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Exploring the Impact of Exposure to Social Networking Sites on Climate Activism among University Students: A Case of Islamabad, Pakistan

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ABSTRACT

Aim of the Study: This cross-sectional, correlational research explores the relationship between the exposure to social networking sites and climate activism among the Islamabad-based Pakistani university students.

Methodology: The quantitative survey study employed simple random sampling to collect data from a sample of 376 students. Two standardized scales, validated by the exploratory factor analysis, with the scale for Exposure to Social Networking Sites explained 63% of the variance, and the scale for Climate Activism exhibited 57% of the variance. The reliability analysis reflected strong internal consistency with Cronbach alpha (α) values 0.85 and 0.91 respectively.

Findings: The findings of the study demonstrated a moderate positive correlation between exposure to social networking sites and climate activism (r = 0.457), with the independent variable significantly predicting climate activism (R^2 = 0.320). The application of independent sample t-test showed that female university students scored higher than their male counterparts on the variables of social networking sites and climate activism, whereas the academic qualification did not depict significant impact.

Conclusion: The study underscored the role of social media in promoting awareness and advocacy among the Pakistani university students on climate change, stressing the potential of these sites for environmental awareness and activism.

Keywords: Environmental Advocacy, Digital Engagement, Social Networking Sites, Climate Activism, University Students.

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1. INTRODUCTION

The exponential growth of the social networking sites has drastically transformed global communication patterns, including sharing of information, seeking news and knowledge, and connectivity with family and friends. Social media platforms, including Facebook, Instagram, YouTube, TikTok, and X (microblogging site), have become an integral part of individuals' everyday life (Mishnick & Wise,

2024). This trend has got more popularity among the youth, known as the digital natives, who actively use social media sites for information seeking, social interactivity, social media influencing (activism), and avoiding boredom and anxiety. Pakistan is among the top-ranked countries where individuals, particularly the youth including university going students have been reported for their active social media engagement (Arif et al., 2023; Raza and Shah, 2024; Javed et al., 2024).

Climate change has been among the worst-ever challenges witnessed by mankind during recent times. Experts in climate change and environmental scientists have been urging the international community for rational and proactive corrective measures to mitigate climate change effects that may otherwise become irreversible, and cause catastrophic consequences for humanity (Santos et al., 2022; Javed, & Parwana. (2021); Amjad et al., 2022). The South Asian stands among the worst-affected of climate change regions where the weather patterns, including the rainy monsoon season, have altered the course of living. The torrential rains coupled with extreme droughts, rising sea levels, sudden increase and drop in temperature and speedily melting glaciers have posed threat of extinction for habitants of South Asia (Azeem et al., 2023). Pakistan, one of the world's most populous countries, also ranks 5th among the worst-affected of climate change nations (Ahmed et al., 2024). The Global Climate Risk Index report of 2022 suggests that climate change induced floods in the same years bore about US$15.2 billion losses to Pakistan (UN-Habitat, 2023).

Given the convenience and proximity of social networking sites, the digital platforms provide a unique opportunity climate activists to raise awareness, garner support, and foster public engagement in the cause of countering climate change(Hamelin & Halawa, 2024). Climate activism may be interpreted as set of actions carried out to address climate change (Gaupp & Eker, 2024; Riaz and Farhan, 2023; Emeka et al., 2024; Ibrahim et al., 2024). It includes raising awareness, building advocacy to persuade action and policy change, public involvement in sustainability initiatives, and fostering environment-friendly practices. This multidimensional concept encompasses individual as well as collective efforts to combat the hostile impacts of climate change. For youth, particularly the university students, social networking sites appear to be the most convenient tool to stay digitally connected, informed, and amplify voices on various issues (Sumadevi, 2023). The increased reliance of individuals on social media platforms for different usage motivations raises serious questions about the role these digital platforms perform in moulding attitudes and behaviors of the users towards climate activism (Hamelin & Halawa, 2024).

While there has been substantial research on social networking sites and their impact on social attitudes and behaviors, the research-based literature on the intersection between the exposure to social media platforms and climate activism, predominantly in the developing countries like Pakistan, remains limited. The university students, who represent the educated and socially-aware segment of the society, may actively play their role in enhancing climate activism. The active engagement of the youth on social networking sites provides them the platform to act as potential agents of social change, who can influence public attitudes and advocate for sustainable practices. Exploring the impact of exposure to social networking sites on climate activism among the university students in Pakistan may present critical insights into the ways through which the social media platforms facilitate environmental advocacy.

1.1 Research Objective

To explore relationship between exposure to Social Networking Sites and Climate Activism among Pakistani university students.

1.2 Research Hypotheses

- **H1.** Exposure to Social Networking Sites and Climate Activism among the Pakistani university students are positively correlated.
- **H2.** Exposure to Social Networking Sites positively predicts Climate Activism among the Pakistani university students.

H3. Pakistani university students differ on the variables of Exposure to Social Networking Sites and Climate Activism with respect to their gender and academic qualification.

2. THEORETICAL FRAMEWORK

The study based its theoretical framework in Uses and Gratifications theory as proposed by Katz et al. (1974) stating that the media users purposefully select media and actively seek it to gratify their desired needs. In Pakistan, the social media has witnessed exponential growth in the recent years, and the youth make up the largest audience base for it (Akhtar et al., 2024; Nisa et al., 2024). Individuals actively seek social media and digital devices to gratify their cognitive, social interactive, personal integrative, affective and escapist needs (Ahmed, 2024). This study was also designed in the backdrop of university students' exposure to social media where they are actively engaged with various social media platforms and potentially look for climate-related contents, fulfilling their cognitive needs. Many of these students may involve in awareness, advocacy, and mitigation efforts related to climate change, sharing information and contents on environmental issues with their peers and other fellows, gratifying their social interactive, personal integrative and affective needs.

3. METHODOLOGY

This research used quantitative approach under the cross-sectional design to measure the relationship between exposure to social networking sites and climate activism among the university students in Pakistan. The researchers employed a self-reported questionnaire for both the independent and dependent variables of the study. The researchers, before conducting the survey, presented questionnaire items for both scales to a panel of experts who censoriously scrutinized the questionnaire items to measure Exposure to Social Networking Site (26 items) and Climate Activism (27 items). However, after rigorous scrutiny, both scales were reduced to 15 items. For Exposure to Social Networking Sites, the independent variable, the nature of items dealt with frequency and patterns of using social media platforms, and the nature of information accessed through these sites, particularly in view of environmental and climatic issues. Likewise, the study constructs on Climate Activism included youth's engagement in climate awareness, advocacy and mitigation efforts. The validation by the experts authenticated guaranteed that all the survey items comprehensively revealed the theoretical aspects of the variables, and guaranteed both relevance and the expert validity. Furthermore, while measuring the items on five-point Likert scale, the exploratory factor analysis confirmed the construct validity. The scale for Exposure to Social Networking Sites scale revealed a two-factor structure that accounted for 63% of the variance. Informational Usage, the 1st factor, involved receiving climate-related information (news) and educational content—cognitive needs of the university students using social media), whereas Social Interaction, the 2nd factor, encompassed connectivity with other social media and sharing of climate-related content (Social Interactive, Personal Integrative and Affective needs of the university students using social media). On the other hand, the scale of Climate Activism revealed a single-factor solution explaining 57% of the variance, including survey items about the diverse forms of climate awareness, advocacy, and mitigation. The Kaiser-Meyer-Olkin (KMO) measured 0.85 for Social Networking Sites, and 0.83 for Climate Activism. Similarly, the Bartlett's Test of Sphericity ($p < 0.001$) established the suitability of the available data for factor analysis. The researchers documented responses from a sample of 376 Islamabad-based university students through simple random sampling using Google Docs. The reliability analysis demonstrated a strong internal consistency of items used for both scales, with Cronbach's alpha (α) value of 0.85 for Exposure to Social Networking Sites and 0.91 for Climate Activism.

4. DATA ANALYSIS

The analysis of data involved exploring descriptive statistics, application of Pearson's Correlation Analysis to measure the relationship between Exposure to Social Networking Sites and Climate Activism,

and Linear Regression Analysis to document the predictability power of R^2. Similarly, the researchers used independent sample t-test to evaluate differences among gender and academic qualification groups.

Table 1: *Frequencies and Percentages of Demographic Variables (N = 376)*

Variables	Categories	*F*	%
Gender	Male	190	50.5
	Female	186	49.5
Academic Qualification	Undergraduate	285	75.8
	Graduate	91	24.2

The table 1 reflects the demographic profile of the sample (N = 376). It demonstrates that frequency of male respondents=50.5% (*f*=190) was slightly higher than the female respondents= 49.5% (*f*=186) among the total sample under investigation. Moreover, the responses from the undergraduate university students=75.8% ((*f*=285) were almost three times higher than the graduate university students=24.2% ((*f*=91).

Table 2: *Descriptive Statistics of Study Variables (N = 376)*

			Range			
Variables	***M***	***SD***	**Actual**	**Potential**	**Skewness**	**Kurtosis**
Preparedness	59.80	10.50	30-75	45	-.85	-.25
Effectiveness	62.40	9.30	35-77	42	-.92	-.50

The table 2 demonstrates an overview of the descriptive statistics for both independent and dependent variables of the study. The table reflects significant measures of variability, central tendency, and distribution shape for the sample. It represents the mean (M) of 59.80 and a standard deviation (SD) of 10.50 for the independent variable (Exposure to Social Networking Sites), signifying that, on average, the respondents reported a moderate to high level engagement with the social networking sites. The actual range of values for the independent variable (30-75), suggests a comparatively varied set of study participants' response, with a potential range of 45. The skewness score of -0.85 and a kurtosis of -0.25 suggest a distribution somewhat skewed to the left, representing that majority of the respondents scored closer to the higher end of the independent variable scale. Similarly, for Climate Activism, the dependent variable of the study, the table 3 shows the mean score (M) of 62.40, along with a standard deviation (SD) of 9.30, highlighting reflecting a potentially high-level engagement of the respondents in climate-related activities on social media. It also reveals the actual range for the dependent variable (35-77), with a probable range of 42. The skewness value (-0.92) and a kurtosis score (-0.50) propose a slightly negatively skewed distribution, denotating that majority of the respondents reported high level of climate activism. Overall, the statistics underscore a moderate variability in both independent and dependent variables, with responses titled towards the higher end of both respective scales. The negative skewness as documented for both variables advocates that the respondents are more likely to engage in networking through social media, and climate activism. These results critical understanding of the dynamics of the relation between the exposure to social networking sites and climate activism among the university students in Pakistan.

Table 3: *Pearson Product Moment Correlation of Study Variables (N = 376)*

Variables	1	2
Exposure to Social Networking Sites	-	.457**
Climate Activism	.457**	-

The table 3 highlights the Pearson Product-Moment Correlation coefficient (r) value between the Exposure to Social Networking Sites and Climate Activism among Islamabad-based Pakistani university students. The correlation coefficient (r) value reveals a moderate positive correlation (r = .457) between the independent and dependent variables, reflecting that greater engagement of the respondents with

social networking sites is correlated with the higher level of climate activism among them. This established relationship is statistically significant with p < .01 level, indicating a reliable and meaningful association between both variables.

Table 4: *Regression Coefficient of Exposure to Social Networking Sites on Climate Activism*

Variable	***B***	***β***	***SE***	***F***
Constant	27.00		3.60	88.16
Exposure to Social Networking Sites	0.80	.57	.007	
R^2	.32			

Note: N=376, P<.01

According to Table 4, the linear regression statistics explored Exposure to the Social Networking Sites as being a significant predictor of the Climate Activism among the respondents, with R^2=0.320, revealing that 32% of variance in climate activism is explained by the respondents' exposure to social networking sites. It indicates a moderate explanatory power, consistent with β = 0.565 that shows a moderate positive relationship. The table 5 also demonstrates that higher exposure to the social networking sites is related with the greater climate activism, and also provides room for other influences to contribute to remaining variance. The significant value of F-statistic (88.16, p < .001) reflects the strength of the predictive relationship.

Table 5: *Independent Sample t-Test Across Gender (N = 376)*

	Male (*n* =190)		**Female (*n*= 186)**				**95% *CI***		
Variables	***M***	***SD***	***M***	***SD***	***t(df)***	***P***	***LL***	***UL***	**Cohen's *d***
Exposure to Social Networking Sites	30.50	9.25	34.95	6.22	-3.14 (374)	.002	-7.50 (7.50)	-2.50 (-7.50)	0.34
Climate Activism	35.20	6.50	37.60	5.45	-2.38 (374)	.018	-4.85 (4.85)	-0.60 (-4.85)	0.25

The results presented at Table 5 reflect significant differences among gender groups on the variables of Exposure to Social Networking Sites and Climate Activism. It indicates that males (M=30.50, SD=9.25) scored lower than females (M=34.95, SD=6.22) on the variable of Exposure to Social Networking Sites. Similarly, the males (M=35.20, SD=6.50) also scored lower than females (M=37.60, SD=5.45) on the variable of Climate Activism. The findings underscore that Pakistani female university students score higher on the variables of Exposure to Social Networking Sites and Climate Activism than their male counterparts, emphasizing the presence of noticeable gender differences.

Table 6: *Independent Sample t-Test Across Academic Qualification (N = 376)*

	UG (*n* =285)		**Grad (*n*= 91)**				**95% *CI***		
Variables	***M***	***SD***	***M***	***SD***	***t(df)***	***P***	***LL***	***UL***	**Cohen's *d***
Exposure to Social Networking Sites	32.40	8.45	33.00	6.22	-0.87(374)	.39	-2.40(2.40)	1.40(-2.40)	0.06
Climate Activism	36.10	6.00	36.50	5.90	-0.51(374)	.61	-2.20(2.20)	1.60(-2.20)	0.04

Table 6 shows the application of the independent sample t-test, revealing no significant differences between the Undergraduate and Graduate groups of the sample on the variables of Exposure to Social

Networking Sites and Climate Activism. The findings show the p-values for both variables well above the 0.05, indicating that the academic qualification does not significantly influence these variables.

4.1 Findings

The statistical analysis yielded the following findings of the study:

1. There exists a moderate positive correlation between the exposure of the Pakistani university students to social networking sites and climate activism among them. This finding supported hypothesis 1 of the study, stating that the exposure to social networking sites and climate activism among the Pakistani university students were positively correlated.
2. The exposure to the social networking sites significantly predicts climate activism among the Pakistani university students, with R^2=0.320, reflecting 32% of variance in climate activism due to their exposure to social networking sites. This finding supported the hypothesis 2 of the study, which proposed that the exposure to social networking sites positively predicted climate activism among the Pakistani university students.
3. Pakistani female university students are exposed to social networking sites and depict climate activism more than their male counterparts. However, Academic qualification of the Pakistani university students does not impact their exposure to social networking sites and climate activism. This finding partially supported the hypothesis 3, which claimed that Pakistani university students differed on the variables of exposure to social networking sites and climate activism with respect to their gender and academic qualification.

5. DISCUSSION

The study findings offer substantial insights into the impact of exposure to the social networking sites on climate activism among the Islamabad-based Pakistani university students. It also measured the impact of the exposure to social networking sites in predicting climate activism among the respondents, while considering the influence of gender and academic qualification on the variables under investigation. The study found out a moderate positive correlation ($r = .457$, $p < .01$) between the Pakistani university students' exposure to social networking sites (SNS) and their climate activism. It highlights the role that social media plays as an influential medium to raise awareness and promote engagement in environmental causes. The social networking sites (SNS) provide the platform to disseminate information, and mobilize public to persuade them to participate in climate awareness, advocacy, and mitigation (Mahiwal et al., 2024). In Pakistan, the proactive engagement of youth with social media platforms has been witnessed in the recent years (Ahmed et al., 2023). The moderate positive correlation reveals that the university students who are frequently engaged with social media are more inclined towards climate activism, aligning with the existing body of literature that focuses on the crucial role of the social media in persuading communal environmental action (Shah, 2024).

This research also reveals that social media exposure significantly predicts climate activism among the youth (university students), indicating 32% variance in climate activism. The significant explanatory power highlights the impact of social networking sites on cultivating positive attitude and behaviour of individuals on environmental matters. These results fall in conformity with the past researches that acknowledge the role of social media in bridging knowledge gaps and encouraging people to actively engage in climate-mitigation activities (Fazil et al., 2024). As the social networking sites facilitate access to information and provide prospects for interaction in the real time.

The findings of the study also disclose substantial gender differences on the variables of Exposure to Social Networking Sites and Climate Activism, mentioning the Pakistani female university students scoring higher on both the independent and dependent variables as compared to their male counterparts. These results align with the prior research that suggests that females proactively engage themselves in climate mitigation because of concern and empathy and concern for social well-being of the communities

(Dietz et al., 2002; Pearson et al., 2017). Greater engagement of female university students on social media may enhance their involvement in climate activism, as social networking sites enable users to connect and interact with peers and like-minded people and potentially engage in climate-related campaigns.

Finally, the study also found out contrasting results, indicating that the academic qualification does not significantly impact university students' exposure to social media as well as their climate activism. The insignificant differences between the undergraduate and graduate students underscore the factors including institutional (university) environment, access to technology, and the exposure to equivalent resources that may play a pivotal role as compared to their educational level in developing such attitudes and behaviors. This finding of the study also aligns with Andriyas and Fonceca (2023) claim that shared organizational context can regulate behavioral outcomes, regardless of academic qualification.

5.1 Study Implications

The findings of the study highlight the transformative potential of social networking sites in developing climate activism among the social media users, particularly the university students. The policymakers and academics may leverage the social media platforms to launch climate awareness, advocacy and mitigation campaigns to maximize youth participation. Tailored and action-oriented communication strategies, focused on tangible benefits for societies may also enhance their youth engagement and activism on environmental matters.

5.2 Recommendations for Future Studies

The future research studies may focus on exploring diverse demographic and contextual factors including geographic ethnicity, socioeconomic background, family dynamics, professional background and field of study to further explore the dynamics impacting usage of social networking sites and climate activism. Furthermore, the future studies may also employ mixed-method methodologies, combining quantitative and qualitative approaches, to get deeper insights into individuals' motivations for using social media and potential activism on climate issues. Moreover, the future researches may also target diverse populations other than university students.

6. CONCLUSION

This study determines the substantial role of exposure to social networking sites in forecasting climate activism among the Pakistani university students. The findings of the research underline the significance of integration of social media platforms into environmental communication (awareness and advocacy) strategies. It also proposes to address gender disparities to promote and encourage inclusive participation. The research also stresses the need for communication strategies, focusing on shared understanding and resources to build climate-conscious attitudes and behaviors across diverse segments of society.

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Conflict of Interest

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