMPs usage patterns. Finally, future research could implement a mixed-methods approach, combining qualitative interviews with quantitative surveys to provide a more comprehensive understanding of the relationships studied.

6. Conclusion

This study aimed to propose valuable insights into the influence of SMPs usage on the mental health of university students (stress, anxiety, and depression), with a primary focus on the mediating role of information overload. While SMPs serve as an essential method for peer communication, quality education, and social interaction, excessive usage—combined with the overwhelming flood of information—can significantly lead to mental health disorders among university students. Our results highlight that SMPs usage alone can lead to negative psychological consequences; furthermore, its negative effects are highly mediated by information overload. When university students are subjected to a devastating amount of unrelated information, it fosters cognitive overload, decision exhaustion, and distress, which in turn exacerbates symptoms of anxiety, stress, and depression. This underlines the urgent need to restructure digital exposure habits, ensuring university students develop strategies to manage SMPs usage effectively. Furthermore, SMPs should consider improving algorithms to decrease information overload by arranging content relevance and consumer well-being.

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Appendix 1: Study scale.

Anxiety	Abbreviation	Items
	Anzi1	I was aware of the dryness of my mouth.
	Anzi2	I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of physical exertion).
	Anzi3	I experienced trembling (e.g., in my hands).
	Anzi4	I was worried about situations in which I might panic and make a fool of myself.
	Anzi5	I felt I was close to panic.
	Anzi6	I felt scared without any good reason.
	Anzi7	I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat).
Depression		
	Dprsn1	I couldn't seem to experience any positive feelings at all.
	Dprsn2	I found it difficult to work up the initiative to do things.
	Dprsn3	I felt that I had nothing to look forward to.
	Dprsn4	I felt downhearted and blue.
	Dprsn5	I felt I wasn't worth much as a person.
	Dprsn6	I was unable to become enthusiastic about anything.
	Dprsn7	I felt that life was meaningless.
Stress		
	Strs1	I found it hard to wind down.
	Strs2	I tended to overreact to situations.
	Strs3	I felt that I was using a lot of nervous energy.

	Strs4	I found myself getting agitated.
	Strs5	I found it difficult to relax.
	Strs6	I was intolerant of anything that kept me from getting on with what I was doing.
	Strs7	I felt that I was rather touchy.
Information overload		
	IO1	I am often distracted by the excessive amount of information available to me on social media platforms.
	IO2	I find that I am overwhelmed by the amount of information I have to process on a daily basis on social media platforms.
	IO3	There is too much information about my friends on social media platforms, so I find it a burden to process.
	IO4	I find that only a small part of the information on social media platforms is relevant to my needs.
Social media usage		
	SMU1	I care too much about my friends' well-being on social media.
	SMU2	I deal too much with my friends' problems on social media.
	SMU3	I care for my friends too much on social media.