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Balancing The Digital Distraction: Cyberloafing And Its Consequences For Academic Performance

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Abstract:
Cyberloafing is an action of involving in non-work or non-academic related online activities during work or study hours, specifically involving in social media, entertainment, or browsing unrelated to academic tasks. Such behavior frequently occurs in educational settings, where students find themselves distracted by the use of internet, which negatively affects their focus, and reduces productivity. On the other hand, Academic performance, is defined as the extent to which a student achieves their educational goals, their performance has been assessed through marks grades, assignments, and overall academic success. This study investigates the influence of cyberloafing on academic performance among 290 college students from Chandigarh, using the Cognitive Load Theory as the theoretical framework. According to this theory, students' behavior is influenced by extraneous, germane and intrinsic cognitive load. This study uses SmartPLS for data analysis, examining the relationships between cyberloafing and academic performance with moderation effect of fear of missing out. The findings suggest that cyberloafing negatively impacts academic performance. These insights can help to create strategies which aimed at reducing cyberloafing behaviors in academic settings among students, which could lead to improving students' performance.

Keywords: Cyberloafing, Academic Performance, Cognitive Load Theory, Fear of Missing Out

Introduction

The exponential proliferation in the innovation of information and communication technologies (ICT) has increased the number of working and learning pathways available to students. Earlier they were able to use only the conventional mode of online learning platforms, but now students are available with more knowledge and entertainment-based platforms such as podcasts, social media channels, short video reels etc. Spatiotemporal constraint is no more a problem for students to furbish their academic performance with the help of internet. One prevalent form of distraction is cyberloafing, where students engage in non-academic online activities (e.g., social media, browsing, gaming) during study or class time. During COVID-19, the online classrooms, dependency on the internet, made the students paralysed. As a result, the gap between learning and entertainment has become obfuscated, and cyberloafing activities starts increasing.

In educational institutions, use of internet-based information and communication technologies are tremendously used by the students (Ikram et al., 2025). Originally, the word cyberloafing was conceptualised from the employees' workplace, where they access internet for unproductive purpose during their working hours (Kamins, 1995). But now a days the area has been extended towards educational institutions (Lizarte S., 2024). Increasingly, existing study examines the effect of cyberloafing behavior on academic performance of students by considering another psychological factor i.e. Fear of Missing Out (FoMO). "FoMO is anxiety

that others might be having rewarding social experiences from which they absent (Przybylski et al., 2013)". FoMO is largely driven by social comparison, with factors like social media addiction, loneliness, and perfectionism amplifying its effects (Piko et al., 2025). This paper investigates whether FoMO plays a moderating role in the relationship between cyberloafing and academic performance.

The use of internet for academic purpose has been greatly imposed by educational institutes to enhance the academic performance of students. Cyberloafing is detrimental to academic performance.

The association between cyberloafing behavior and academic performance is still unclear, as some scholars consider that it a harmful behavior that causes academic distraction among students, tends to reduce their cognitive skills and learning engagement and increases academic procrastination behavior (Mihelič et al., 2023). On contrary, some researchers called it a strategic tool for enhancing academic performance by reducing their boredom, stress (Metin-Orta & Demirtepe-Saygılı, 2023). This double-barrelled perspective of cyberloafing either becomes detrimental or beneficial. For this purpose, the cognitive perspective has been identified by us which may have a binary effect of cyberloafing on students' academic performance. The cognitive load theory has been taken into consideration for this study which explains the exact amount and which type of cognitive load be able to intensify their academic performance (Sweller, 1988). Furthermore, due to the presence of cognitive level of students, influence of cyber-loafing on students' academic performance might differ individually. So, authors intended to find out the FoMOs role on the relationship between cyberloafing and academic performance. In order to understand their cognitive behavior and on the basis of theoretical foundation, we have framed the following research question:

Research questions

Q1. How is academic performance be influenced by cyberloafing among college students?

Q2. How does FoMO moderates the association between cyberloafing and academic performance?

Theoretical Foundation

Cognitive Load theory was originated by Sweller in 1988 which defines how cognitive load influence the outcomes of students. This theory provides a valuable framework for understanding how digital distraction such as cyberloafing and FoMO impacts academic performance. This theory underscores that the effectiveness of learning is determined by the cognitive load relies on working memory-an essential but limited mechanism that transforms new information and facilitating its storage in lasting knowledge, which has been affected by three loads: extraneous, intrinsic and germane load (Sweller, 1988). In case of cyberloafing, extraneous cognitive load amplifies when it disrupts the functioning of working memory and passes irrelevant information, hence limiting the learner's ability to focus on effective key material. Furthermore, FoMO also heightens the emotional and cognitive disruption in desire of having constant engagement that increases the extraneous load and reduces learnings' ability (Hameed et al., 2022). When there is imbalance between intrinsic cognitive load and students' cognitive capacity then academic performance inclined negative. All these distractions diminish the germane cognitive load which is essential for the formation and processing of new knowledge into lasting memory. Hence, suboptimal use of cognitive load due to digital distraction leads to diminishing academic performance. While existing literature has significantly documented the psychological and behavioral factors of cyberloafing and FoMO that has been associated with reducing academic performance but limited research had applied on cognitive load theory to investigate the cognitive mechanism underlying this

phenomenon. The impact of cognitive load types in shaping academic performance particularly in digitally distracted learning environments is still an emerging area of enquiry. This theory will be used to conduct this study to understand how limitations in working memory affect learning, especially in environments with such distractions.

Cyberloafing in educational environment

The internet has become an integral part of our everyday life (Koay et al., 2017) and tremendously utilised by the education sector to amplifies the students' learning ability. In support to grow the information and communication technologies in education, many higher education institutes under the surveillance of Ministry of Education have taken strategic steps to heightens the learning environment for students by establishing ICT laboratories across campus, equipped with modern computers and dual-mode internet access. The students are allowed to bring their own electronic or digital devices such as smartphones, laptops, tabs into the classroom as a part of their studying material. Though it has been expected by their educators that these devices must be used only for the academic purpose such as presentations, assignment work, research work etc. But some studies had revealed that the students are engaged in non-academic activities in the classroom like, texting during lectures, playing games, online surfing etc (Kafkas University et al., 2020; Sana et al., 2013) online shopping, socialization in social networks (Baturay & Toker, 2015). The use of internet for unrelated studied activities is called cyberloafing or cyber slacking and it impacts the learning environment (Taneja et al., 2015). Some researchers have been pointed out that the cyberloafing among students is higher than cyberloafing among employees (Akbulut et al., 2017). This multitasking learning style leads to increase the cognitive load and diminishes the academic performance among college students

Some recent studies highlighted the growing issue on cyberloafing in educational institutions in many countries. A study found that 84.5% students from South Africa spent nearly four hours on social media that negatively impacts on their academic performance (Lukose & Agbeyangi., 2025). Similarly, a study conducted in Turkey on 843 university students revealed that cyberloafing was the major predictor significantly contribution to disengagement in online courses (Mazman Akar, 2024). Most of the studies on cyberloafing has been conducted in workplace setting in comparison to educational settings. There is very few research on cyberloafing in academic settings, especially the country like India. Cyberloafing is observed frequently among individuals with internet addiction (Keser et al., 2016).

Academic performance

Academic performance has been widely recognised as key indicator of student success, shaped by a dynamic interplay of cognitive, social, emotion, and behavorial influences. Recent research highlights the growing emergence of digital learning in advanced learning environment. As per a study in Indonesia, it has been concluded that digital literacy alone did not directly increases the academic outcomes, they significantly amplify students' self-efficacy when related with academic engagement (Santoso et al., 2019). In contrast, research from South Africa revealed that more than 80% of students spent about four hours that diminishes their ability to perform academic tasks (North-West University (NWU) et al., 2015). As per the report given by World Health Organisation, 2024, with the high use of internet, students struggling with high depression, anxiety often faces difficulties and decreased academic engagement. Similarly, insomnia is very common problem among

college students due to the excessive use of internet and fallen in focusing on their academic performance (National Sleep Foundation, 2024).

Hypotheses and research model

The review of literature shows that the cyberloafing and academic performance are closely related to each other (She & Li, 2023).

- H1: Cyberloafing negatively and significantly influences academic performance.
- H2: FoMO negatively and significantly impacts academic performance.
- H3: FoMO moderates the cyberloafing and academic performance.

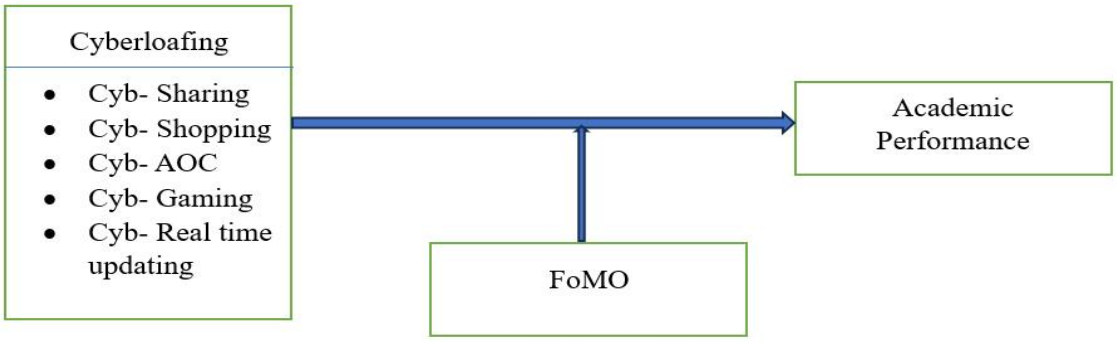

Figure 1: Conceptual model

Methodology

Sampling

For the purpose of this study, we administered the data online via questionnaire survey using Google forms. This has been disseminated among students of undergraduate and post graduate courses of private and public colleges in Chandigarh between January and March 2025. An adaptive questionnaire has been utilised to gather the data through online modes from 320 students using simple random sampling technique after deleting outliers and invalid responses 290 respondents have been taken for study. The study had 190 females and 100 males The data has been collected only with the consent of respondents. There were 186 students from private colleges and 104 from public colleges. 262 students from undergraduate courses and only 28 students had responded from post graduate courses.

Research Instrument

Five-point Likert Cyberloafing scale with 30 items developed by Akbulut et al., 2016 was used to measure the cyberloafing behavior. The alpha for this is 0.700. Five-point Likert FoMO scale with 10 items developed by Przybylski et al., 2013 was utilised to measure the FoMO among students. Alpha for this is 0.875. The five-point Likert scale for academic performance developed by Carson et al., 2015. The alpha for this is 0.886 as shown in table 1.

Variables	Likert scale	Items	Author	Cronbach's alpha
Cyberloafing	Five Point	30	Akbulut et al., 2016	0.700
Academic Performance	Five Point	8	Carson et al., 2015	0.875
Fear of Missing Out	Five Point	10	Przybylski et al., 2013	0.886

Table 1: Variables and Scales

Test of Measurement Model

In the research, the quality of the model has been assessed by evaluating the factor loading first, then the further construct reliability and Convergent validity and discriminant validity. For Internal consistency, the composite reliability was used and results have shown the acceptable criterion which is above .70 (Hair et al., 2022).

Factor loadings

The threshold limit for factor loading is 0.5 (Hair et al., 2016). In this case the one statement from assessing online content has been removed as the value of it was below 0.5. the values have been showed in table 2.

Indicator multicollinearity

According to the Hair et al. (2016) the threshold limit for VIF values can be 5. They will not create a major issue of multicollinearity if the values are less than 5. Table 2 reveals that the all the VIF values are below the threshold limit which is recommended.

	LOADINGS	VIF
AOC_2	0.930	3.141
AOC_3	0.884	3.276
AOC_4	0.675	1.404
AOC_5	0.854	2.372
AP_1	0.723	1.872
AP_2	0.787	2.031
AP_3	0.542	1.357
AP_4	0.794	1.940
AP_5	0.785	2.376
AP_6	0.758	2.484
AP_7	0.700	1.623
AP_8	0.731	1.765
F_1	0.724	2.168
F_10	0.655	2.888
F_2	0.754	2.338
F_3	0.722	1.966
F_4	0.718	2.146
F_5	0.643	1.607
F_6	0.717	1.907
F_7	0.628	2.184
F_8	0.604	2.906
F_9	0.731	2.763
GG_1	0.974	3.135
GG_2	0.906	3.485
GG_3	0.687	3.443

GG_4	0.702	2.880
RTU_1	0.764	1.455
RTU_2	0.816	1.827
RTU_3	0.803	2.509
RTU_4	0.638	2.054
RTU_5	0.850	2.182
SA_1	0.600	1.990
SA_2	0.593	1.954
SA_3	0.713	1.678
SA_4	0.642	1.801
SA_5	0.562	1.591
SA_6	0.628	1.691
SA_7	0.639	1.479
SA_8	0.805	2.058
SA_9	0.788	2.051
SO_1	0.921	4.032
SO_2	0.709	2.067
SO_3	0.936	4.631
SO_4	0.573	1.692
SO_5	0.748	1.923
SO_6	0.585	2.242
SO_7	0.501	1.555

Table 2: Factor Loadings and VIF values (Notes: "AOC= Accessing online content, RTU= Real time updating, SA= Sharing, SO= Shopping, GG= Gaming/Gambling, F= Fear of missing out, AP= Academic performance")

Reliability Analysis

The reliability analysis has been done by analysing the Cronbach alpha and Composite reliability. Both the reliability indicators have required the threshold limit of 0.70 (Hair et al., 2011). The results for both has been presented in table 3.

	Cronbach's alpha	**Composite reliability**	**Composite reliability (rho_c)**	**Average variance extracted (AVE)**
AOC	.861	.981	.905	.708
AP	.875	.891	.901	.535
FOMO	.886	.897	.901	.501
GG	.909	.779	.894	.684
RTU	.857	.819	.883	.605
SA	.863	.866	.877	.500
SO	.860	.996	.881	.526

Table 3: Measurement model
Source: Authors' own creation

Construct Validity

For the purpose of construct validity PLS-SEM has been used statistically. Where the convergent validity and discriminant validity is being measured using PLS-SEM. For convergent validity, AVE is calculated. The recommended value for AVE is greater than or equal to 0.5 (Fornell & Larcker, 1981). The results for fulfilled recommendation of AVE are shown in table 3.

Discriminant Validity

The discriminant validity of the model has been verified through HTMT, where all the values should be maximum 0.85, (Henseler et al., 2015).

HTMT	AOC	AP	FOMO	GG	RTU	SA	SO
AOC							
AP	0.218						
FOMO	0.166	0.252					
GG	0.203	0.071	0.134				
RTU	0.281	0.156	0.227	0.107			
SA	0.731	0.13	0.216	0.194	0.327		
SO	0.496	0.156	0.208	0.215	0.235	0.493	

Table 4: Discriminant Validity
Source: Authors' own creation

Fornell Larcker Criterion

According to Fornell Larcker, the value under this validity should be greater in its own construct than other constructs. Table 5 shows the results of Fornell Larcker.

Table 5: Fornell Larcker

	AOC	AP	FOMO	GG	RTU	SA	SO
AOC	0.841						
AP	-0.207	0.732					
FOMO	0.136	-0.26	0.707				
GG	0.142	-0.042	0.094	0.827			
RTU	0.222	-0.113	0.202	0.108	0.778		
SA	0.623	-0.122	0.148	0.161	0.273	0.707	
SO	0.491	-0.16	0.212	0.198	0.201	0.485	0.725

Source: Authors' own creation

Higher order construct

In this study, cyberloafing has been treated as higher order construct with five lower order construct i.e sharing, shopping, assessing online content, gaming and real time updating. For assessing the validity of higher order construct, the validity, reliability and factor loading has been evaluated. The Cronbach's alpha and composite reliability assessed the threshold limit which is greater than 0.7 (Wasko & Faraj, 2012; Hair et al., 2019). The factor loading as

prescribed by Hair et al., 2016 must be atleast 0.5. the convergent validity also satisfies the threshold limit greater than 0.5 as shown in table 6.

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AP	0.875	0.887	0.901	0.535
CYB	0.700	0.770	0.788	0.502
FOMO	0.886	0.898	0.901	0.508

Table 6: Validity of variables
Source: Authors' own creation

Fornell Larcker
In accordance with the standards requirements proposed by Hair et al., (2022), the sem assessment was carried out. First of all, the VIF values have been analysed as shown below with the maximum value 2.275, which shows no multicollinearity and follows the threshold limit.

Common Method Bias
During survey, common method bias is a critical problem. Such problem comes up when data has been collected from same source. This model is free from CMB problem as all the VIF values are not more than 3.33 (Kock, 2015).

	VIF
CYB -> AP	1.059
FOMO -> AP	1.066
FOMO x CYB -> AP	1.015

Table 7: VIF values

CYB	VIF	Loadings
AOC	1.774	0.862
AP_1	1.872	0.726
AP_2	2.031	0.791
AP_3	1.357	0.800
AP_4	1.940	0.783
AP_5	2.376	0.772

AP_6	2.484	0.692
AP_7	1.623	0.742
AP_8	1.765	0.755
F_1	2.168	0.627
F_10	2.888	0.776
F_2	2.338	0.721
F_3	1.966	0.714
F_4	2.146	0.637
F_5	1.607	0.731
F_6	1.907	0.696
F_7	2.184	0.862
F_8	2.906	0.726
F_9	2.763	0.791
GG	1.051	0.709
RTU	1.094	0.772
SA	1.803	0.801
SO	1.444	0.763
FOMO x CYB	1.000	1.000

Table 8: Factor Loadings and VIF
Source: Survey data SmartPLS 4 results

	AP	**CYB**	**FOMO**	**AP**	**CYB**	**FOMO**	**FOMO x CYB**
AP	0.732						
CYB	-0.211	0.672		0.268			

FOMO	-0.261	0.232	0.691	0.255	0.318		
FOMO x CYB	--------	--------	--------	0.116	0.174	0.119	

Table 9: Discriminant validity by fornell larcker and Htmt
Source: Survey data SmartPLS 4 results

Hypotheses testing

In the compliance of standards established by Hair et al., (2022), all the VIF values are less than 3.3 as shown in table 8 with the maximum value was 2.906, which shows no multicollinearity. Further investigation examines the significance of path coefficient using bootstrapping at subsamples of 5000 (Hair et al., 2022). Cyberloafing significantly impacts the academic performance (β = -0.164, $p < 0.005$), hence H1 accepted. Moreover, significant association has been established between FoMO and AP (β = -0.214, $p < 0.005$), supported H2. But the results shows that there is no significant moderation effect of FoMO between the association of cyberloafing and academic performance (β = -0.091, $p > 0.005$), hence H3 is not supported.

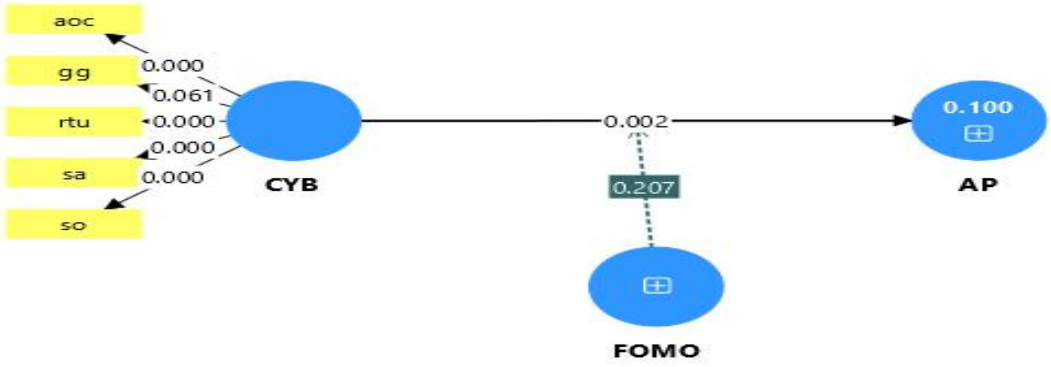

Figure 2: SmartPLS results showing p values.

Hypotheses	(O)	(M)	f^2	CI2.5%	CI97.5%	P values
H1: CYB -> AP	-0.164	-0.187	0.028	-0.287	-0.086	0.002
H2: FOMO -> AP	-0.214	-0.23	0.047	-0.328	-0.135	0.000
H3: FOMO x CYB -> AP	-0.091	-0.101	0.010	-0.248	-0.038	0.207
R^2 AP= 0.101	Q^2 AP= 0.060					

Table 10: Hypotheses results
Source: Survey data SmartPLS 4 results
R^2, effect size and model fit

The coefficient of determination (R^2) valued between 0.1 to 0.5 is considered to be relevant in social science field (Ozili, 2023). In this study the value of R^2 is 0.101. The standardized root mean square residuals (SRMR) was employed to examine "goodness of fit index" and was found less than .08 (Henseler, 2012). As per the suggestions given by Cohen (1988), the value of f^2 is 0.028 which means that the cyberloafing has a smaller effect on endogenous variable. The SRMR value is 0.079.

Predictive Relevence

The predictive relevance for the academic performance was examined by using PLSpredict. The value of Q^2 was more than or equals to 0 as shown in table 11. To reflect the strong predictive power of academic performance, (RSMS) "root mean squared error PLS" was compared to LM standards and it has been found that all the values are less than RMSE LM standards except two shown in table 11.

INDICATORS	Q^2predict	PLS-SEM_RMSE	LM_RMSE
AP_1	0.014	0.828	0.835
AP_2	0.042	0.856	0.877
AP_3	0.057	0.860	0.866
AP_4	0.047	1.042	1.040
AP_5	0.000	1.035	1.028
AP_6	0.017	0.813	0.833
AP_7	0.056	0.897	0.909

Table 11: Q^2 prediction results
Source: Survey data SmartPLS 4 results

LM

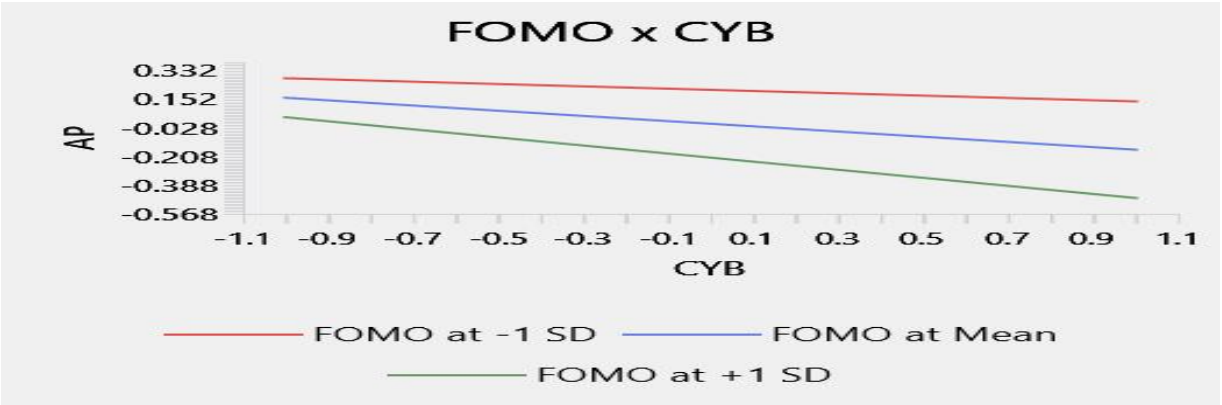

Figure 3: Moderation results using SmartPLS.

Discussion and Conclusion

Nowadays, students are extremely attached to internet, which is now become crucial component of their routine lifestyle. This research investigated the influence of cyberloafing behavior among students' academic performance in presence of fear of missing out. The results supported the proposed conceptual model and evaluated as an optimal fit. From three, two hypotheses were accepted except one, moderation of fear of missing out. As per findings, students' behavior on cyberloafing has shown a significant impact on academic performance.

This means the cyberloafing does not impacts the academic performance of students. The use of internet during their lectures has a negative impact on their academic performance. Thus, results signifies a significant impact of cyberloafing on academic performance as similar to results of Mei et al., (2019) and Agrawal & Krishna, (2025) and found to be negative. Additionally, the fear of missing out has not confirm the hypothesized moderation effect between cyberloafing and academic performance in contrats to Balasubramanian and Parayitam (2023). The results demonstrate no moderation effect. Furthermore, the results of Guan et al., (2023), shows the same results as in present study, it shows the significant impact of fear of missing out on academic performance, a negative relationship has been found.

Implications

The findings of this study have some relevant implications for practitioners. This study provides the direction of educational instiitutes and students as well. The educational institutes can work upon digital workshops for students wellbeing, encourage application blockers during study hours, and promote awareness camps of fear of missing out and its effect on the student's mental health. Futhermore, the instituions must teach students emotional resilience, midfulness and other time management strategies that may help in redcuing cyberloafing activities and enhance academic performance.

Limitations

The current investigation has some drawbacks also despite of its contribution. This study includes only the students and the responses have been filled by them as per their perspective only. Teachers or employees can also be considered. Cross-sectional approach has been used for this study, use of longitudinal approach may change results. Furthermore, the area and sample size can be increase. The private and public colleges have been considered, the universities from various regions can also be taken.

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