Lahore Institute for Research and Analysis Journal
ISSN: 3007-2700 (Online); 3007-2719 (Print)

Volume 3, 125-139, 2025

A Delphi Study on Mapping Motivations and Barriers of Pakistan's Digital Participation in Climate Activism

Zoya Tahir[1], Dr. Sajid Hussain[2]

[1]*M.Phil Scholar, Superior University, Lahore, Pakistan.*
[2]*Assistant Professor, Superior University, Lahore, Pakistan.*

Corresponding Author: [1]zoyeah.tahir@gmail.com

Received: 08-12-2024 Revised: 11-01-2025 Accepted: 20-01-2025 Published: 04-02-2025

Suggested Citation: Zoya Tahir; Sajid Hussain "A Delphi Study on Mapping Motivations and Barriers of Pakistan's Digital Participation in Climate Activism" *Lahore Institute for Research and Analysis Journal* 3 (2025): 125–139.

Abstract *- This study examines the barriers and enablers of digital participation in climate advocacy in Pakistan, a country ranked among the most climate-vulnerable nations globally yet lagging in public engagement with climate action. The research applies the Delphi method within the framework of Actor-Network Theory (ANT) to explore how socio-cultural, technological, and structural factors shape digital activism in the context of climate change. Twenty-three experts from fields as diverse as climate advocacy, digital communication, sociology, and cultural studies were brought together in a three-round iterative process to reach consensus on the key barriers and strategies. The findings include major barriers such as low awareness, socio-economic priorities overshadowing environmental concerns, limited internet access, and algorithmic biases that reduce the visibility of climate content. Identified enablers are religious and cultural framing, localized storytelling, and influencer-led campaigns to mobilize diverse audiences. Non-human actors, such as algorithms on social media, were found to play a very critical role in shaping the effectiveness of digital advocacy networks. The research integrates insights from experts and offers actionable recommendations for enhancing digital climate engagement, including targeted policy interventions and culturally resonant advocacy strategies. This article contributes to the growing body of literature on digital activism in the Global South and supports pathways toward strengthening Pakistan's climate movement.*

Keywords - Climate Action, Actor-Network Theory, Climate Advocacy, Global South, Pakistan

Introduction

Pakistan is one of the most vulnerable countries to climate change impacts. It is regularly featured among the top ten most vulnerable countries in the Global Climate Risk Index. Between 2000 and 2019, there were 173 extreme weather events, causing over 10,000 deaths and annual economic losses exceeding $3.8 billion in the country. Pakistan ranked 8th on the Global Climate Risk Index in 2024, highlighting the country's high susceptibility to climate-related disasters. Climate-induced floods in 2010, 2011, and 2022 resulted in severe food insecurity, migration activities that

strained natural water reservoirs, and a rapid rise in already exorbitant health concerns nationwide.[1] The compounded impacts of climate change disasters are projected to cause Pakistan's GDP to decline by seven to nine percent by 2050. Despite such high levels of climate vulnerability, the country lags significantly in mass climate awareness.[2]

The catastrophic floods of 2022 had inundated one-third of Pakistan, displaced over 33 million people, and inflicted losses amounting to $30 billion, making it urgent that climate change is addressed. Despite the alarming reality, public awareness and engagement regarding climate change remain low. A 2023 policy note published by World Bank found through a survey that less than 25% of Pakistanis consider climate-induced threat among the top three issues the country is facing and only 18% could identify specific climate-related risks (e.g., flooding, droughts) affecting their communities, and underpinning the urgent need to increase awareness and mobilize digital engagement.[3]

Digital activism has emerged as an essential tool for mass mobilization, spreading awareness, and influencing policy around the world. In the Global North, movements such as Fridays for Future and Extinction Rebellion, have used social media for mass mobilization and concerted action.[4] The Brazilian anti-deforestation movement from the Global South owed its success to effective social media use, which amplified its environmental cause, gaining international support and attention.[5] Conversely, Pakistan's climate change activism on digital platforms is yet to gain significant ground. While smartphone penetration has increased and access to social media has expanded, climate-related content in Pakistan is grossly de-emphasized and mostly invisible. This disparity is attributed to socio-cultural barriers and technological constraints perpetuating limitations on digital engagement and the corresponding climate activism.

Existing studies primarily focus on international movements, such as Fridays for Future and Extinction Rebellion, which are better supported by higher digital access, awareness, and socio-political climate action. However, the socio-economic context of Pakistan is unique in that it has widespread poverty, a digital divide, and low climate literacy. This creates specific barriers to digital participation. Global studies have focused on the role of influencers and storytelling in advocacy, but there is little research on religious teaching, and more precisely, Islamic teachings and cultural narratives can be integrated into climate campains. This study addresses these gaps by examining the intersection of socio-cultural, technological, and religious factors influencing digital climate activism in Pakistan, offering insights that are both locally relevant and globally significant.

This Delphi study analyses factors that may influence the digital engagement of climate activism, understood as the interaction with climate-related news, campaigns, or sub-movements over online platforms such as X (Twitter), Instagram, and Facebook. The analysis considered three categories of variables. First, relating to low awareness and perceived irrelevance resulting from a lack of understanding of climate change effects on individuals and communities. In addition, the disengagement is further heightened by competing socio-economic priorities due to the prevalence of issues, such as inflation, and unemployment diverting attention of the masses. Lastly, various social, cultural, and technological factors have influenced engagement. The aspects concerned

[1] Ahmad and Hashmi, "Global Climatic Transformation," 1116–1119.
[2] World Bank, *Pakistan Country Climate and Development Report*, 12–13.
[3] World Bank, "Understanding Socioeconomic Factors in Climate Change Awareness and Action," November 2023, 2-6
[4] Fernández-Zubieta et al., "Digital Activism Masked," 676
[5] Gomez-Solbrække, *Defending the Amazon*

with poverty and poor education come into the play, with regards to accessing digital media for distributing information to propagate climate awareness. Cultural factors, such as religious, and cultural values also affect public opinion regarding the need for action against climate change. Other technological factors include the digital divide and the algorithmic biases that limit internet access, contribute to digital illiteracy, and limit the reach of climate-related information. Together, these variables provide a comprehensive framework to understand digital participation within Pakistan's climate change movement.

Social media platforms act as enablers of participation as well as barricading through the filter bubbles created by the algorithms that askew the overly complex concern of climate change into smaller unrelated issues. These variables negotiate within a network of human (influencers, activists, public) and non-human actors (platforms, algorithms, cultural narratives), which aligns perfectly with the principles of Actor-Network Theory, hence used as a lens to guide the study.

This study explores the barriers and motivations of digital participation into Pakistan's climate change movement, with a socio-cultural and technological focus. Applying ANT as its theoretical lens, the study revolves around how these related factors interact to shape public engagement and the actionable plan revealed through the iterative Delphi method for improving digital climate advocacy in Pakistan.

The objectives of the study are: (1) to identify the major barriers to digital participation in Pakistan's climate change movement, (2) to investigate which social, cultural, and technological factors lead to public engagement and discourage it, and (3) to understand whether religious and cultural framing have potential with regard to digital participation; (4) to evaluate the influence of the digital divide and influencer participation on increasing the reach and visibility of the movement. Therefore, this study answers the following research questions: (1) What are the main barriers to digital participation in climate change activism in Pakistan? (2) How do social, cultural, and technological factors condition public engagement on digital platforms? (3) Can religious and cultural framing enhance participation in climate change advocacy through a digital platform? and (4) How does the digital divide and influencer participation influence climate movements' visibility and reach? The questions are framed to identify strategies for improving digital climate advocacy and strengthening the nexus between the sense of urgency in climate action and public awareness in one of the most climate-vulnerable countries in the world.

This study is susceptible to some limitations that must be acknowledged. Firstly, reliance on expert opinions through the Delphi method introduces the potential for selection bias as the sample may not represent all perspectives within Pakistan. Secondly, qualitative research provides depth but limits generalizability of findings to broader populations. Third, the study focuses only on digital participation, meaning that other forms of climate activism that may be significant in Pakistan's context may not be included. In addition, the fast and ever-changing nature of the digital platforms and algorithms creates limitations in capturing a static form of digital activism. Future research, therefore, should include quantification methods, larger samples, and longitudinal studies to better and more comprehensively understand the nature of digital climate advocacy.

Digital activism has emerged as a phenomenal mobilizing tool for public engagement globally, leveraging the capacity of digital tools to quickly organize, communicate, and advocate through digital technologies and networks. It is revolutionary compared to the traditional activism because, for instance, individuals and groups can now reach across borders to amplify their voices and influence public opinion on issues surrounding the climate change agenda, trade, and human rights among others. This revolution has become even more consolidated by the creation of advocacy groups. Building from the success cases of MoveOn and Campact, these organizations spread all

over the world with the use of digital platforms that mobilized millions of followers to engineer quick action both online and offline. [6] More recently, transnational activism networks have emerged as a source of case studies to research the strategies and technologies to hone to influence state powers. Some new research focuses on the mobilizing power of digital activism to bring international support too, particularly mass protests. The studies thus enlighten about the foreign political and apolitical factions that the digital campaigns involve and the formative roles these play in forming global responses.[7]

Digital platforms like X (formerly Twitter), Instagram, and Facebook have dramatically changed activism by mobilizing rapidly, increasing participation, and amplifying the voices of the marginalized. These platforms can organize protests and social movements and share information with different audiences in a flash. For example, during the Arab Spring, where these networks proved capable of quick mobilization, the messages on social media seemed to be behind the mass mobilization of protests across the countries, according to social scientists.[8] Digital activism gives voice to minorities. The LGBTQ+ communities used these platforms to generate support for their rights, which made the movement a transnational activism phenomenon and a case study for digital activism.[9] The democratization of participation through such channels have allowed for voices, from diverse sources, a role to play in meaningfully furthering the cause of a social movements. This fosters a culture of inclusivity and varied representation to these movements.[10] Nevertheless, digital activism in these platforms is fraught with its own challenges: the spread of disinformation and Big Tech's monopolistic tendency that undermines the movement's success. For one, online engagement is fluid, and it often does not lead to sustainable action in the real world--a valid criticism about the reliability of digital activism and the platorms' roles in promoting long-lasting change.[11] Examples of other successful digital movements include Fridays for Future (FFF) and Extinction Rebellion (XR), demonstrate social media as a crucial tool in mobilizing youth for the climate change cause. These movements make use of social media platforms for community engagement, information dissemination, and urgent political action. Fridays for Future relay on X (Twitter) in an effective manner to augment the climate message. In a study, over 111,000 tweets were used as a sample size to demonstrate diverse framing strategies, including mobilization messages as well as solution-oriented discourse, propagated by FFF.[12] Similary, Extinction Rebellion appeals to and engages general audiences using Instagram and Facebook through emotionally appealing content.[13] Combining the insights from these efforts show how strategic digital mobilization can fuel effective climate activism that involves the youth.

A clear segregation is observed between the Global North and the Global South with the latter facing different challenges and opportunities with respect to digital activism. The socio-economic circumstances and environmental vulnerabilities of the countries in Global South, creates a dire

[6] Hall, Transnational Advocacy in the Digital Era, 45.
[7] Gray-Hawkins, "Collective Movements, Digital Activism," 67.
[8] Al-Qteishat, "Social Media and Political Protest Mobilization," 34550 .
[9] O'Byrne, "Educate, Empower, Advocate," 14.
[10] Schradie, "The Digital Activism Gap," 60.
[11] Schradie, Jen. "The Digital Activism Gap: How Class and Costs Shape Online Collective Action." Social Problems 65, no. 1 (2018): 51–74. DOI: 10.1093/socpro/spx042.
[12] Fernández-Zubieta, Ana, et al. "Digital Mobilization in Climate Activism: A Case Study of Fridays for Future." *Climate Change and Digital Activism* 9, no. 2 (2023): 67–89.
[13] Gunningham, Neil. "Can climate activism deliver transformative change? Extinction Rebellion, business and people power." Journal of Human Rights and the Environment 11, no. 3 (2020): 10–31. DOI: 10.4337/jhre.2020.03.01..

need for the climate change movement and limits it at the same time. Although these countries are disproportionately affected by climate change; they still believe in resilience and show innovative approaches to activism, particularly through climate litigation and grassroots mobilization. The most critical challenge is climate financing, as a majority of these countries have struggling economies making it difficult to secure sufficient funding at a national level to support climate action.[14] The political and institutional barriers, ranging from climate obstruction by corporate interests to weak judiciary and policing infrastructures, are hard to eliminate without internal action from the general public of the state.[15] Climate vulnerability in regions, such as the Sahel and Andean areas further increase socio-economic inequalities since the worst impacts of climate are felt by these regions--and especially effects the marginalized communities.[16] Yet opportunities lie at the heart of these problems. A commitment to climate justice is demonstrated by the growing trend of Climate litigation, influencing global discourse.[17] Grassroots movements can include not just local but indigenous communities as well. As the traditional knowledge blends with modern activism in order to promote environmental rights in innovative ways.[18] International cooperation with Northern countries will allow for the knowledge sharing and mobilization of resources, hence resilience and adaptation.[19] All this notwithstanding, climate activism in the Global South still describes resilience and innovation, showing good potential of turning into holistic contributions toward global climate action, all things being right and proper in facilitation and infrastructure.

Digital climate activism has become an essential tool for the acute vulnerability that Pakistan faces vis-à-vis climate change as it ranks at 8 in the world list.[20] It employs digital tools to raise awareness and mobilize communities in pursuit of climate justice, especially among youth who are growingly demanding accountability and action.[21] The popularity of digital activism has democratized access to climate education, thereby opening wider participation in global movements such as Fridays for Future. [22] Social media represents a vital tool for young activists, who can voice their sentiments, find a sense of community, and organize protests about the urgency of climate issues. But it is not without its challenges. This perpetual digital divide in Pakistan can disengage the excluded group of people who don't have an internet connection and may intensify social inequality. Criticisms prevail that digital engagement leads to "clicktivism," where a virtual show of support does not translate into an actual real-life action and thereby dilutes the climate movement.[23] The limitations do indicate the necessity for traditional activism as a means to mobilize grassroots communities and realize real-life impacts. It does emphasize the importance of a balanced approach towards climate advocacy.[24]

2. Theoretical Framework

This study has been guided by the Actor-Network Theory of Bruno Latour and Michel Callon mainly due to the diversity of human and non-human actors in Pakistan's climate change movement in the context of digital participation. ANT obscures the traditional hierarchy between

[14] Anozie, "Left Behind," 345.
[15] Edwards et al., "Climate Obstruction in the Global South," e0000243.
[16] Janicot et al., Climate Change: What Challenges for the South?, 50
[17] Setzer and Benjamin, "Climate Litigation in the Global South," 85.
[18] Das, "Ecological Mobilizations in the Global South," 462.
[19] Janicot et al., "Climate Impacts and Vulnerability," 48.
[20] Hussain et al., "A Comprehensive Review of Climate Change Impacts," 50.
[21] Naeem, "Empowering Pakistan’s Youth," 3.
[22] Fernández-Zubieta et al., "Digital Activism Masked," 682
[23] Ermolaeva and Yu, "Modern Western Theories," 12.
[24] Ibid.

the human and the non-human impact, thereby holding all these as equally significant constituents in constructing the social phenomenon. It's an approach which gives a thorough understanding of why digital climate advocacy works without the negation of such a phenomenon, as it should be part of a complex web of relationships. The major human actors involved in this complex web can be grouped into three bigger categories: activists, influencers, and the mass population. All these categories of actors play important roles in the process of information dissemination, garnering support and flaming motivation for a movement.

Among the multitudes of roles these human actors play, the most critical role is that of the influencers. Influencers tell complex issues in the form of relatable stories, they increase engagement and emotion-based connection, especially among the younger demographics. Algorithms and social media are amongst the most prominent examples of non-human actors that effect the dynamics of digital activism. Algorithms sort out climate content with regard to trends or charged subject matter, excluding far more complex contextual matters surrounding climate change. In this regard, cultural stories-from religious teachings advocating "protection" of environment through stewardship-perform an important agent in shaping the framing as well as perception within such a network. Like for example, Islam's principle of not harming nature closely aligns itself to the moral imperative of conservation, leaving an underleveraged narrative of considerable public engagement. A focus on the collaboration between these actors opens doors of investigations on the hindrances and the motivations in the complex network of digital activism. Furthermore, the framework fits into the Delphi method applied in this study since it captures the consensus of experts on the roles and interactions of such actors in digital participation realm. By applying ANT, this study points out action-oriented strategies that may be used in improving digital engagement within Pakistan's climate change movement through the leveraging of the interconnectedness of the actors.

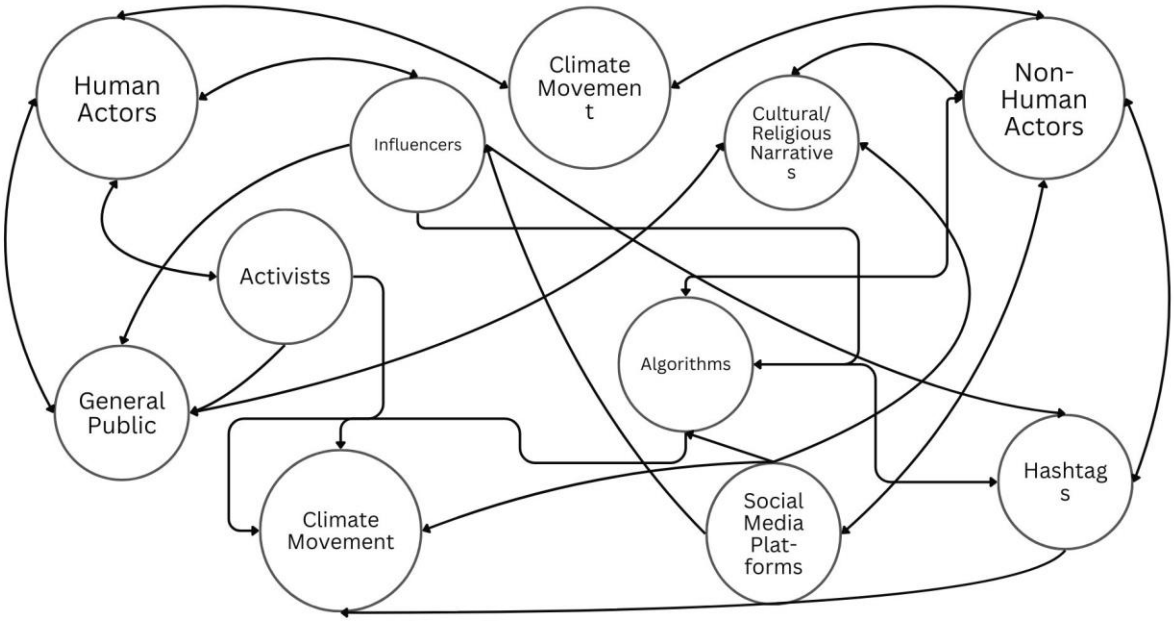

Figure 1: Climate Action Networking

3. Method

A qualitative research approach was used where the Delphi method is nested in the structure of Actor-Network Theory, as this will try to understand how the socio-cultural and technological dimensions impact digital engagement within Pakistan's climate change movement. Using the Delphi method helped in collecting iterative expert insights, which was refined into a structured approach of consensus building on all the barriers, motivations, and strategies influencing digital climate activism. This methodology was determined to be particularly suited for addressing complex, interdisciplinary topics where empirical data was found to be limited, hence rendering the expert perspectives imperative to building understanding.

This exploratory qualitative research aimed at understanding the networked relationships between human actors (e.g., influencers, activists, public) and non-human actors (e.g., algorithms, platforms, cultural narratives). ANT assisted with providing a comprehensive analysis of interconnected actors and their influence on digital engagement. The Delphi method used here was divided into three iterative rounds to collect expert opinions, evaluate them, and refine them to deepen the findings, ensure reliability, and achieve consensus in all insights put forth.

The study targeted a purposive sample of 23 experts with significant experience and knowledge in climate advocacy, digital communication, sociology, cultural studies, and technology. The experts were chosen from climate change advocacy with knowledge in digital communication strategies, or socio-cultural dynamics, specifically within Pakistan. The panel comprised of experts from diverse fields, such as environmental science, social media strategy, religious scholarship, and grassroots activism, complemented the multifaceted understanding of this issue, as illustrated in Table 1: Panel Composition by Field of Expertise. A sample size of 23 was deemed sufficient to maintain diversity but limit correspondence during the iterative rounds.

The Delphi method involved three rounds of correspondence. First round, comprising of open-ended questions were deployed using an online Google Form with an intent to collect qualitative insights regarding barriers to digital participation, the role of influencers, possible cultural and religious framing, and the barriers related to technology.

Responses were manually coded to identify key themes such as social barriers, technological challenges, and cultural influences. In the second round, thematic findings from the first round were converted into closed-ended statements, which were presented to the experts for evaluation using a Likert scale (1-9). Statements like "Framing climate action as an Islamic duty will increase public engagement" and "The digital divide is the most important obstacle to inclusive climate activism" were brought before the panel for ratings of agreement. The round enabled quantitative data to be drawn to advance areas of consensus. For the third round, findings from the second round were fine-tuned into coded phrases and presented back to the panel. Experts were able to confirm their agreement or explain any dissent identifying outliers in the consensus. Bar charts of the consensus levels were distributed to promote informed discussions and develop final consensus.

The responses from the rounds of Delphi were thematically analysed as well as descriptively summarized. Responses from round one, were coded into qualitatively, labelled categories such as "Social Barriers," "Cultural Framing," "Technological Challenges," and "Influencer Impact." Residual themes of these categories were then drafted as targeted statements for rounds two and three. Likert-scale responses for rounds two and three were then calculated in terms of achieving consensus, where responses over 75% were considered to be the areas of strong consensus. The results were represented by bar charts and tables to clarify the agreement levels across the themes of importance, making expert feedback easy to understand and interpret.

The study adhered to strict ethical guidelines to ensure the integrity and confidentiality of the

participants. Participants were taken through informed consent, with full details of the study's purpose and methodology. Identities of the experts were anonymized to prevent self-revelation and minimize bias within. Participants were also informed of their right to withdraw their participation at any stage without any explanation. The findings of the study were thus conveyed in discrete discussion rounds that ensured agreement, while the respondents' integrity and confidentiality were maintained with anonymity. The experts were unaware of the panel to omit the chances of bias due to shared professional and personal interests. All respondents were informed of their right to withdraw their participation from the study and two respondents out of the initial 25 panellists, exercised this right during the first round.

While the Delphi method was effective for generating expert consensus, some constraints were identified. The researcher acknowledges that the results are solely based on opinions of experts and might carry subjectivity and restrict generalizability to a broader population. The iterative nature of the method may result in participant fatigue, which would negatively impact the quality of replies in subsequent rounds. Limitations notwithstanding, the methodology managed to garner valuable insights into the complex dynamics that shape digital participation within Pakistan's climate change movement.

Table 1: Panel Composition by Field of Expertise

Field	Number of Panellists	Expertise
Climate Advocacy	6	Environmental scientists, climate policy analysts, and NGO representatives.
Digital Communication	5	Social media strategists, digital marketing experts, and online campaigners.
Sociology	4	Sociologists with expertise in public engagement and social movements.
Cultural Studies	3	Scholars specializing in cultural narratives and their influence on activism.
Religious Scholarship	3	Islamic scholars focusing on environmental ethics and stewardship.
Grassroots Activism	2	Activists with on-ground experience in climate and community mobilization

4. Results

The results obtained through three rounds of iterative Delphi suggest an in-depth understanding of the barriers, motivators, and strategies in the change movement concerning climate change in Pakistan. The expert panel was a mixture of climate advocacy experts, sociologists, experts in cultural studies, and those associated with communication and digital media; they managed to reach a consensus over critical socio-cultural and technological factors. These findings include the presence of significant barriers, the potential of religious and cultural framing, the impact of technological constraints, and the role of influencers in mobilizing public engagement.

4.1 Barriers to digital participation in Climate Change Activism

The panel identified several barriers which are an obstacle for public engagement in Pakistan's digital climate movement, as shown in Figure .

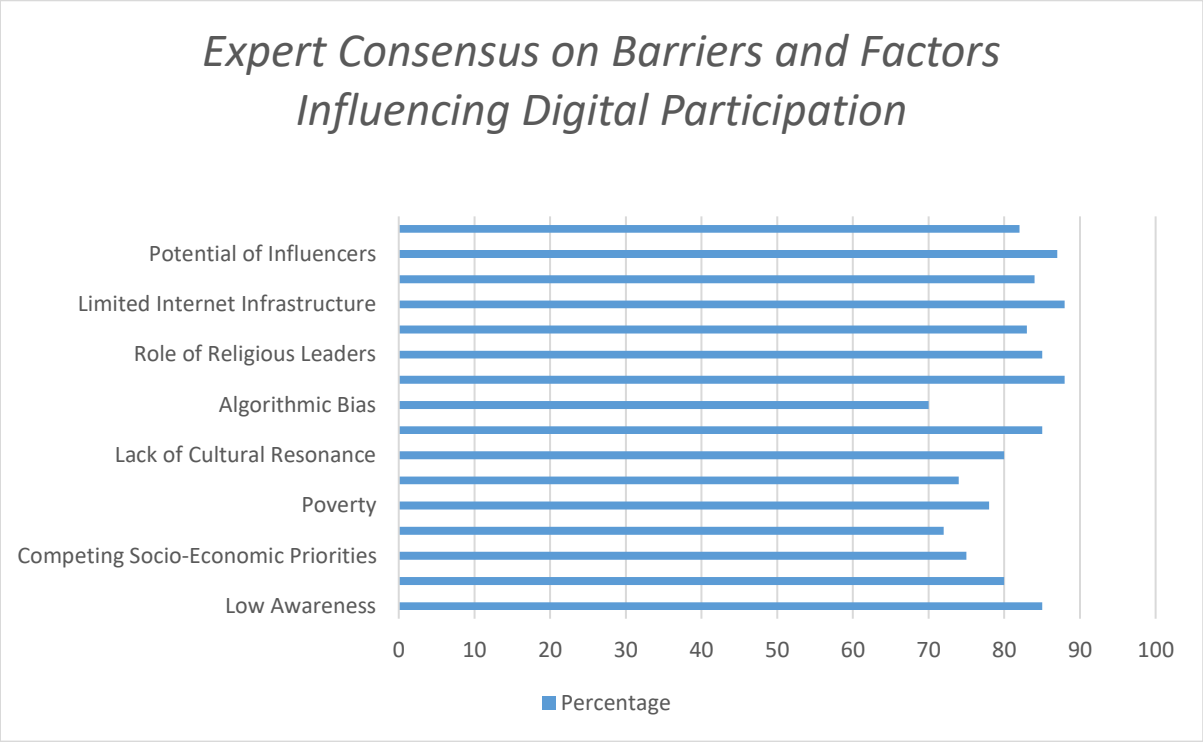

Figure 2: Experts' opinions

4.2 Low Awareness and Perceived Relevance

Another key challenge is low public awareness of climate change impacts in among the masses in the country. According to experts, climate change is often viewed as a secondary or distant issue in contrast to the more immediate, pressing issues such as the country's economic instability and political crisis. "The lack of urgent, local impacts makes it difficult to relate climate change to everyday life," one expert observed. This disconnection results in a lack of urgency and consideration of climate priorities in public discourse. Economic issues such as inflation, unemployment, and poverty shift public attention further from climate issues. Panellists contend that the public merely focuses more on meeting the bare minimum. Little bandwidth exists for long-term concerns when it comes to protecting the environment. "When people have to afford the bare minimum, things like climate activism take a backseat naturally," one participant said. The abstraction of climate science and the distant nature of its impact make it seem to be an abstract, technical issue. Unlike humanitarian crises that trigger immediate emotional reactions, climate change is too global and impersonal to appear urgent enough for adequate action. The experts emphasized the need to develop relatable narratives that translate climate challenges into tangible, localized consequences.

4.3 Social, Cultural, and Technological Factors Influencing Engagement

Poverty and low levels of education were significant barriers and limited access to general climate-related knowledge as well as digital information. For most communities, especially the rural population, insufficient resources and basic literacy have made them ineffective towards digital activism. An expert offered insight, "People most hit by impacts of climate change are ones least able to participate in digital advocacy due to systemic inequalities." Lack of cultural resonance in current climate advocacy campaigns makes them less effective; the campaigns fail to connect with the values and beliefs of the Pakistani public. The panel agreed that engaging climate action within the teachings of Islam on environmental stewardship could greatly enhance engagement. Human

beings are taught to protect nature as part of their moral and spiritual duties, making this a culturally relevant foundation upon which efforts for advocacy hinges. The most pressing issue was access to the internet and digital literacy, which excluded majority of population from participating in the web-based political activation. It mainly affects the rural areas with the full fury of climate change. Besides that, even the algorithms embedded in social media aim to engage people with sensational, not complex, abstract issues, like climate change. One respondent commented, "Social media sites are not neutral; their algorithms work against the visibility of climate-related content."

4.4 Impact of Religious and Cultural Framing

The findings highlight the transformative potential of religious and cultural framing in advancing digital participation. The panel achieved consensus over the appropriateness of aligning climate advocacy with religious principles. Framing climate action as a religious duty can help campaigns tap into deeply held values and foster a greater moral connection to the issue. A panel member highlighted, "Environmental stewardship is already imbedded in Islamic teaching; leveraging this can make climate action both personal and spiritual." Experts also pointed to the role of religious leaders in moulding public opinion and attitude. Religious leaders could be trusted voices for climate messages, especially in rural and conservative communities. Such involvement would only add to the credibility and reach of climate advocacy efforts. Localized mechanisms of storytelling were recognized as an effective means of linking climate issues to everyday practice. Stories that concentrate on the experiences of tangible impacts of climate change, for instance, agriculture, health, and everyday livelihoods, may turn abstract concepts into personal concerns. An expert posited that "telling stories based on local experience makes this large problem start to feel proximate, rather than remote, and tangible, rather than abstract.

4.5 Impacts of Digital Divide and Influencer Involvement

The scarcity of internet infrastructures and low-cost access once again proved to be one of the primary challenges for broad digital involvement. Experts elaborated that rural and low-income communities, who are also often the most vulnerable victims of climate impacts, tend to be systematically excluded from digital activism, thereby limiting as well as narrowing the diversity of opinions in the climate discussions. The panel agreed on the potential of influencers in amplifying climate advocacy and engaging diverse audiences. Influencers-- especially those with cultural and religious resonance-- can simplify jargon-laden issues and appeal to the younger demographics. However, the study determined that climate activism in Pakistan hasn't tapped into its potential fully yet. An example was cited by one panellist as: " Influencers are pivotal in bridging the gap between technical climate discussions and public understanding. Their participation can make the movement more appealing and accessible to a lot more people.” Finally, the experts said that content needs to be visually appealing and emotionally evocative in nature to outsmart algorithmic biases and increase visibility. Influencers, with skills in telling narratives and wide reach, can craft and distribute such content effectively.

Table 2 Challenges and Opportunities for Enhancing Digital Participation in Pakistan’s Climate Change Movement

Category	Challenges	Opportunities
Barriers to Digital Participation	Climate change perceived as secondary to economic and political issues.	Developing relatable narratives that link climate change to everyday life.
	Abstract and technical nature of climate science; lack of emotional	Translating climate challenges into tangible, localized consequences.

	connection.	
Social, Cultural, and Technological Factors	Poverty and low education levels restrict access to climate knowledge and digital platforms.	Addressing systemic inequalities through education and resource access programs.
	Lack of cultural resonance in current campaigns.	Framing climate action within Islamic teachings on environmental stewardship.
	Limited internet access in rural areas; digital literacy deficits.	Expanding digital infrastructure and literacy programs to reach underserved populations.
	Algorithmic bias diminishes visibility of climate content.	Creating visually compelling, emotionally resonant content optimized for social media algorithms
Religious and Cultural Framing	Limited integration of religious narratives into climate advocacy.	Aligning advocacy with Islamic principles to enhance moral and spiritual connections.
	Inadequate involvement of religious leaders in climate messaging.	Engaging religious leaders as trusted voices to amplify advocacy, particularly in rural areas.
Digital Divide and Influencer Involvement	Systematic exclusion of vulnerable communities from digital advocacy.	Utilizing influencers to simplify complex issues and engage diverse, younger audiences.
	Lack of optimized content for platforms dominated by algorithmic biases.	Partnering with influencers to create and disseminate impactful, algorithm-friendly content.

5. Discussion

This study's findings outline the most common challenges to and opportunities for improving digital participation in Pakistan's climate change movement. It opens avenues of transformative strategy on advocacy and policy discourse. The barriers recognized are in multitude and require a detailed precision in mapping out pathways for fixing the systemic gaps to increase of public awareness, cultural resonance, and technological divison. However, these results underscore the need for multi-dimensional efforts that would align cultural narratives, improvements of technology infrastructures and strategic partnerships with influencers and institutions to create an integrated and impactful climate movement.

The underlined concern of low awareness and perceived irrelevance highlights the need for reframing climate change discourse as an immediate and relatable concern. Connecting the overarching climate concern with observable, familiar effects might reside in the climate impact on the increases in inflation, health risks, and economic insecurity. Advocacy efforts, framed in this manner, could explain abstract issues in tangible terms. It aligns with the best practices observed globally: localized narratives that lead communities toward mobilization by defining how environmental crises intersect with socio-economic realities. For example, agricultural insecurity induced by climate change in the form of crop failure or water shortages are directly related to climate change can be the focus of campaigns to trigger public involvement. In a society like

Pakistan, where religious values largely influence behaviors and attitudes, climate action as something of a moral and spiritual duty offers a culturally salient foyer for engagement. Religious leaders, therefore, can be tapped for key advocacy roles that will help in making the climate cause easier to advance, since they are trusted voices within their communities. Their involvement may also help remove possible resistance to the climate narratives that would otherwise appear strange or irrelevant to the local cultures. Such actors (religious personalities and religious framing) will not only increase public resonance but will also make climate advocacy more embedded in the garment of Pakistani culture and society, eventually making it sustainable in the long run.

The structural barriers against inclusivity in digital climate activism is due to the digital divide. The general public-- particularly remote communities most vulnerable to climate impacts-- must be connected and facilitated to access the internet through a structured effort. Investments in digital infrastructure must become a priority for the state and policymakers alongside effective frameworks for promoting digital literacy across the nation. Climate campaigners and communication specialists can develop off-line to on-line engagement strategies so that the marginalized sectors are not left behind in the climate discourse. For example, grassroots organizations could use in-person workshops as a means of introducing digital platforms as tools for sharing local environmental challenges, gradually assimilating these communities into the broader digital movement.

The algorithmic biases, exposed by the study, highlight the need for strategic content creation. Consensus establishes that social media algorithms tend to favour sensationalism rather than content quality, however the opportunity lies in using such algorithms to further the climate advocacy through emotionally appealing and visually stunning storytelling. Advocacy institutions and influencers should be brought together to jointly produce content for such platforms with algorithmic bias. Campaigns built on short videos, infographics, or personal stories evoking empathy and social responsibility among audience members, can be successful in terms of engaging individuals, who are yet to engage with the climate change movement or lack awareness about it. Such approaches ensure visibility and resonance particularly where youth is concerned. Indeed, influencers are a powerful tool for enhancing digital engagement. Their capacity for making complex issues simple and forging personal connections with their audiences place them in a strategic position to be an effective climate advocate. To amplify such impact, however, influencers should be supported and equipped with skills in constructing messages that are both accurate and engaging. State-based campaigns and NGOs should support influencer education by paying attention to increasing their climate literacy levels and climate storytelling in regards building narratives around the climate impact with the ability to maintain credibility in their delivery.

6. Policy Implications

The results of this study provide actionable recommendations for policymakers in Pakistan to address barriers to digital climate advocacy. First, the government should invest in digital infrastructure to bridge the digital divide, especially in rural areas that are most vulnerable to climate impacts. It can also work with tech companies to address algorithmic biases that restrict climate-related content visibility on social media platforms. Third, climate education must be part of national curricula to raise awareness and eventually sustain interest in climate issues over time. Lastly, policymakers should tap cultural and religious narratives by working with religious leaders to strengthen climate stewardship as an Islamic duty. Finally, the partnership of Pakistan with influencers and grassroots organizations will be apt for amplifying climate advocacy campaigns so that appropriate diverse audiences are reached. By filling in these policy gaps, Pakistan will

encourage a more inclusive and effective movement against a digital climate.

Results of the study will then be used for actionable policy ideas by policymakers because this study stresses the need to develop culturally apt, inclusive and technologically responsive strategies. To this end, national public campaigns should localize climate change narratives in line with urgent soci-economic issues such as food security and health, jobs and employment by personalizing climatic change and change to make people more inclusive and aware for more involvement.

Religious institutions can also be an effective tool for amplifying the voice for climate action. Religious leaders and institutions can further deepen climate action in moral and spiritual discourses, this, in turn would further amplify the resonance. Government-led sermons, textbooks, and religion-based congregations that focus on environmental issues can be the source of mass awareness and utilize popular support for climate programs. Equitable participation in digital climate advocacy requires the digital divide to be addressed. Policymakers should undertake investments in internet infrastructure and affordability in rural areas and integrate digital literacy programs into educational frameworks. It would allow more people to engage and participate in digital mobilization, especially the people whom climate change most directly impacts. State campaigns can really amplify climate advocacy and mobilize different audiences with their own influencers who share the same cultural and religious affinity. The craft and design of message conveyance and the production of meaningful public engagement from this popular influencer would be enhanced by offering proper resources for structured guidance and climate literacy training.

Advocacy institutions also need to make their content algorithm-friendly, attractive to the eye, and emotive. Social media campaigns through Instagram, TikTok, and X can guarantee greater reach and visibility in climate advocacy, thereby making it more effective in grabbing public attention. Such knowledge for advocacy organizations- NGOs and grassroots movements can tailor their strategies into stories localized to the immediate impacts of climate change that should form the core of campaign design. Such experiential impacts are the declines in agricultural productivity or the urban heat island. The issues are brought nearer, thus currently more relatable to the affected communities, in such stories.

Community engagement is essential in building an inclusive climate movement. The hybrid model from these institutions and local leaders, educators, and activists will take the offline initiatives that easily translate to online advocacy work. This hybrid model is a pathway forward in which the institutions build digital capacity while ensuring the underprivileged populations get the seat at the table in the broader climate discourse.

Amplifying climate messages would require engaging with the different types of advocacy that the community may offer- among the topmost of this being the campaigning with influencers; thus, as such, collaborations are a priority with influencers since data-driven storylines and telling templates, though factual and interestingly emotive, would require incorporating the scientific truth with societal applications.

In order to make the institutions more inclusive, the institutions, themselves have to build their capacity by offering trainings on leadership and activists from the community. This will be done through equipping factions with knowledge of how to properly utilize digital tools in climate advocacy and how to represent marginalized groups in digital spaces so that their voices can find representation in the movement

Finally, institutions dedicated to advocacy should focus on algorithm centric content strategies to create visually compelling and emotionally resonant material tailored for masses on social media

platforms. This will ensure that the climate advocacy efforts are more visible and impactful while still aligning with algorithmic preferences.

7. Future Study Areas

The study opens avenues for further research into the dynamics of digital participation in climate change advocacy. Further research could investigate the impact of religious framing in order to find out whether these Islamic environmental stewardship narratives sustain engagement with climate issues in the long term. Studies could explore long-term impact of tenets of religion on public behavior and commitment towards climate action and provide insights into the strength of this approach in sustaining nationwide participation.

Analyzing digital divide is very important for future research. Investigations into scalable models that can accelerate internet access and penetration, that can increase digitization literacy would, help bridge differences between affected societies and the technology advocacy platform. Such research may help in yielding useful solutions in facilitating inclusivity. It would provide a voice that can take its rightful place and be heard without fear if marginalized communities so feel, need, and want.

Algorithmic approaches are also another relevant area to explore, such as the use of algorithms made by social media that determine and shape climate information. For example, researchers can discover the way of campaign optimization on online channels to position climate issues in user feeds more highly visible and seemingly within reach for access.

Third, understanding effectiveness in reaching audience by influencers differently will provide better knowledge of differences between impact creation by influencers and differences in settings. This would help advocacy campaigns target audiences more strategically, leveraging influencers whose reach and messaging align with specific community needs.

8. Conclusion

This study sheds light on the barriers as well as opportunities for digital participation in Pakistan's climate change movement and highlights the importance of making it culturally relevant, technologically inclusive, and strategically communicated to have higher public involvement. The results indicate actionable pathways for policymakers, advocacy institutions, and influencers to bridge gaps in awareness, accessibility, and resonance. Further research on religious framing, digital inclusion, and algorithmic strategies can further strengthen climate advocacy efforts. By using these learnings, Pakistan can build a strong, inclusive, and impactful climate movement using digital, along with the rest of the world, to struggle against climate change.

References

Ahmad, Muhammad, and Rehana Saeed Hashmi. "Global Climatic Transformation: Implications for Pakistan." *Pakistan Journal of Social Research* 5, no. 2 (2023): 1116–1119. DOI: 10.52567/pjsr.v5i02.1223.

Al-Qteishat, Ahmad S. A. "Social Media and Political Protest Mobilization: Unveiling the Dynamics of the Arab Spring 2.0." *Current Psychology* 43 (2024): 34538–34562.

Anozie, Chinonso. "Left Behind: Funding Climate Action in the Global South." *Texas A&M Law Review* 11, no. 2 (2024): 333–363.

Butt, Abbas Rashid, Anjum Zia, Rana Faizan Ali, and Ahmad Zaheer. “Comparative Analysis of Climate Change Policies: Pakistan VS. Global Approaches.” Journal of Climate Policy 3, no. 1 (2024): 45–61.

Das, Pallav. "Ecological Mobilizations in the Global South." In *Handbook of Critical Environmental Politics*, edited by Luigi Pellizzoni, Emanuele Leonardi, and Viviana Asara, 456–467. Cheltenham, UK: Edward Elgar Publishing, 2022. DOI: 10.4337/9781839100673.00043.

Edwards, Guy, et al. "Climate Obstruction in the Global South: Future Research Trajectories." *PLOS Climate* 2, no. 7 (2023): e0000241.

Ermolaeva, P., and Yu, E. "Modern Western Theories of Studying Digital Activism." In *Proceedings of*

the European Sociological Association Conference, 2019.
Fernández-Zubieta, Ana, Juan Antonio Guevara, Rafael Caballero Roldan, and José Manuel Robles. "Digital Activism Masked: The Fridays for Future Movement and the 'Global Day of Climate Action': Testing Social Function and Framing Typologies of Claims on Twitter." *Social Sciences* 12, no. 12 (2023): 676. DOI: 10.3390/socsci12120676.
Gomez-Solbrække, Samanta Parreiras Ferreira. *Defending the Amazon: Coalition Strategies Against Environmental Dismantling Under Bolsonaro's Mandate.* Master's thesis, Norwegian University of Life Sciences, 2023.
Gray-Hawkins, Malcolm. "Collective Movements, Digital Activism, and Protest Events: The Effectiveness of Social Media Concerning the Organization of Large-Scale Political Participation." *Geopolitics, History, and International Relations* 10, no. 2 (2018): 64–69.
Gunningham, Neil. "Can Climate Activism Deliver Transformative Change? Extinction Rebellion, Business and People Power." *Journal of Human Rights and the Environment* 11, no. 3 (2020): 10–31. DOI: 10.4337/jhre.2020.03.01.
Hall, Peter. *Transnational Networks in Digital Activism.* London: Global Advocacy Publications, 2022.
Hall, Nina. *Transnational Advocacy in the Digital Era: Think Global, Act Local.* Oxford: Oxford University Press, 2022. DOI: 10.1093/oso/9780198858744.001.0001.
Hussain, Mudassar, Abdul Rahman Butt, Faiza Uzma, Rafay Ahmed, Samina Irshad, Abdul Rehman, and Balal Yousaf. "A comprehensive review of climate change impacts, adaptation, and mitigation on environmental and natural calamities in Pakistan." Environmental monitoring and assessment 192 (2020): 1-20.
Reinert, Magali, Serge Janicot, Catherine Aubertin, Martial Bernoux, Edmond Dounias, Jean-François Guégan, Thierry Lebel et al. "Climate change: what challenges for the South?." (2015): 272-p.
Naeem, Omaer. "Empowering Pakistan's Youth to Address Climate Change Risks." *Atlantic Council*, September 15, 2023.
O'Byrne, W. Ian. "Educate, Empower, Advocate: Amplifying Marginalized Voices in a Digital Society." *Contemporary Issues in Technology and Teacher Education* 19, no. 4 (2019).
Schradie, Jen. "The Digital Activism Gap: How Class and Costs Shape Online Collective Action." *Social Problems* 65, no. 1 (2018): 51–74. DOI: 10.1093/socpro/spx042.
Setzer, Joana, and Lisa Benjamin. "Climate Litigation in the Global South: Constraints and Innovations." *Transnational Environmental Law* 9, no. 1 (2020): 77–101. DOI: 10.1017/S2047102519000268.
World Bank. "Understanding Socioeconomic Factors in Climate Change Awareness and Action." November 2023.
World Bank. *Pakistan Country Climate and Development Report.* Washington, DC: World Bank Group, 2022.