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Examining the Role of Social Media in Shaping Public Perceptions of Climate Change in Pakistan

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Abstract

This research paper was meant to explore how social media influences the perception of people in relation to information about climate change in Pakistan. It targeted Pakistani population, specifically the people living in the twin cities of Rawalpindi and Islamabad, who were active users of social media. The research aimed at investigating the awareness level, attitude changes and perceptions regarding climate change severity in the general population. Data collection was done using quantitative research design. The survey technique was employed for data collection, and using a questionnaire, (n=287) responses were collected online in one month. The information was collected from the citizens in Rawalpindi and Islamabad, Pakistan. For data collection, participants of 16 years and older ages were selected. The findings make it clear that exposure to information about climate concerns is associated with better levels of awareness, improved shifts in attitudes, and stronger levels of concern over the severity of climate change.

***Keywords*:** social media use, public perception, climate change, climate knowledge

Introduction

Pakistan was one of the first respondents to global climate crisis, and is largely exposed to the effects of climatic change which include increasing temperatures, melting glaciers and devastating floods, all of which are a great threat to the lives, livelihood, and economic stability of its people. The problem of climate change is ubiquitous, and it is identified as a global challenge by all means- it may even be called the most important problem of our era (Ahmed et al., 2024; Baber et al., 2025; Coeckelbergh, 2021;

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Javed et al., 2024; Raza & Shah, 2024; Raza et al., 2025; Kashif et al., 2025).

Pakistan is extremely prone to the effects of climate change, unlike a number of other Asian nations that are experiencing difficulties in sustainable development through resource depletion, industrialisation, urbanisation, and economic growth (Chan et al., 2018). Climate change is already having devastating impacts in Pakistan and these impacts are estimated to be exacerbating in the future. The records show steady increases in the temperatures, which result in excess heatwaves, and a growing number of heatstroke cases both in cities and in countryside (Faurie et al., 2022). The monsoon has also been affected by the changes in the weather forms leading to increased rain and floods (Tahir et al., 2015).

One of the major causes of climate change is the emission of greenhouse gases, most of which are caused by the burning of fossil fuels and other non-renewable resources (Maulu et al., 2021; Rabah et al., 2025). Road transport is a source of around 23 percent of greenhouse emissions in Pakistan (Mir et al., 2022). This is not only a challenge that Pakistan is going through but almost all countries in the world are going through it. The problem of climate change was first mentioned in the scientific world as early as 1824, but it was nearly 150 years before the discussion moved into the media sphere (Rorsch, 2014).

In Pakistan, where there was virtually no media coverage of climate change, the average number of print stories is now 146 every month (Ejaz et al., 2023). Nevertheless, in measuring climate change awareness, the small sample of media coverage is not enough to drive effective change and awareness among the people (Rorsch, 2014). When analyzing the impact of media messages, we should take into consideration the origin of the message, traits of the recipients (e.g. gender, age, psychographic profile), and the environment of the platform or channel in which the message is delivered (McGuire, 1989). Social media has become a necessity in the modern life in Pakistan, where it provides a wide range of information related to climate change, global warming, and other political and social problems (Raja & Nagasubramani, 2018). The social media is quite significant in climate change communication because it is among the most appropriate and convenient platforms used to communicate information (Pearce et al., 2019). Social media has also served in creating awareness for farmers, and is useful in climate change issues with timely reporting

(Quarshie et al., 2023).

It is thus critical to look into the effects of social media coverage of climate change on the perception of the people in Pakistan. It is the duty of every person to give his or her contribution and involvement in the activities that tend to curb this situation which is becoming a serious concern. This paper fills the research gap by exploring the role of social media in influencing people in Pakistan about climate change. Quantitative research type was adopted to critically evaluate the level of public awareness in Pakistan, that is, whether people are knowledgeable about the notion of climate change, read climate-related materials, and subscribe to social media pages devoted to the topic.

The paper also assesses whether, after exposure to climate change details on social media, there is behavioural or attitudinal change such as taking practical measures to mitigate the problem. The study goes further to analyse the perceived severity, which examines the level of perceived seriousness to the issue of climate change by the population in Pakistan. The data collection was based on the close ended and self-designed questionnaire that was administered to the active social media users aged 16 years and over in Rawalpindi and Islamabad.

This research aims to present quantitative information about the effects of social media content on the perception of climate change among the population in Pakistan. The study further examines the perception and reaction of individuals towards the information relating to climate in the era of personalisation algorithms, particularly on the social media, to draw the attention to the importance of social media when it comes to influencing the population regarding a topic of critical concern.

Problem Statement

Pakistan is most susceptible to the harsh effects of climate change, causing extreme weather conditions, occurrence of natural disasters, and warming. As the trends continue to increase and pose unimaginable risks, there is disproportionate recognition and acceptance of climate change by people. Social media is an effective means of distributing information, creating awareness about different problems, improving knowledge levels, influencing perception, and triggering engagement, especially of young adults. It holds a significant position in persuading people to learn and act on the challenges faced in the world such as climate change. As online

participation increases at a high rate, Instagram, Facebook, Twitter and YouTube are important platforms that determine awareness, attitudes and behaviours towards climate change. Nonetheless, this impact is unexplored. This research paper explores the impacts of social media on the climate change awareness of young adults and studies the citizen reactions to climate change messages. Moreover, it assesses the attitudes concerning whether the results of climate change will be severe or not.

Significance

Climate change is already becoming dangerous to the region as temperatures have increased, glaciers are melting, and floods are devastating. There is, thus, a need to create awareness among the people so that they can be enlightened on the gravity of the situation. The media is important in the proposed dissemination of information and keeping the information current. This paper analyses the persuasive power of social media on how the masses perceive climate change since it is a potent method of influencing the attitude, behaviour, and the level of awareness on the important agenda. It gives information on the impact of social media messages on understanding, concerns, and intentions to action and the reception of climate-related communications among the population. The results unveil the significance of employing social media campaigns and shaping directed communication approaches to encourage the interest of the people around, and to enhance responsible environmental behaviour. This study is an effort to contribute to the growing debate of successful climate change communication strategies by examining the association between social media and social perception.

Study Gap

Although various studies across the world have focused on the problem of climate change and the role of social media in determining the behaviour of individuals, no exhaustive research has been conducted in Pakistan on the same. Current literature in the nation has mainly focused on climate change awareness using the conventional media thus neglecting the emerging power of online platforms. In addition, little has been done to explore the attitudes, behaviours, and awareness of the public on climate change and how the society responds to the messages made regarding climate change, spreading through social media. With this gap to fill, this research aims to determine the influence of social media on climate change

perceptions among the Pakistani population with implications to policymakers and communication professionals.

Objectives

- To examine the role of social media in shaping public perceptions of climate change in Pakistan.
- To assess the awareness level of the public about climate change, particularly among social media users.
- To analyse public attitudes towards climate change messages on social media.
- To evaluate public perceptions of the severity of climate change impacts.

Research Questions

- How does social media shape public perceptions of climate change in Pakistan?
- To what extent are social media users aware of climate change?
- What are the public's attitudes towards climate change messages on social media?
- To what extent does the public perceive climate change as a severe issue?

Literature Review

A study carried out by Asif et al. (2024) called Media Portrayal of Climate Change in Pakistan: A Systematic Literature Review discussed the role of media as a significant contributor in influencing people on climate change awareness in Pakistan. The research used systematic literature review of research publications of the last 15 years (2009-2023). Evidence showed that climate change, among other issues, was underrepresented in the Pakistani media because of such reasons as illiteracy, editorial inclinations, low viewership, and the absence of infrastructure to report. The report of the study concluded that programmes on climate reporting should be designed and launched by media.

Javed et al. (2023) studied Social Media Reporting and what it takes to be Sustainable in Agricultural Adaptation to Climate Change in Pakistan.

This was meant to understand how social media comes into play in making the farmers shift towards coping with weather-related issues. The study addressed the nature of correlations existent between climate change and agriculture using a correlation experimental research design. The respondents included 120 male farmers whose data were gathered through purposive sampling. The results indicated that social media reporting contributed positively to the attitude of the farmers towards management practices, water storage, and crop selection. In the study it was concluded that social media reporting affects farmers in advanced adoption of crop selection practice, pests control, and water storage.

Usman et al. (2024) aimed to explore the sudden climate change and anomalies in Pakistan, and an analyse the disruption between the economists and climate change analysts. Various causative factors causing climate abnormalities were detected and the findings presented the claim of Pakistan being one of the worst-hit countries by global warming. The research established that professionals ought to embrace systematic strategies to alleviate the climate change issues.

Khan and Hanif (2024) examined the topic of Role of Media in Climate Literacy: opportunities and challenges in Pakistan. This research was supposed to explore how the media can foster climate literacy in Pakistan. Qualitative research design was used, and interviews with journalists and experts in climatic change were conducted, as well as document analysis of secondary sources. The results revealed that the media has a strong impact on the agenda-setting to portray the climate issues. The research suggested an increased dedication in climate journalism through enhancing the competence of the journalists and enhancing collaboration among media organizations and civil society as well as the policy makers with the view of advancing sustainable development.

Qayyoum and Hameed (2023) determine the pro-environmental knowledge, attitudes and the behaviours of the youth and the role of the media in that matter. The survey was quantitative, carried out on 476 male and female university students in Islamabad. Results indicated that in spite of the fact that young people possessed much knowledge about the environment, it was not necessarily translated into action. The social media was more effective in influencing attitudes and behaviours compared to the traditional media. The researcher came to the conclusion that no difference was found in knowledge patterns of the male and female respondents;

however, female participants were more prone to pro-environmental attitudes and behaviours.

The article titled Climate Change and Its Effects on Pakistan by Talpur et al. (2023), examined the socio-economic, environmental, and ecological variables, and the consequences of climate change. The existing academic literature, international reports, and government policies, as well as scientific statistics were used to draw data. Results proved the fact that Pakistan is one of the most susceptible nations to climatic change whereby temperatures are increasing, the glaciers are melting, sea level is rising, the pattern of precipitation is changing, heat waves are occurring, and the effects are health issues, agricultural problems, and water shortage. The research proposed that sustainable mitigation measures should be adopted immediately.

The article by Gul et al. (2024) aimed to explore the role of media in influencing the discussion of environmental matters. Three major English newspapers were analyzed with the application of a quantitative content analysis, targeting at op-ed pages in 2021-2024. The findings showed that there were minimal discussions on the environment and the frames applied in the newspapers were global warming, pollution, glacier melting, and the rise in sea level. It was found that the level of coverage was often low and the society was rather touchy when it comes to issues regarding these problems.

A study by Farooq et al. (2024) discussed how social media platforms influence public perception and advocacy of policy problems and programs in climate change. Its objective was to analyze how social media use is connected with the opinion of the masses and backing policy points. It was a quantitative survey in which 185 students of public and private educational institutions of Lahore participated. The results implied that social media has a positive impact on the attitudes and opinion about taking questions into account regarding climate-related policy efforts.

The research by Abbass et al. (2024) investigated the global implications of climate change on sustainable sectors based on secondary data collection of media houses, agencies, policy papers, and newspapers. The research showed that climate change poses a great risk to different sectors especially in the countries that rely on agriculture. The research reached the conclusion that more robust policies concerning climate should

be implemented to deal with the crisis.

Sharif and Medvecky (2018) discussed the development of Pakistan and the problems encountered by environmental journalists. The objective was to come up with reasons as to why the coverage of climate change in the news media has been minimal and therefore, promotes confusion, ambiguity, and a lack of awareness. The interviews conducted by semi-structured guidelines with the media professionals showed that social, cultural, political, economic, technological, and scientific issues play roles in the coverage. The results of the study were compiled to substantiate that better communication structures were required to increase the information flow and be more available to the people about environmental news.

A study by Bibi (2024) determine the role of media in shaping the attitudes of people, and the way in which information regarding climate change was conveyed, especially via the television, radio and the internet. The paper also considered the possibility of personalised communication to counter the unique requirements of various community groups. Surveys and interviews were done using a mixed-method approach. Results showed that media have a great influence on forming opinion of the people, yet awareness does not necessarily mean action. The research proposed policy formulation and specific communication to climate change awareness.

Tuitjer and Dirksmeier (2021) investigate the effect of the internet and social media in the perceptions of climate change. The data of European individuals were analyzed using multilevel regression analysis. Results showed that an increased social media consumption was linked to a decreased perceived capacity to affect the outcome of climate change.

Afsheen and Naz (2024) focused on the comparison between digital media and climate consciousness in Pakistan and on the situation regarding the knowledge level of users and action-awareness gap. The study has been presented using both methods, that is, surveys of 500 members of digital media and extensive interviews with nature conservationists and creators. The results indicated that the association between digital media and climate change awareness was positive, but at the same time demonstrated that misinformation spreads online. The paper made suggestions on how to enhance effective application of digital media in addressing global warming.

Khan and Ahmed (2024) examine the relationship between social media

consumption and perception of climate change of university students. A cross-sectional survey using a quantitative approach was applied, where a sample of 249 students was used. Results indicated that the use of social media by females was greater than that of males affecting their attitudes in climate change as compared to rural and urban students who did not have significant perceptions. This study advised schools to embrace critical thinking, availability of trusted content and fact-checking system to enhance discourse on climate change.

Theoretical Framework

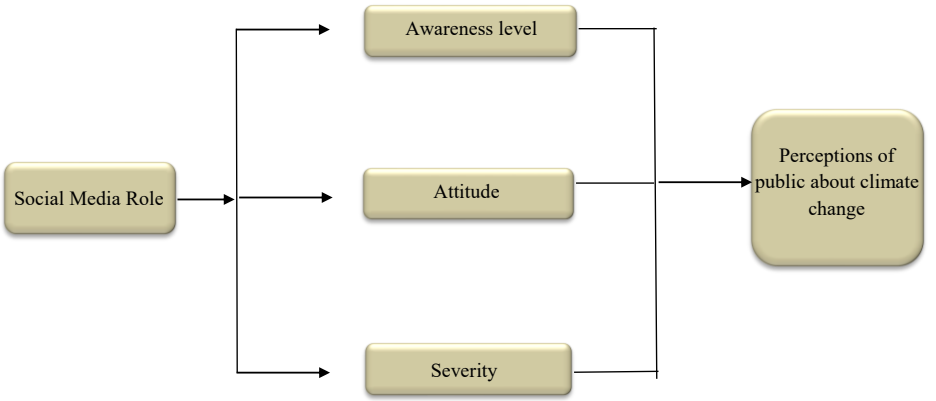
The agenda-Setting Theory (McCombs & Shaw, 1972) informs this study and it states that the media has the ability to influence perceptions and views of the people by making some issues or topics more visible than other ones. In this research, the theory implies that the prevalence of climate change across several social media platforms can influence the level to which it will be perceived as a serious issue by people. Since the individuals utilizing social media are those who wrestle with the inside information through hashtags, trends, and influencers, these sources of media have the capability of agenda-setting by making the white-colored information attractive to the rest of the population.

In addition, Goffman (1974) introduced Framing Theory in his book Frame Analysis that has explained how people utilize particular frames and outlooks in interpreting and understanding actuality in the social world by attributing meaning to various occasions and experiences. This idea was later further elaborated by Entman (1993), who has come up with a much-known media theory of framing, which entails the evaluation of specific pieces of perceived reality and that which becomes more prominent within a communicative situation. This undertaking influences the manner in which the population is made to think and judge about matters.

Within the scope of the current research, the Framing Theory is used to describe the principles according to which social media incorporate climate change to get people more concerned and involved by framing climate change as a humanitarian disaster, a political issue, or environmental movement, etc. The social media environment with its user-generated content and fast spreading capabilities, uses these framing techniques to win over the issue of climate change among the population awareness, attitudes, and intentions to change their behavioural patterns (see Figure 1).

Figure 1

Study Model



Research Methodology

The study uses a quantitative research design to focus on the use of social media in influencing the view of people on climate change in Pakistan. Quantitative studies deal with systematic numerical information that can be statistically assessed to determine patterns, links and trends (Changjun & Xiaowen, 2025). The data of the current research was collected through a survey method, where the participants were provided with a self-designed questionnaire aimed at collecting information about their awareness, beliefs, and perceptions towards climate change and associated social media information posted on the Internet.

The population of this research consisted of citizens of Pakistan. The sample was selected among twin metropolitan cities Islamabad and Rawalpindi and comprised of individuals who actively use social media. The target population was selected to understand how the knowledge they obtain on social media plays a role in affecting their knowledge on climate change. The sample was made up of persons who are living in the twin cities of Rawalpindi and Islamabad, aged 16 years and above. The data used in this study was collected online using Google Forms and was distributed via WhatsApp among the social circle of the authors. Using non-probability purposive sampling technique, a sample of (n=287) respondents was collected in one month's duration. A self-designed questionnaire was chosen with close-ended (Likert scale) scale questions. The collected data was

analysed using SPSS software where different statistical procedures were used to interpret the results in accordance with research objectives.

Results

Table 1

Respondents' Information

Sr.	Variables	Options	Frequency	Percentage
1.	Gender	Male	103	35.9
		Female	184	64.1
2.	Age	16-20	56	19.5
		21-25	168	58.5
		26-30	62	21.6
		30 above	1	0.3
3.	Occupation	Student	90	31.4
		Employed	151	52.6
		Unemployed	46	16.0
4.	Time spend on social media	1-2 hours	62	21.6
		3-4 hours	163	56.8
		More than 4 hours	62	21.6

Table 2

Correlations among demographics, SMU and PPCC

	1	2	3	4	5
Gender	1	.102	.106	.004	.088
Age		1	.464**	.087	.033
Occupation			1	.063	.078
SMU (IV)				1	.203**
Public Perception about Climate Change (DV)					1

Note. $^{**}p < .0.01$

Table 1 illustrates the demographic data of the sampled respondents including age, gender, occupation and the use of social media. Survey method was used to collect 287 responses. Most of the respondents were women (64.1%), and males constituted 35.9% of the sample. The age range of the respondents was the highest in the age bracket of 21-25 (58.5), and the lowest percentage was those people who were older than 30. In the

aspect of occupation, close to fifty percent of the respondents were employed. The study showed that the majority of the participants spent three to four hours on social media content daily. These results prove that the sample population is digitally engaged and frequently use social media.

The correlation analysis in table 2 shows that the independent variable (use of social media) and the dependent variable (youth perceptions of climate change) have a statistically significant relationship ($r = 0.203$, $p < 0.01$). This implies that the more people use social media, the more they perceive climate change as an important and serious problem among the youth. Differently put, increased use of social media seems to increase awareness, change attitudes or heighten interest in climate change among the Pakistani young population.

These results showed that potential of social media to inform, educate, and create awareness on critical issues among the public and determined by what the users like and what they are exposed to. Here, social media does its part in terms of making constructive images towards climate change among young adults.

Also, demographic factors like age, sex, and profession do not indicate any insignificant correlation with climate change perceptions. These demographic variables do not seem to affect the perceptions of the young adults regarding the issue differently. A moderate positive relationship would however be seen between age and occupation but this implies that the elderly have higher chances of holding some professional positions. Altogether, demographic features have little to do with the climate change perception in this sample.

Table 3

Independent Sample t-test SMU and PPCC

	t	*df*	*p*	Mean Difference	95% CI	
					Lower	Upper
SMU (IV)	127.85	286	.000	23.06	22.70	23.42
PPCC (DV)	151.13	286	.000	96.99	95.73	98.25

According to the results of the One-Sample Test in table 3, the independent variable, i.e., social media has a very strong effect. This value is *t* 127.85 (*df*= 286, *p* <. 001), the mean score is 23.06, which is significantly greater than the value of the test. This illustrates that the

respondents are avid social media users, and social media is an influential part amid transmission of information.

In the same manner, the perceptions of adults toward climate change were discovered to be very crucial, as having t-value of 151.14 with a degree of freedom of 286 and $p < .001$ and a mean of 96.99. These results indicate that the awareness, attitudinal shifts and perception of adults regarding seriousness of climate change is highly dependent on the information that people absorb on social media.

On the whole, findings indicate a great potential of social media in producing the popular semantics of climate change. It is extremely important to propagate awareness, shape the opinion and create concern about the gravity of climate change in the adult population through it.

Table 4

Regression analysis among variables

Model	*B*	*SE*	β	*t*	*p*
(Constant)	113.610	4.801		23.665	.000
Social Media	-.721	.206	-.203	-3.492	.001

The results of regression analysis in Table 4 suggest that the visibility of effects of social media use on the perception of adults regarding climate change is quite predictable and significant. It can be seen that greater use of social media leads to greater awareness levels, more concerned as well as proactive attitude, and greater perception of climate change as a serious situation.

It also reveals through an analysis that awareness is the greatest influence of the social media, changed attitudes being second, and perceived severity being third. This is an indication that although social media provides a strong instrument of information dissemination, it equally contributes significantly to the development of opinion among people and the shaping of perceptions towards climate changes.

Discussion

In Pakistan, climate change is a very frightening menace that presents itself in the form of increased temperature, melting glaciers, storms, and floods, which result in threats to life and livelihoods. The effects on farmers are not the only ones, but the issue produces enormous economic losses and other

ripple effects (Javed et al., 2019). It is necessary to spread information on climate change, regarding its effects, mitigation efforts, or even the general understanding of the issue, and the media has a pivotal role in it. Social media platforms are also among media outlets that provide a convenient and accessible route of informing about climate-related data (Mavrodieva & Shaw, 2021).

This paper is aimed at analyzing the perceptions of social media active adults, in particular, to identify if consumption of climate-related content raises the level of awareness, attitudes and recognition of climate change as a severe crisis. In contemporary life, social media is already a part of the modern lifestyle and it offers an unending flow of various information, including environmental content (Raja & Nagasubramani, 2018). It is important to focus the general population on the concerns related to the environment, particularly when the sphere of politics and economics prevails as the primary topic of conversation (Bozan, 2017). In addition, the views of people and communities are often underrepresented and the messages of climate communication are often mirrored in the governmental views and policies. The involvement of the people is thus essential in supporting the action to be taken on climate change, though the local effects and reactions are less reported than international ones (Kleinberg, 2022).

Considering this gap, the research asks the question of how little studied the role of social media is in the development of perceptions on climate change among adult Pakistanis. It relies on Agenda Setting Theory (McCombs & Shaw, 1972) and Framing Theory (Goffman, 1974) in describing how selective and framed information on social media can create concern, attitudes and a willingness to act in the general population. The previous studies indicate that people who have a greater exposure to such, would show an attitude change and would also become open to pro-environmental behaviour (Awan et al., 2022). This research is a quantitative one that addresses the issue of the impact of social media on climate change awareness, attitudes, and their perceived severity. The findings make it clear that exposure to information about climate concerns is associated with better levels of awareness, improved shifts in attitudes, and stronger levels of concern over the severity of climate change.

Conclusion

The evidence that was gathered establishes that social media is an

effective way of sharing information and it is very influential in creating opinions and in molding people's perceptions. There are different platforms where adults in Pakistan read climate-related information on a regular basis. The study was able to fulfill its goals as it analyzed the effects on awareness, attitudes, and perceived severity of climate change due to social media. The results show that the respondents use social media actively, and most of them spend three to four hours checking posts and content about climate change. Not only does this exposure ensure that they are informed on anything that is emerging and developing but also makes them always have proactive attitudes and to be ready to act. Its findings make it clear that exposure to information about climate concerns is associated with better levels of awareness, improved shifts in attitudes, and stronger levels of concern over the severity of climate change. The analysis also demonstrates that raising awareness is the area where the impact of social media is the most powerful, following that is the perceived evidence of changing attitudes, and the third is the ability to affect the perceptions of severity. These results underscore the centrality of social media in enabling intelligent and participatory public messages about climate change.

Author Contribution

Ghulam Safdar: conceptualization, methodology, investigation, formal analysis, writing—original draft, writing—review and editing. **Aatif Iftikhar:** writing—original draft, writing—review and editing. **Fatima Yasin:** writing—original draft, writing—review and editing.

Conflict of Interest

The authors of the manuscript have no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

Data supporting the findings of this study will be made available by the corresponding author upon request.

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The authors did not use any type of generative artificial intelligence software for this research.

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