The Role of Social Media in Raising Awareness and Engagement with Government Initiatives for Smog Mitigation in Pakistan

Shaiza Farooq[1], Dr. Aemen Khalid[2], Azhar ul Haq Wahid[3]

[1]M.Phil. Scholar, School of Media & Communication Studies, UMT, Lahore, Pakistan.
[2]Assistant Professor, School of Media & Communication Studies, UMT, Lahore, Pakistan.
[3]PhD Scholar, Communication Sciences, Universidad Complutense de Madrid, Spain.

Corresponding Author: [2]aemen.khalid@umt.edu.pk

Abstract - *The aggravation of smog pollution in Lahore, Pakistan, presents a critical challenge to public health and environmental sustainability. Traditional approaches to mitigate smog have yielded limited success, necessitating innovative strategies. Pakistan, ranked fifth among the most affected countries by climate change, contributes only 0.3% of global emissions yet suffers disproportionately from climate adversities, including severe smog conditions. Lahore has consistently topped the list of the world's most polluted cities in 2021, 2022, and 2023.This research investigates the role of social media in fostering awareness of government initiatives aimed at smog mitigation among youth aged 18-24 in Lahore. Using a purposive sampling technique targeting 200 social media users, a quantitative research design and survey method were employed. The study integrates the Theory of Planned Behavior (TPB) and the Elaboration Likelihood Model (ELM) to understand how social media shapes perceptions concerning smog mitigation initiatives. The findings reveal that frequent social media use explains 18.8% of the variation in awareness and significantly influences youth perceptions (58.4%) towards combating smog, with higher engagement among men. The hypothesis regarding the significant contribution of social media to creating awareness about government initiatives in smog mitigation campaigns in Lahore is supported. The research highlights social media's crucial role in environmental advocacy and offers insights for policymakers and campaign designers. Future research should include broader demographics, longitudinal studies, and qualitative methods to further explore social media's impact on environmental issues.*

Keywords - Media functions, audience gratifications, media academics, news media, Pakistan

1. Introduction

Social media is an online communication channel that emphasizes user-generated content and interactions.[1]

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[1] A M Kaplan and M Haelein, *Users of the World, Unite! The Challenges and Opportunities of Social Media, Business Horizons* (53, 2009); M Terry, "Twittering Healthcare: Social Media and Medicine," *Telemedicine and E-Health* 15, no. 6 (2009): 507–10.

It has become integral to users' lives and their primary source of dependence, with its features and patterns greatly influencing their actions.[2] Social media has been studied for its ability to offer consumers access to a wealth of knowledge and promote democracy by educating the public about societal issues.[3] The present study focuses on the role of social media in creating awareness regarding government initiatives in smog mitigation, as smog is an environmental issue.

Facebook, founded in 2004 by Mark Zuckerberg, is a popular social networking platform that allows users to interact with content, connect with friends, and share updates.[4] Instagram, founded in 2010, is crucial for brand marketing.[5] Both platforms have been used to increase public awareness of environmental issues, such as smog and air pollution. Facebook groups and pages dedicated to environmental activism share news stories, instructional materials, and calls to action. Social media has influenced the majority of youth, switching from television to social media for instant communication and spreading knowledge.[6]

Smog, a blend of fog and smoke, is a major issue in Lahore, Pakistan, affecting health and the environment. It's a result of photochemical smog, a heavy vehicular traffic issue.[7] Social media significantly shapes youth actions and perceptions regarding environmental issues, including smog mitigation efforts. Platforms like Facebook and Instagram provide instant access to information and ongoing initiatives, promoting participation in environmental discussions.

Smog is a major concern in Pakistan, as it affects both rich and poor countries. Multiple perspectives exist among authorities, researchers, and decision-makers about climate change. With some believing it will lead to terrible outcomes and others hopeful about creative solutions. Social media can be used to support events, campaigns, and interact with the public about air pollution. The harm from global warming is expected to be catastrophic and irreversible if global action is not taken to stabilize Earth's surface temperature, according to the United Nations Framework Convention on Climate Change.[8] Increasing public knowledge of the dangers posed by climate change is essential to putting suitable and efficient policies into place. Millions of people are thought to be affected by smog, which arises from a photochemical reaction between sunlight and air pollution that produces damaging ozone.[9] The harmful effects of pollution on the general public can be mitigated by increased awareness and preventive measures.[10] In Pakistan, the main sources of air pollution are population growth, industrialization, and increased motor vehicle use. A study found that breathed air pollutants from increased motor vehicle use were one of the main causes of deficient atmospheric conditions.[11] Lahore, the second-biggest metropolis in Pakistan, is severely contaminated with substances such as carbon monoxide, lead, and zinc, which are dangerous to the community's health and finances.[12] According to a prior research report the highest concentration of particulate matter in Lahore,

[2] P Raghavendra et al., *'I Could Never Do That before': Effectiveness of a Tailored {Internet} Support Intervention to Increase the Social Participation of Youth with Disabilities* (Child: Care, Health and Development, 2013).

[3] M Margolis and G Moreno-Riaño, *The Prospect of Internet Democracy* (USA: Ashgate Publishing, Ltd, 2013); H Margetts, *The Internet and Democracy* (Dutton, The Oxford handbook of Internet studies. UK: Oxford University Press, 2013).

[4] M Nycyk, Facebook: Exploring the Social Network and its Challenges, 2020.

[5] V Nandagiri and L Philip, "Impact of Influencers from Instagram and {YouTube} on Their Followers," *International Journal of Multidisciplinary Research and Modern Education* 4, no. 1 (2018): 2454–6119.

[6] P U Rani, "Padmalosani, "Impact of Social Media on Youth," *". Int. J. Innov. Technol. Explor. Eng* 8, no. 11 (2019): 786–87.

[7] K Sanaullah et al., *Smog Awareness and Knowledge of Precautionary Measures among General Population. Journal of Society of Prevention, Advocacy and Research KEMU* 1, no. 2 (2022).

[8] IPCC., *Climate Change*, 2013.

[9] F Arif, "SMOG: Causes, Effects and Preventions," *Annals of King Edward Medical University* 22 (2016): 4.

[10] Y Wang et al., "(2016)," *Public Awareness and Willingness to Pay for Tackling Smog Pollution in China: A Case Study. Journal of Cleaner Production* 112 (2015).

[11] Y -X. Zhang, T Quraishi, and J J Schauer, "(2008)," *Daily Variations in Sources of Carbonaceous Aerosol in Lahore, Pakistan during a High Pollution Spring Episode." Aerosol and Air Quality Research* 8, no. 2 (2007).

[12] M Younas et al., *Assessment of Cd, Ni, Cu, and Pb Pollution in Lahore, Pakistan. Environment International* 24,

Quetta, and Karachi in Pakistan is due to air pollution.[13] This pollution costs the country about 6% of GDP, with air pollution-related illnesses accounting for almost half of all damage-related costs. It impairs people's physiological systems, raises death and illness rates, and reduces productivity.[14] Some experts believe that India's coal refining sector is linked to Pakistan's haze.[15]

A teacher named Wajiha Azhar claimed that while there was an extensive initiative to raise awareness and sensitize people about the dengue outbreak, the campaign also contributed to some degree of control over the problem. In Rawalpindi, Alia Tariq, a student, informed her peers that section 144 had been enforced by the district administration, prohibiting anyone from setting solid garbage on fire. A global campaign called BreatheLife inspires cities and people to take action against air pollution to safeguard both the environment and human health. The Climate & Clean Air Coalition (CCAC), UN Environment Programme (UNEP), and World Health Organization (WHO) have launched the initiative.[16] The October and November 2020 events in Pakistan aimed to raise awareness about lung health and combat air pollution, particularly in urban areas. The two main causes of lung ailments in Pakistan are persistent pollution in dirty cities and the increased rate of smoking. Smog presents serious health risks and has earned Pakistan the distinction of being the second most polluted nation in the world, routinely exceeding WHO air quality limits. These events were coordinated by the Gujranwala City Traffic Police in collaboration with various partners such as the Government School Education Partnership, the District Teaching/General Hospital, and media outlets.[17] The media holds significant discursive power, allowing it to affect public opinion, generate agreement, and coerce assent. By adopting social responsibility, the media can orient public opinion towards the severe issue of climate change.[18] The current study highlights the promise and limitations of various litigation techniques in international law, focusing on a particular sequence in the UNFCCC's legal framework governing international responsibilities. Under the current configuration of the UNFCCC, legal action towards governments individually for their distinct environmentally damaging policies is nearly impossible to pursue.[19]

Facebook and Instagram have been used to organize rescue and relief operations after climate-related disasters, as well as to prepare campaigns and initiatives related to climate change.[20] On December 24, 2019, WaterAid Pakistan, UNICEF Pakistan, and the Local Government and Community Development (LG&CD) Department launched the Clean Green Pakistan Index (CGPI) in Punjab. The province-wide goal of this program is to encourage environmental sustainability and cleanliness. The Chief Minister stressed the value of healthy competition among the 319 local government bodies during the launch event, with performance evaluated based on important metrics. He called on district administration officials to take the initiative to meet goals and establish Punjab as a champion in the clean and green campaign.

The Punjab government has taken great steps to tackle the detrimental impacts of air pollution, such as

no. 7 (1998).

[13] B Ghauri, A Lodhi, and M Mansha, *Development of Baseline (Air Quality) Data in Pakistan. " Environmental Monitoring and Assessment* 127 (2007).

[14] M J Neidell, "Air Pollution, Health, and Socio-Economic Status: The Effect of Outdoor Air Quality on Childhood Asthma," *Journal of Health Economics 23*, 2004; A Wahid, "Productivity Losses in Barley Attributable to Ambient Atmospheric Pollutants in Pakistan," *Atmospheric Environment* 40 (2006).

[15] G Sadiq, *Environment: Smog — Curtain over the Cities* (Dawn, 2016).

[16] Breathe Life Campaign, (2016).

[17] European Lung Foundation, (Healthy Lungs for Life events: Pakistan, 2020).

[18] S Khan and R M Khan, *Role of Media in Tackling Climate Change Issue – a Case Study of {Pakistan}* (Margalla Papers, 2016).

[19] M Meguro, *Litigating Climate Change through International Law: Obligations Strategy and Rights Strategy. Leiden Journal of International Law* 33, no. 4 (2020): 933–51.

[20] B León, M Bourk, and L S Davis, *One Essential Component of the Response to Climate Change Is Public Engagement. {Effective} Communication and Public Participation Are Essential for Achieving the Necessary Swift Social Change with the Consent and Participation of the Populace. {Media} {I* 188, no. 1 (2021).

public transportation measures such as the Orange Line train, Metro bus, and Speedo bus.[21] Lahore received the first artificial rain to reduce smog, thanks to UAE assistance.[22] Pakistan is currently facing significant ramifications from changes in the climate, including changes in weather and devastating floods. However, these effects are expected to worsen; projections indicate that by 2050, air pollution, environmental degradation, and climate-related disasters might reduce Pakistan's GDP by 18-20%. This concerning figure emphasizes the urgency of solving the issue of climate change to lessen its consequences for people and their means of subsistence.[23]

Lahore will get another dose of artificial rain this month, as the government claims that the artificial rain was used for the first time in the country last month to tackle air pollution in Lahore.[24] Residents, particularly students and outdoor workers, have been greatly affected by the smog, reporting a variety of clinical symptoms, including coughing, wheezing, burning, and watering of the eyes, as well as aggravating pre-existing respiratory conditions. Despite the government's best attempts to end the haze, the nation continues to struggle with controlling various air pollutants.[25] The present research examines the role of social media in raising awareness about government initiatives to mitigate smog in Lahore, Pakistan. It provides a current view of the level of awareness and perception among the people of Lahore regarding smog-related air pollution and its preventative measures.

1.1 Problem Statement

In spite of the government best efforts, smog pollution remains a significant challenge in Lahore, Pakistan. The issue of concern has not responded well to traditional techniques, highlighting the need for creative solutions. In addition to aiming to identify chances for improving the efficacy of smog mitigation measures, this project aims to investigate the potential of social media as an instrument for influencing public opinion, influencing youth perception, and raising awareness about government actions in smog reduction. This study aims to offer evidence-based suggestions for enhancing public participation and to promote positive change in Lahore's battle against air pollution through rigorous quantitative analysis.

1.2 Rationale

The study examines the severe issue of smog in Lahore, Pakistan, where despite efforts by the government, traditional methods have not produced the intended outcomes. The study intends to investigate social media's potential as a tool for increasing public awareness of government actions in smog mitigation, given its pervasive effect in people's lives. This effort seeks to influence public attitudes about most smog abatement initiatives by using social media tools similar to Facebook and Instagram to try to change young people's likely positive disposition towards them. The initiative aims to produce evidence-based suggestions for enhancing public engagement and promoting positive change through rigorous quantitative analysis. The research highlights youth engagement since youth utilize social media extensively, and it acknowledges the significance of involving the next generation in environmental issues. In the long-term, the findings of this research can help policymakers create effective plans to reduce air pollution and enhance public health in Lahore.

1.3 Objectives

1. To check the impact of social media usage in creating awareness regarding government initiatives in Smog mitigation campaigns in Lahore.

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[21] The New York Time, in *Lahore, Pakistan, Smog Has Become a 'Fifth Season,'* 2017.

[22] Business Standard, (Lahore receives first artificial rain to combat smog with {UAE}'s assistance. https://www.business-standard.com/world-news/lahore-receives-first-artificial-rain-to-combat-smog-with-uae-s-assistance-123121600593_1.html, 2023).

[23] J D Barón and S Asad, (Turning concern into action: Understanding climate change attitudes in Pakistan, 2023).

[24] Dawn, (Lahore to have another spell of artificial rain this month. https://www.dawn.com/news/1803266#:~:text=The%20artificial%20rain%2C%20according%20to,than%2011m%20residents%20during%20winter, 2024).

[25] S Wasif, *November 4)*, 2016.

2. To check the role of government campaigns in building the perception of youth regarding smog mitigation in Lahore.
3. To recommend suggestions on measures to control smog mitigation to policy maker.

1.4 Significance of the study

This study would help in addressing a critical issue faced by the city of Lahore, Pakistan smog pollution. Smog pollution affects millions of residents and requires immediate action since it presents serious threats to human health and the environment. This study has several aspects because it examines how social media might raise public awareness of government initiatives designed to reduce pollutants in the air. For policymakers and agencies of government, knowing how social media affects the general public's awareness of smog mitigation activities can be quite insightful. The results of this study can be used to improve currently used techniques and create more effective public awareness campaigns to encourage people to take up the cause of reducing smog pollution. With a focus on youth who use social media often, ages 18 to 24, and this study acknowledges the significance of involving the next generation in environmental issues. Strategies to empower youth participation in smog mitigation initiatives can be informed by research evaluating the impact of awareness campaigns on youth perception. A greater understanding of smog mitigation programs might influence people's behavior, encouraging them to support environmental regulations or choose cleaner forms of transportation. In the end, this can help improve public health outcomes in Lahore by lowering exposure to hazardous pollutants. The research's recommendations can aid in coordinating future smog mitigation campaigns with objectives.

2. Utilizing Social Media for Awareness

To investigate how social media, in particular platforms like Facebook and Instagram, might be extremely useful in raising public awareness of government initiatives aimed at mitigating air pollution. People's life now revolve on social media platforms, which have an impact on their interactions, views, and behaviors.[26] Facebook and Instagram are among the most widely used platforms, suitable for spreading awareness about environmental issues due to their interactive nature.[27]

2.1 Influence of Social Media

Social media significantly shapes youth actions and perceptions regarding environmental issues, including smog mitigation efforts. Platforms like Facebook and Instagram provide instant access to information and ongoing initiatives, promoting participation in environmental discussions. Many studies on the intensity of media consumption, both active and light, have produced varying results for user groups. According to Nycyk, Facebook and Instagram are two of the most widely used social media platforms globally. While Instagram is mostly used for photo sharing, Facebook is more focused on social networking. When it comes to coordinating activities, exchanging information, and pushing for legislation to address environmental problems like air pollution and smog, these platforms have proved invaluable. Users frequently post news articles, educational resources, and calls to action on smog mitigation programs on various platforms. Facebook pages and groups devoted to environmental action serve as focal points for local communication and teamwork on pollution control initiatives. Similar to this, Instagram users take part in efforts to lower air pollution and post pictures and stories illustrating the negative effects of smog on their local areas. Facebook and Instagram help spread information, mobilize public opinion, and advocate for laws and programs that fight pollution because of their widespread accessibility and interactive capabilities. Using these media, environmental organizations and influencers spread the word about pollution reduction and inspire their followers to adopt sustainable practices.

2.2 Climate Literacy and Awareness

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[26] Kaplan and Haelein, *Users of the World, Unite! The Challenges and Opportunities of Social Media, Business Horizons}*; Terry, "Twittering Healthcare: Social Media and Medicine."

[27] Nycyk; Nandagiri and Philip, "Impact of Influencers from Instagram and YouTube on Their Followers"; Raghavendra et al., *'I Could Never Do That before': Effectiveness of a Tailored Internet Support Intervention to Increase the Social Participation of Youth with Disabilities, 2020*.

Climate literacy refers to the methodical integration of climate-related learning into the educational framework. It involves the ability to collect accurate information on climate and weather and communicate that data in a clear, understandable, and objective manner.[28] Awareness and literacy are crucial components of the international response to climate change, generating changes in attitudes and actions of individuals, raising "climate literacy" among youth, and helping to address the effects of global warming.[29] Effective actions, knowledge, literacy, and skills are necessary for addressing climate change. Communities and people can respond more effectively to the problem and participate in its fight when they are educated.[30] The primary concern in Pakistan is the general lack of knowledge about climate change among the populace.[31] However, it is not limited to the general public; the rich and powerful and even important climate actors lack the same. Experts and policymakers are not the only ones who need to be literate about climate change concerns; regular people also need to know about the effects of climate change and potential adaptation and mitigation strategies. The moment has come to address the problem on both a macro and micro level by changing the curriculum, running awareness campaigns, and holding training. The gap between research and implementation must also be filled, with an emphasis on converting research into the implementation of policies.

Awareness and literacy are crucial components of the international response to climate change. It generates changes in attitudes and actions of individuals, raises "climate literacy" among youth, and assists in addressing the effects of global warming. Effective actions, knowledge, literacy, and skills are necessary for addressing climate change. Communities and people can respond more effectively to the problem and participate in its fight when they are educated.[32]

The public is made more aware of climate change and motivated to take action together to confront the threat by raising awareness of the issue. Without a question, raising people's knowledge of climate change plays a significant part in encouraging green thinking. But raising awareness of climate change is a difficult endeavor. Because of this, it ought to have a significant position in all initiatives and policies. Being climate literate and informed will make it easier to adapt to environmental and climatic changes.[33] The primary concern in Pakistan is the general lack of knowledge about climate change among the populace.[34] However, it's not limited to the general public. The rich and powerful and even important climate actors lack the same. Experts and policymakers are not the only ones who need to be literate about climate change concerns; regular people also know about the disadvantage of climate change and potential adaptation and mitigation strategies. The moment has come to address the problem on both a macro and micro level by changing the curriculum, running awareness campaigns, and holding training. The gap between research and implementation must also be filled, with an emphasis on converting research into the implementation of policies. Since the economic framework of Pakistan could be severely impacted by climate change, it is imperative that local communities become more aware of the issue.

2.3 Barriers to Climate Change Education

The barriers to climate change education include a lack of political will and commitment.[35] The exclusive focus of education on career-focused subjects, minimal community awareness initiatives about climate

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[28] T Miler and P Sladek, "The Climate Literacy Challenge," *Procedia-Social and Behavioural Sciences* 12 (2011): 150–56.

[29] UNESCO., (Climate Change Education and Awareness. https://en.unesco.org/themes/addressing-climate-change/climate-change-educationand-awareness, 2014).

[30] A Anderson, *Combating Climate Change through Quality Education* (Brookings Global Economy and Development, 2010).

[31] National Climate Change Policy, *Ministry of Environment* (Government of Pakistan, 2012), http://www.nrsp.org.pk/gcf/docs/National-Climate-Change-Policy-ofPakistan.pdf.

[32] Anderson, *Combating Climate Change through Quality Education*.

[33] Anderson.

[34] Policy, *Ministry of Environment*.

[35] S Khan, *Climate Change: Perspective of a Civil Society Organization Development Advocate Pakistan* (2(4). https://www.researchgate.net/publication/299393218, 2016).

change, and the vilification of civil society and non-governmental organizations in countries like Pakistan. Additionally, Pakistani media outlets are sadly solely focused on making money, with sensationalism, fear, and a rush to break news becoming standard practices in Pakistani journalism. Education and self-defense skills should be taught to prevent worsening pre-existing medical issues.and the potential harmful health impacts associated with environmental threats. Public service announcements, marketing materials, and educational handouts can be distributed via the Internet, television, and radio to accomplish it. The results of these research would suggest that ideology has a greater influence on people's opinions and perceptions of climate change, worldviews, and other emotive factors than by knowledge. However, rather than testing genuine climate change content knowledge directly, this research used proxy measures. For instance.

2.4 Understanding Youth Perceptions and Challenges

The media has contributed to raising awareness of environmental issues and observing incidents, with increased media concentration supporting long-term and environmental consciousness. However, young people are building amicable and sociable relationships with the local community, and one of the primary outcomes of these platforms is academic success. Long-term research has shown that spending too much time on social media without any purpose has a detrimental effect on degrees.[36]

3. Hypotheses

H1–Social media usage has a significant impact on creating awareness regarding government initiatives in smog mitigation campaigns in Lahore.

H2–Government campaigns play a significant role in building the perception of youth regarding smog mitigation in Lahore.

4. Theoretical Framework

A theoretical framework is essential for research, as it helps researchers select variables, explain concepts, and formulate hypotheses, placing the study within the broader context of existing knowledge.[37] It aids in identifying research gaps and enhancing the study's quality and authenticity. In this research we utilize two theories .The Theory of Planned Behavior (TPB), expanded from the Theory of Reasoned Action, predicts behaviors beyond one's control and is influenced by perceived behavioral control, attitude, and subjective norms.[38] This study uses TPB to investigate the impact of social media on public knowledge of smog mitigation initiatives in Lahore, examining attitudes towards government initiatives, subjective norms, and perceived control over social media engagement. Empirical testing aims to understand how social media and awareness campaigns shape youth attitudes and behaviors towards smog mitigation, informing policymakers on effective strategies The Elaboration Likelihood Model (ELM) offers insights into information credibility and suggests routes of information processing for designing impactful smog mitigation campaigns.[39]

5. Method

The present research employs a quantitative approach to investigate the role of social media in creating awareness regarding government initiatives in smog mitigation.The sampling strategy for this study is purposive sampling. In this case, the criteria for 200 participant selection include being active social media users of Facebook and Instagram within the age range of 18 to 24 years. Both male and female university students were selected as samples. In this research, primary data was collected using a closed-ended Questionnaire about the effectiveness of smog mitigation awareness campaigns. Descriptive and inferential

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[36] Rani, "Padmalosani, "Impact of Social Media on Youth.""

[37] C Grant and A Osanloo, "Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: {Creating} the Blueprint for Your,"; S Vinz and T George, *(2023* (November 20)).

[38] W W LaMorte, (Behavioral Change Theories, 2022); I Ajzen, "Models of Human Social Behavior and Their Application to Health Psychology," *Psychology & Health* 13, no. 4 (1998); M F Ashraf, R U Ahmad, and H K Tareen, *Worsening Situation of Smog in Pakistan: A Tale of Three Cities. Annals of Medicine and Surgery,* 79. (2022).

[39] Richard E Petty et al., *The Elaboration Likelihood Model of Persuasion* (Springer, 1986); C Nickerson,*)* (Elaboration Likelihood Model Of Persuasion).

statistics of this study reveal that social media significantly enhances awareness about government initiatives and engagement in smog mitigation. Cronbach's Alpha reliability analysis has been utilized in this study to assess the reliability and stability of the research instrument used. Regression analysis was used to investigate this relationship and test the hypothesisand examine variations in respondents' awareness of social media campaigns. The data was collected through an online survey through a Google document from the four university students: UMT, UCP, GCU, and PU. In the current study, the distribution of participants was as follows: 50% were affiliated with Private sector and 50% represented the Government sector, an equivalent percentage.

6. Hypothesis Testing

H1: Social media significantly contributes in creating awareness about government initiatives in smog mitigation campaigns in Lahore.

Table 1

		Model Summary		
				Std. Error of the
Model	R	R Square	Adjusted R Square	Estimate
1	.434ᵃ	.188	.184	.64254

The results of the model summary indicate that the overall model is significant, and the value of R square explains the variation in the dependent variable due to certain independent variables. In this case, the R square is 0.188, which means that 18.8 percent of the variation in Social Media Smog Awareness is explained by the independent variable, the Social Media Scale. In other words, 18.8 percent of Social Media Smog Awareness can be explained by the Social Media Scale.

Table 2

		Coefficients				
				Standardized		
		Unstandardized Coefficients		Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	1.719	.271		6.344	.000
	Social Media Usage Scale	.820	.121	.434	6.774	.000

The coefficients table reveals a significant positive relationship between the Social Media Usage Scale and Social Media Smog Awareness. The constant (intercept) is 1.719 with a standard error of 0.271, indicating that when the Social Media Usage Scale is zero, the predicted value of Social Media Smog Awareness is 1.719. The Social Media Usage Scale has an unstandardized coefficient (B) of 0.820 with a standard error of 0.121, and a standardized coefficient (Beta) of 0.434. This implies that for every one-unit increase in the Social Media Usage Scale, the Social Media Smog Awareness increases by 0.820 units. Both the constant and the Social Media Usage Scale are highly significant, with t-values of 6.344 and 6.774, respectively, and p-values of .000. These results underscore the strong and significant impact of social media usage on increasing awareness about smog mitigation initiatives.

H2: Government campaigns play a significant role in building the perception of youth regarding smog mitigation in Lahore.

Table 3

		Model Summary		
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

| 1 | .214ª | .046 | .041 | .67789 |

a. Predictors: (Constant), Social Media Scale

In the above table the regression model shows a weak relationship between the predictor variable, Social Media Scale, and the outcome variable, as indicated by a low R Square of 0.046. This means that only 4.6% of the variance in the outcome variable is explained by changes in the Social Media Scale. The Adjusted R Square, accounting for the model's complexity, is even lower at 0.041. The standard error of the estimate is 0.67789, suggesting that the model's predictions typically deviate from the actual values by approximately 0.68 units. Overall, while there is a statistically significant relationship ($p < 0.05$), the model's predictive power is limited, indicating that other factors not included in the analysis may influence the outcome variable more substantially.

Table 4

		Coefficients				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.804	.286		9.808	.000
	Social Media Scale	.394	.128	.214	3.090	.002

a. Dependent Variable: Perception Youth Smog Awareness Campaign

In the regression analysis presented, the coefficients table summarizes the relationship between the predictor variable Social Media Scale and the dependent variable Perception Youth Smog Awareness Campaign. The standardized coefficient (Beta) of .214 suggests the strength of this relationship in standard deviation units. The t-value of 3.090 and its associated significance level ($p = .002$) indicate that the relationship is statistically significant at the 0.05 level, suggesting that Social Media has a significant impact on Smog Awareness Campaign.

7. Conclusion

The research concludes that frequent social media use significantly raises awareness about government smog mitigation initiatives, explaining 18.8% of awareness variation. The study also found that smog mitigation campaigns on social media positively influence youth perceptions (58.4%) towards combating smog, with men engaging more with smog-related content than women. Facebook and Instagram emerged as the most popular platforms among students. Supported by both theories, the findings showed that social media helps bridge the gap between perception. However, the study's small sample size, short duration, and focus on Lahore limit its generalizability. Future research should include broader demographics, longitudinal studies, and qualitative methods. Overall, the study underscores social media's crucial role in environmental advocacy, enhancing public engagement and fostering proactive behaviors toward smog mitigation. Policymakers and campaign designers are encouraged to leverage social media's potential to create effective awareness campaigns.

Future Recommendations

This study highlights the need for broader research to understand the variations in perceptions and behaviors beyond Lahore. Future research should focus on longitudinal studies to track users' consumption of awareness over time and understand their evolving perceptions. Qualitative research among Pakistani users is recommended to gain deeper insights into their mindset regarding smog mitigation awareness on social media.

The survey results show varying levels of agreement among respondents regarding the effectiveness of smog mitigation awareness campaigns in Lahore. A significant portion agrees that these campaigns effectively inform youth about measures to control smog pollution, motivate them to take proactive actions, and communicate potential solutions. However, a significant number express neutral opinions across these

dimensions. A trend towards agreement is observed among youth regarding policies aimed at reducing smog pollution after exposure to these campaigns. A majority of respondents believe these campaigns are effective tools for influencing youth's attitudes and behaviors towards combating smog pollution. However, the diversity of opinions and neutral stances suggest a need for further investigation into the factors influencing perceptions and behaviors regarding smog mitigation among youth in Lahore.

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