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Digital Activism, Social Media and Policy Advocacy: A Study of #DelhiAirPollution Campaign on Twitter (X)

Anshul Chauhan[1], Dr. Dheeraj Kumar[2]

Department of Mass Communication, Mizoram university

Email: chnanshul5@gmail.com; dheeraj@mzu.edu.in

Abstract

This study examines the intersection of digital activism and policy advocacy, focusing on the #DelhiAirPollution campaign on Twitter (X). Over a six-month period (October 2023 to March 2024), it employs netnographic analysis to explore the themes emerging from the campaign, as well as qualitative analysis of news articles and policy measures discussed during the peak pollution season to assess the influence of digital activism on government responses to air pollution in Delhi. Findings reveal that Twitter (X), as a platform for collective action, has played a crucial role in mobilizing the general public, raising awareness, and influencing short-term air quality measures. However, challenges remain in ensuring long-term policy change. Through the netnographic analysis of campaign tweets and the policy review, the study highlights the impact of digital activism in shaping public discourse, influencing policy decisions, and raising awareness about air pollution in urban environments.

Keywords: Digital Media, Digital Activism, Policy Advocacy, Twitter (X), Delhi Air Pollution , Netnographic Analysis

1 | Introduction

In the modern era, digital platforms have become crucial for collective action, activism, and public discourse, offering innovative spaces for individuals to address social and environmental concerns. These platforms have been complemented by advancements in technology, which have provided accessible and cost-effective communication tools, allowing individuals to engage with a broad audience (Korda & Itani, 2013; Segerberg & Bennett, 2011). Among these platforms, Twitter—recently rebranded as X—has emerged as a pivotal medium for grassroots movements and policy advocacy. It facilitates instant communication, enabling users to amplify their concerns, organize effectively, and challenge mainstream media narratives (Pew Research Center, 2018; Rosenbaum, 2018). Air pollution has become a major environmental challenge, especially in urban areas like Delhi, where pollution levels are high year-round. In winter, the city's air quality worsens due to a variety of factors, such as vehicle emissions, industrial activities, crop residue burning, and unfavorable weather patterns (Chauhan & Sharma, 2022). These challenges have made Delhi a focal point for environmental activism, drawing the attention of citizens, advocacy groups, policymakers, and international organizations. The #DelhiAirPollution campaign, which gained traction in late 2023, provides a clear example of how digital activism can shape public discourse and influence government responses to environmental crises. Social media's continuous availability allows activists to share updates and mobilize support instantly, bypassing traditional media delays (Papacharissi & de Fatima Oliveira, 2012; Wen, 2017).

Delhi's air pollution crisis is a major public health concern, contributing to respiratory and cardiovascular diseases and increasing premature mortality rates (Guttikunda & Calori, 2020). Various efforts have been undertaken to address these challenges, ranging from policy interventions to public awareness initiatives. Despite these actions, addressing the root causes of pollution and achieving long-term solutions remains a significant challenge (Bali, 2023). Digital activism has emerged as a vital tool for addressing these issues, as it enables individuals, environmental organizations, and advocacy groups to raise awareness, pressure authorities, and demand immediate action. Campaigns like #DelhiAirPollution create virtual spaces for individuals to share their personal experiences, frustrations, and demands for reform. Social media tools allow for the rapid spread of information and engagement with audiences beyond geographical boundaries. These dynamics are reminiscent of past digital movements, such as the Arab Spring and #BlackLivesMatter, which demonstrated the power of digital tools in driving

social change (Bruns, Highfield, & Burgess, 2013; Freelon, McIlwain, & Clark, 2016). By fostering a sense of urgency and collective purpose, these platforms have proven effective in mobilizing diverse groups of individuals.

The decentralized nature of social media campaigns enables rapid evolution and broad engagement, reaching global audiences and mobilizing participants without requiring formal organizational structures (Bennett & Segerberg, 2012; Jackson, Bailey, & Foucault Welles, 2020). Moreover, platforms like Twitter provide an affordable and accessible means for younger generations to participate in discussions about issues that directly impact their lives and communities (Dahlgren, 2018). This ability to rally support around shared environmental concerns allows movements like #DelhiAirPollution to gain momentum and attract widespread attention (Papacharissi & de Fatima Oliveira, 2012; Bennett & Segerberg, 2012). However, despite its strengths, digital activism often struggles with sustaining long-term impact. Short-lived participation and weak connections among campaign participants can limit the effectiveness of these movements (Valenzuela, Correa, & Gil de Zúñiga, 2018). Additionally, the absence of centralised leadership in such campaigns can lead to fragmented efforts, which may hinder the achievement of substantial policy changes (Brunner, 2017).

This study seeks to examine the role of the #DelhiAirPollution campaign in shaping public discourse on air pollution and influencing policy responses. The first research question (RQ1) examines the thematic patterns and narratives that emerged from the campaign's tweets, focusing on how digital activism has shaped public discussions about air pollution. Social media activism can influence public opinion and encourage policymakers to take action by raising awareness and driving engagement (Tufekci, 2014). Analysing these themes will provide insights into how social media facilitates discourse on critical environmental issues. The second research question (RQ2) evaluates the impact of the #DelhiAirPollution campaign on government policies and responses. While digital activism has the potential to bring about policy changes, its success often depends on factors such as the level of public mobilisation, the visibility of the issue, and political will (Harlow & Harp, 2012). By assessing government actions in response to the campaign, this study seeks to determine whether digital activism has resulted in meaningful policy changes or whether its influence remains limited to short-term measures without addressing the structural causes of pollution.

Through Netnographic analysis of campaign tweets and qualitative analysis of policy responses, this study will provide valuable insights into the dynamics of digital

activism and its potential to influence environmental policy. Additionally, the study will contribute to the existing literature on the intersection of digital media, environmental advocacy, and policy change, offering a deeper understanding of how digital platforms can be leveraged to address global environmental challenges.

1.1 | Digital Activism for Environment

Digital activism has transformed how environmental issues are addressed, providing innovative ways to mobilize individuals, spread awareness, and influence policy decisions. Social media platforms like Twitter (X), Instagram, and Facebook have emerged as essential tools for fostering real-time engagement, allowing users to communicate beyond geographical barriers and amplify their advocacy efforts (Jacqmarcq, 2020). These digital platforms enable environmental campaigns to expand their reach, empowering grassroots movements and connecting them with global audiences (Isnata & Nugroho, 2024).

The integration of social media into environmental activism has proven particularly effective in raising awareness and increasing community participation. For example, WALHI Jakarta leveraged Instagram (@pulihkanjakarta) to campaign against air pollution in Jakarta. By utilizing Instagram's visual and interactive features, the organization was able to provide regular updates, educate followers, and foster engagement with a diverse audience. Features such as Instagram Stories and Feeds facilitated a continuous flow of information, creating an interactive space for public involvement (Isnata & Nugroho, 2024). Similarly, global campaigns like #FridaysForFuture and Greenpeace's digital advocacy efforts have demonstrated how online activism can influence public opinion and promote policy changes. A notable instance of this was Greenpeace's online campaign against Lego's collaboration with Shell, which led to the termination of their multimillion-dollar partnership. This case highlights the power of collective digital pressure in driving tangible corporate and policy shifts (Abelvik-Lawson, 2020). These examples underscore how digital platforms can craft compelling narratives that capture public attention and hold decision-makers accountable.

While digital activism has significantly advanced environmental advocacy, it also faces notable challenges. One major issue is "slacktivism," where engagement remains superficial. Many users participate by liking, sharing, or commenting on content without

taking meaningful offline actions to drive change (Büssing et al., 2019). Despite the widespread visibility of online campaigns, limited offline involvement can hinder their overall impact (Cernat, 2022). Additionally, social media's algorithm-driven nature can restrict the visibility of activist content. These algorithms often promote content that aligns with users 'existing preferences, creating **echo chambers** that limit the diversity of perspectives and reduce the reach of advocacy campaigns (Deibert & Rohozinski, 2010). Such barriers make it difficult for digital environmental movements to achieve the broad public engagement necessary for systemic change.

Nevertheless, digital activism has played a crucial role in raising public awareness and shaping policy responses. Campaigns such as #DelhiAirPollution have successfully highlighted urgent environmental concerns, compelling governments to introduce temporary measures to improve air quality. WALHI Jakarta's efforts further demonstrate that combining online activism with offline initiatives—such as protests and community-driven events—can create a more comprehensive and impactful advocacy approach (Isnata & Nugroho, 2024). However, achieving lasting policy reforms through digital activism requires addressing structural barriers, maintaining long-term engagement, and navigating complex media landscapes. According to Jacqmarcq (2020), activists must overcome corporate control and algorithmic biases within social media platforms to sustain meaningful environmental progress.

Digital movements such as #DelhiAirPollution offer valuable insights into how individuals utilize online platforms to voice concerns about environmental issues while fostering collective action. These campaigns provide researchers with critical case studies on large-scale online efforts that initiate public discourse and shed light on overlooked environmental challenges. By examining such digital activism strategies, scholars can better understand how social media influences environmental advocacy and drives community-driven change.

1.2 | Air Pollution and Policy Advocacy in Urban Contexts

Air pollution poses a significant threat to urban environments, adversely affecting public health, economic productivity, and overall quality of life. Cities like Delhi experience severe pollution due to rapid urbanisation, industrial emissions, vehicular traffic, and inadequate urban planning frameworks. These challenges are compounded by the fragmented roles of various agencies and overlapping jurisdictional responsibilities,

which impede effective policy implementation (Veron, 2006). Efforts to mitigate urban air pollution have included interventions like vehicle emission standards, industrial relocation, and promoting public transport. Delhi's adoption of compressed natural gas (CNG) for public vehicles is a notable example of judicially mandated environmental reform (Pratibha & Rahul, 2018). However, these measures often focus on immediate remedies rather than addressing the root causes of pollution, such as unregulated urban sprawl and the rising number of private vehicles (Brown et al., 2004).

Air pollution impacts are unevenly distributed, disproportionately affecting vulnerable and marginalized populations who live near industrial zones and other pollution hotspots. These groups often lack the resources to mitigate exposure risks, underscoring the need for equitable environmental policies (Brown et al., 2004). Middle-class activism, while instrumental in pressuring policymakers, can sometimes prioritize cosmetic improvements over systemic changes, further marginalizing underprivileged communities (Veron, 2006). Social media platforms have emerged as vital tools for raising awareness and mobilizing collective action against air pollution. Campaigns such as #DelhiAirPollution demonstrate the potential of digital activism in amplifying voices, fostering public discourse, and pressuring policymakers to act. These initiatives reflect the growing role of online platforms in shaping environmental advocacy and bridging gaps between civil society and decision-makers (Pratibha & Rahul, 2018). Despite significant interventions, challenges such as enforcement inefficiencies, fragmented governance, and limited public participation persist. To achieve sustainable solutions, it is crucial to adopt a multi-stakeholder approach involving government agencies, non-governmental organizations (NGOs), private entities, and the public. Integrated planning, proactive policy-making, and enhanced community engagement are essential to address the multifaceted problem of urban air pollution (Veron, 2006).

1.3 | Social Media as a Tool for Environmental Advocacy

Social media platforms like Twitter (X) have transformed the landscape of environmental advocacy by enabling real-time communication, widespread dissemination of information, and fostering collective action. The unique affordances of social media, such as the use of hashtags and user-generated content, provide a mechanism to amplify advocacy campaigns and influence public opinion (Merry, 2013) . Twitter's (X) microblogging format supports rapid dissemination of information, allowing

environmental advocacy groups to respond quickly to environmental crises and maintain public attention on key issues. Studies reveal that during focusing events, such as environmental disasters, interest groups often turn to Twitter (X) for immediate communication, leveraging its speed and reach to influence public discourse (Merry, 2013). Hashtags, such as #DelhiAirPollution, serve as concise tools to categorise and signal the relevance of content, aiding in the creation of a cohesive online narrative (Tumasjan et al., 2010) . Digital platforms reduce organisational costs and barriers to collective action, enabling broader participation in environment related campaigns.

The Social Identity Model of Collective Action (SIMCA) suggests that online advocacy can enhance collective identity, perceived efficacy, and emotional engagement, which are critical drivers of public participation in environmental initiatives (Van Zomeren et al., 2008). Online spaces create opportunities for like-minded individuals to connect, share resources, and mobilise around shared environmental goals (Gulliver et al., 2021). Social media enables environmental groups to frame issues and construct compelling narratives that resonate with their audience.

Studies highlight how Twitter's (X) affordances, such as retweets and hyperlinks, allow organisations to curate narratives that emphasize urgency, assign responsibility, and propose solutions. This approach is instrumental in shaping public understanding of environmental issues and rallying support for policy changes (Merry, 2013; Harlow & Johnson, 2011) . While social media excels in short-term mobilization, sustaining long-term advocacy efforts and influencing institutional policy changes remain challenging. The transient nature of online engagement and the need for continuous strategic framing are significant barriers to achieving sustained policy impact (Grossman, 2009; Pralle, 2006) . Moreover, reliance on user-generated content often reduces the control of advocacy groups over the framing and direction of the discourse (Merry, 2013). Examples like the Gulf of Mexico oil spill demonstrate the potential of Twitter to serve as a platform for advocacy during environmental crises, providing insights into its application in urban contexts such as the #DelhiAirPollution campaign. Similarly, citizen science initiatives showcase how participatory tools can enhance advocacy efforts, emphasizing the importance of community engagement in achieving environmental goals (Johnson et al., 2014) .

1.4 | Intersection of Digital activism and Policy Advocacy

Digital activism and policy advocacy converge in a transformative space where technological platforms amplify civic engagement and influence policymaking. In the digital age, platforms like Twitter (X) have become pivotal in shaping public discourse, fostering community mobilization, and holding governments accountable. Acting as a digital town square, these platforms facilitate discussions on pressing issues, such as health implications of air pollution, critique of governmental policies, and proposals for solutions. The amplification of individual and collective voices through these platforms allows citizens, activists, and organizations to coalesce around common causes. This phenomenon aligns with social movement theories, emphasizing mobilizing structures, framing processes, and opportunity structures in driving collective action (Garrett, 2006). Activists effectively utilized tools such as petitions, open letters, and public calls to action to bolster the campaign's impact. These digital tools enabled the collection of data, quantification of public support, and presentation of evidence to policymakers. Such methods resonate with transnational advocacy networks' strategies, which use information politics and symbolic actions to influence decision-making processes (Keck & Sikkink, 1998). Digital activism leverages online platforms to enable rapid information dissemination, organization of protests, and large-scale advocacy campaigns. By reducing transaction costs and broadening participation, social media platforms allow activists to overcome geographical, economic, and structural barriers (Schmitz et al., 2020). The #DelhiAirPollution campaign exemplifies this utility, with Twitter facilitating real-time discussions and galvanizing public sentiment against the deteriorating air quality in Delhi. By creating a shared digital space, the campaign brought together stakeholders, ranging from concerned citizens to policymakers and media, to demand accountability. The campaign's strategic use of hashtags such as #DelhiAirPollution allowed people to curate narratives, shedding light on critical issues such as governmental inaction, public health risks, and the need for sustainable urban development. These narratives align with the framing processes outlined in social movement theories, where collective interpretations unify visions and challenge opposing discourses (Melki & Mallat, 2014). By framing air pollution as a governance crisis and public health, the campaign created a compelling narrative that mobilized widespread public and media attention.

This interplay between digital activism and policy change underscores the democratizing potential of digital platforms. However, this democratization is not without

its challenges. The digital divide excludes marginalized communities from participating in digital campaigns, often leaving the most vulnerable voices unheard. Algorithmic biases further complicate matters by prioritizing content that garners high engagement, which can overshadow more substantive discussions. Additionally, the phenomenon of slacktivism, where minimal online engagement replaces meaningful activism, poses a significant barrier to translating digital campaigns into real-world impact (Melki & Mallat, 2014).

In summary, initiatives like the #DelhiAirPollution campaign hold significant value in the realm of digital activism. These digital movements enable researchers to explore how individuals utilize online platforms to share their perspectives on air quality issues and environmental concerns while also driving collective social action. Additionally, such environmental campaigns addressing air pollution and other environmental challenges are particularly valuable to researchers, as they exemplify large-scale online efforts that spark public dialogue and bring attention to overlooked experiences.

1.5 | Research Questions

Therefore, the present study aims at understanding these two research questions -

RQ1 - How did the #DelhiAirPollution campaign on Twitter contribute to public dialogue surrounding air pollution in Delhi, and what thematic patterns emerged from the campaign's tweets? (Study 1), and
RQ2- To what extent did digital activism influence government policies and responses to air pollution in Delhi? (Study 2)

This paper involves two studies. Study 1 aims to understand how the #DelhiAirPollution campaign on Twitter contributed to public dialogue surrounding air pollution in Delhi and to identify the thematic patterns that emerged from tweets related to the campaign (RQ1). Data was extracted from Twitter using the hashtag #DelhiAirPollution, collected over six months during the peak pollution season in Delhi (October to March 2023). This hashtag was chosen for its specificity and prominence, ensuring focused and relevant data on Delhi's air quality discourse. This study is, therefore, timely in addressing the critical role of social media in shaping public awareness, fostering dialogue, and highlighting thematic patterns in environmental discourse during Delhi's peak pollution season. The period between October and March

is considered the peak pollution season due to a combination of meteorological and human-induced factors. Post-monsoon stubble burning in neighbouring states like Punjab and Haryana during October and November releases large amounts of particulate matter, which is transported to Delhi by prevailing winds (Jain et al., 2020). Additionally, the onset of winter brings temperature inversions that trap pollutants near the ground, further exacerbating air quality issues (Gurjar et al., 2016). Low wind speeds during this period hinder the dispersion of pollutants, while the use of firecrackers during Diwali, often in late October or November, causes a significant spike in air pollution levels (Sharma et al., 2019). The colder months also see increased reliance on biomass and solid fuels for heating in peri-urban and rural areas, adding to the particulate matter burden (Chowdhury et al., 2020). These factors, combined with vehicular and industrial emissions, make the October-to-March period particularly challenging for air quality in Delhi (Singh et al., 2021).

Then, Study 2 continued to explore the influence of public dialogue surrounding air pollution on government policies and responses to air pollution in Delhi (RQ2). For Study 2, government policies and responses were analyzed during the data collection period to assess the extent to which digital activism and public discourse on Twitter influenced governmental actions, including policy changes, regulatory measures, or public statements. The analysis focused on identifying the alignment between the key themes emerging from Twitter discussions and the government's policy responses, considering factors such as timeliness, relevance, and scope of the policies in addressing the concerns raised online.

Both studies focused exclusively on Twitter (X) activities because of its well-defined and straightforward ethical guidelines for data usage in research. Public data was gathered using Twitter's advanced search tool and other open-source tools. Specifically, only tweets made publicly available by users who have accepted Twitter's privacy policy (https://twitter.com/en/privacy) were included, as well as those who have agreed to the public nature of their tweets (i.e., "Twitter is public, and tweets are immediately viewable and searchable by anyone around the world"). A further benefit of using Twitter is its 280-character limit, which allows for more precise analysis. Although privacy concerns are generally minimal when using Twitter for research, some studies have raised issues regarding users' assumptions of anonymity (Williams, Burnap, & Sloan, 2017). Therefore, we followed the standard practice of summarising tweet contents rather than directly quoting individual tweets.

2 | Study 1

2.1 | Research Design

Netnographic analysis was applied in this study to examine the role of digital activism in shaping public discourse. Netnography, as a method specifically designed for studying online communities and cultures, is particularly effective for exploring digital activism and policy advocacy. It allows for an in-depth examination of the interactions, narratives, and values that drive public engagement on social media platforms (Kozinets, 2010). This approach is especially useful for identifying patterns in online qualitative data and understanding the behaviors, interactions, and shared meanings of digital participants within their virtual communities.

The data for this study consisted of tweets that included the hashtag #DelhiAirPollution, collected between October 2023 and March 2024, which is considered the peak air pollution season in Delhi. This period captures critical events and environmental factors affecting air quality, such as post-monsoon stubble burning, Diwali celebrations, and winter inversions (Jain et al., 2020; Sharma et al., 2019). Tweets were gathered using Twitter's Advanced Search tool and other open-source tools, resulting in a total of 2,472 tweets distributed across the months as follows: October (623 tweets), November (1,576 tweets), December (178 tweets), January (81 tweets), February (6 tweets), and March (8 tweets). Only tweets in English were included in the study. This decision aligns with ethical considerations, as public data was used exclusively, and no personal or sensitive information was analyzed.

To analyze this data, the researcher utilized MAXQDA, a qualitative data analysis software, to ensure a structured and thorough approach to identifying and interpreting key themes. MAXQDA was selected for its ability to handle large datasets, particularly text-based data like tweets. The software supported the organization and coding, enabling the researchers to categorize tweets into five main thematic areas: Government Accountability and Criticism, Calls for Action Against Pollution, Pollution as a Political Issue, Health and Social Impact, and Technical and Scientific Recommendations.

Netnography provided a nuanced understanding of these thematic patterns and the ways in which digital activism shaped public dialogue. By examining these emergent themes, this study contributes to understanding the role of social media in raising

awareness, fostering public engagement, and influencing policy advocacy in the context of environmental challenges (Kozinets, 2015).

2.2 | Findings

2.2.1 | Government Accountability and Criticism

This theme reflects widespread frustration with how government and institutions are handling Delhi's ongoing air pollution crisis. Many tweets strongly criticize the efforts (or lack thereof) of both state and central governments, calling out the failure to implement effective, long-term solutions. A noticeable portion of the criticism was aimed at Delhi Chief Minister Arvind Kejriwal and the Aam Aadmi Party (AAP). For example, one user tweeted, *"Arvind Kejriwal's and Aam Aadmi Party's policies to combat #DelhiAirPollution have failed,"* bluntly stating their disappointment in local governance. But the criticism wasn't limited to one party. Another tweet argued, *"None of the political parties, be it BJP or AAP, is serious about tackling #DelhiAirPollution,"* reflecting a broader sentiment that the entire political system isn't prioritizing this critical issue.

Government agencies weren't spared either. One tweet directed at the Commission for Air Quality Management (CAQM) said, *"@CAQM_Official measures are only a quick fix, which can reduce peaks, but Delhi needs long-term sustainable solutions instead of cosmetic solutions."* It's clear people feel that while emergency measures are helpful in the short term, they fail to address the deep-rooted issues causing recurring pollution spikes. The Prime Minister's Office (PMO) also came under fire. In a tweet dripping with sarcasm, one user wrote, *"PMOIndia There'll be two Diwalis now! Double the pollution, double the fun... yay!! #DelhiPollution #DelhiSmoke #DelhiAirPollution #ICantBreathe #LetMeBreathe."* Such posts highlight how events like Diwali, often seen as triggers for pollution surges, are exacerbated by the government's perceived lack of proactive measures.

Some users were also frustrated with the mismanagement of air quality measures. One tweet questioned delays in lifting restrictions, saying, *"@PMOIndia @ArvindKejriwal Why has Stage III not been removed yet? AQI is no longer greater than 400. As per the forecast, it will not be in the Severe category."* This reflects growing impatience with the government's response and a desire for clearer communication and

timely action. These tweets paint a picture of public disillusionment. Whether directed at politicians, agencies, or specific policies, the message is clear: people want less rhetoric and more meaningful, sustainable action to tackle Delhi's air pollution crisis.

2.2.2 | Calls for Action Against Pollution

This theme captures the public's urge for immediate and meaningful action to address Delhi's severe air pollution crisis. The tweets reflect both individual appeals and collective frustrations, emphasizing the need for stricter measures, community efforts, and government accountability.

One tweet directly called for decisive interventions, stating, *"Please implement strict measures & policies to lower its harmful impact. Online classes and work from home should be mandated for a few days."* This post highlights the growing demand for policies that prioritize public health, such as temporary closures and shifts to remote work, to mitigate exposure during critical pollution periods. The sentiment of collective responsibility was also evident, with one user urging everyone to take part in the fight against pollution: *"Let's unite against air pollution, not just for ourselves, but for the generations to come. Every small effort counts. #ActNow."* This reflects a hopeful and proactive mindset, encouraging people to think beyond immediate gains and work together for a sustainable future. However, not all tweets in this theme were optimistic. Frustration with inconsistent government decisions was apparent, as seen in the tweet, *"Why is Stage III still in effect? AQI well below 300. Stop this harassment!"* Here, the user questions the logic of continuing harsh restrictions when air quality has reportedly improved, revealing a gap in communication or trust between authorities and the public. Another user expressed anger over the perceived premature lifting of restrictions, tweeting, *"On what basis has the #Delhi government lifted GRAP 3 restrictions? Where has the air quality improved? What are they trying to make us believe?"* This post suggests skepticism about the government's transparency and decision-making processes, pointing to a disconnect between policy enforcement and ground realities.

Together, these tweets reflect a blend of hope, frustration, and a desire for clarity and effective action. While some users emphasized unity and proactive solutions, others called out the government for what they perceived as mismanagement or lack of foresight.

The common thread across this theme is the public's insistence on a stronger, more coherent approach to combat air pollution in Delhi.

2.2.3 | Pollution as a Political Issue

This theme reveals how air pollution in Delhi is often framed as a political issue, with many tweets pointing fingers at politicians for not addressing the crisis effectively. The frustration expressed in these tweets suggests that people see the pollution problem not just as an environmental one, but as a result of political neglect or failure. One tweet sarcastically criticized the Aam Aadmi Party (AAP), saying, *"AAP sitting in their purified offices while citizens breathe toxic air."* This tweet reflects a common sentiment that politicians are disconnected from the reality of the pollution problem, living in comfortable, cleaner environments while the public suffers from the toxic air in Delhi. It suggests that the political elite may be indifferent to the struggles of ordinary people.

National politicians were also targeted, particularly the ruling BJP and Prime Minister Narendra Modi. One tweet asked, *"The Delhi NCR air quality is at an all-time high. Does @BJP4India or @narendramodi even care for the health of India?"* Here, the focus is on the government's failure to address air quality issues at a national level. The tweet suggests that the BJP, which holds power in the central government, is not doing enough to protect the health of citizens, even as air pollution continues to affect large parts of India.

Another tweet shifted the blame back to AAP, saying, *"Now that both #Punjab and #Delhi are ruled by the @AamAadmiParty, it is very convenient to blame it for elevated levels of #AirPollution."* This tweet highlights the political control AAP has in both Delhi and Punjab, pointing out that since the party governs these areas, it should take responsibility for the air quality issues. The user suggests that it's easier for AAP to blame others while it holds power in both regions. These tweets show how people are increasingly viewing air pollution as a political issue, with accusations of politicians failing to take the necessary action to address it. Whether it's local or national politicians, the public seems to expect more responsibility and clearer solutions from those in power.

2.2.4 | Health and Social Impact

This theme captures the concern about the severe health effects of air pollution in Delhi, as expressed by residents and users on social media. Many tweets focus on the immediate and long-term risks to people's health, particularly the vulnerable groups such

as children, the elderly, and those with pre-existing conditions. One tweet starkly highlighted the disparity in air quality between private spaces and the rest of the city, stating, *"Breathing easy in our office oasis with PM2.5 levels comfortably below 60, while Delhi hits a staggering 300 AQI."* This user contrasts the air quality in their own work environment with the toxic levels of pollution outside. The implication is that while some may have the luxury of being in cleaner spaces, the majority of people in Delhi are forced to breathe in harmful air, which has become an everyday reality. The tweet also reflects a broader sense of helplessness, as pollution levels reach dangerously high numbers. Another tweet raised a serious concern about the impact of air pollution on children, stating, *"Sending children to school in severe AQI is equivalent to smoking 25-30 cigarettes."* This powerful statement underlines the risks that children face when exposed to poor air quality on a daily basis. It highlights the growing public anxiety over the long-term health consequences of polluted air, especially for younger generations. The comparison to smoking emphasizes the severity of the issue, suggesting that sending children to school in such conditions is akin to forcing them into a highly harmful activity.

Lastly, a tweet emphasized the worsening health conditions linked to air pollution, with the user stating, *"Respiratory issues and chronic conditions are worsening with every passing winter in Delhi."* This reflects the growing concern over the health burden that Delhi's residents face, as each passing year sees an increase in respiratory illnesses, particularly during the winter months when air pollution spikes. The tweet suggests that the city's residents are caught in a cycle of deteriorating health due to the worsening air quality.

Together, these tweets shed light on the profound health and social consequences of air pollution in Delhi. The messages reflect a sense of urgency and frustration, highlighting the impact on people's well-being, particularly those who cannot avoid the pollution, such as children and low-income families. The increasing prevalence of respiratory conditions and chronic illnesses adds to the growing public demand for immediate action to address the city's air pollution crisis.

2.2.5 | Technical and Scientific Recommendations

This theme centers around the technical and scientific approaches that individuals are suggesting to address Delhi's severe air pollution. Tweets under this theme reflect a desire for more innovative, research-driven solutions to combat pollution, while some

also highlight the shortcomings or limitations of current efforts. One tweet proposes a specific solution, saying, *"Can @mygovindia @narendramodi @ArvindKejriwal take initiative to minimize the #DelhiAirPollution like @CarbFix, the company turning CO2 into stone?"* This tweet reflects a growing interest in exploring advanced technologies and innovative solutions for reducing air pollution. By mentioning CarbFix, a company that captures CO2 and turns it into solid rock, the tweet advocates for the adoption of new scientific methods that could help address Delhi's ongoing air quality crisis. It's a call for policymakers to consider global technological advancements and apply them locally to make a more significant impact. Another tweet discussed the current measures in place, stating, *"Water is being sprayed with 215 mobile anti-smog guns. A total of 375 water sprinkling machines are in operation."* This tweet points to the government's current response to air pollution, specifically highlighting the use of anti-smog guns and water sprinkling machines to reduce particulate matter in the air. While it provides information on the scale of the initiative, there is an underlying sense of skepticism about whether these measures are sufficient to tackle the larger problem of pollution, suggesting that these efforts might only be temporary fixes. A third tweet focuses on an environmental factor influencing Delhi's air quality, saying, *"Despite a notable reduction in #stubbleburning in neighbouring states, Delhi's air quality worsened in November, suggesting weather patterns may be a key factor."* This tweet brings attention to the broader, complex factors contributing to Delhi's pollution levels, particularly the role of weather patterns. It implies that while stubble burning might be reduced, other factors, such as temperature inversions or wind patterns, could still significantly worsen air quality. This suggests the need for a more comprehensive approach that not only addresses specific sources of pollution but also takes into account meteorological conditions that exacerbate the problem.

These tweets highlight the diversity of technical and scientific solutions people are proposing, from advanced carbon capture technologies to practical, though perhaps limited, efforts like anti-smog guns. They also reflect the complexity of the issue, acknowledging that while some improvements may be made, more research and innovation are needed to develop long-term solutions for improving air quality in Delhi.

3 | Study 2

3.1 | Research Design

Study 2 aims to explore the extent to which digital activism influenced government policies and responses to air pollution in Delhi (RQ2). To achieve this in depth, the researcher employed a netnographic analysis of tweets from political leaders and institutions involved in addressing Delhi's ongoing air pollution crisis, following a similar approach as in Study 1. Using Kozinets' (2010) approach to examine the tweets of key political leaders and institutions. The analysis aimed to assess the alignment of these tweets with the five themes identified in Study 1. The data for this part consisted of tweets from political leaders and institutions that included terms related to Delhi air pollution, aligning with the timeline and methods used in Study 1. Only English tweets were included, with Twitter's auto-translation feature used when necessary.

Additionally, qualitative analysis was used in this study, qualitative analysis is a approach to analyze news articles and policy measures discussed during the peak pollution season. This enabled an evaluation of the extent to which digital activism influenced governmental actions (Liu et al., 2019).

3.2 | Findings

List of policy measures implemented in Delhi Between October 2023 and March 2024:

Measure	Description	Implementation Period	Source
Odd-Even Vehicle Scheme	A vehicle rationing system allowing cars with odd and even-numbered plates to operate on alternate days to reduce vehicular emissions.	November 13–20, 2023	Sarkari Bhatta
21-Point Winter Action Plan	A comprehensive plan focusing on real-time pollution monitoring using drones, deployment of special task forces, and emergency measures like artificial rain to tackle rising pollution levels.	Initiated in October 2023	Hindustan Times
Anti-Dust Campaign	Part of the Winter Action Plan, this campaign aimed to control dust pollution through measures such as enforcing dust control norms at construction sites and regular road cleaning.	October 7, 2023, onwards	Hindustan Times
Ban on Firecrackers	A prohibition on the sale and use of firecrackers to prevent a spike in pollution levels during festive seasons.	October 2023–February 2024	Times of India

Industrial Activity Restrictions	Limitations imposed on certain industrial activities during high pollution periods to reduce industrial emissions.	October 2023–March 2024	Delhi Planning
Enhanced Public Transport Services	Expansion of public transport services to reduce reliance on private vehicles, thereby decreasing vehicular emissions.	October 2023–March 2024	Hindustan Times
Real-Time Air Quality Monitoring	Deployment of drones and other technologies for real-time monitoring of air quality at pollution hotspots.	October 2023–March 2024	Hindustan Times
Special Task Force (STF) Deployment	Formation of a six-member STF to ensure enforcement of pollution control measures across the city.	October 2023–March 2024	Hindustan Times
Artificial Rain Implementation	Plans to induce artificial rain to settle pollutants and improve air quality during peak pollution periods.	As needed during high pollution episodes	Hindustan Times
Odd-Even Rule Consideration	The government considered reintroducing the odd-even vehicle scheme if pollution levels did not improve, indicating a readiness to implement additional measures as necessary.	November 2023	Hindustan Times

The theme of Government Accountability and Criticism emerged prominently in study 1 and was reflected in both online discourse and subsequent policy measures. One clear example was the series of tweets by Bhupendra Yadav, the Union Cabinet Minister for Environment, who used Twitter (X) to voice sharp criticism of the Delhi government, particularly the AAP (Aam Aadmi Party). Yadav accused Chief Minister Arvind Kejriwal of failing to tackle stubble burning, which he claimed was a major contributor to Delhi's deteriorating air quality. In a pointed remark, he tweeted, *"This country is yet to see a bigger liar than Arvind Kejriwal. 93% of farm fire events this year have happened in Punjab, turning Delhi-NCR into a gas chamber, because @AamAadmiParty has failed to provide alternatives to farmers"*. Such statements were part of a broader narrative that sought to attribute blame for the pollution crisis, resonating with Study 1 findings where digital activists and citizens criticized the government's inadequate response to the issue.

The public pressure generated on Twitter (X) translated into concrete government actions, as seen in the reintroduction of the Odd-Even vehicle rationing scheme, widely reported in outlets like *The Hindu* (Nov 6, 2023) and *Business Today* (Nov 6, 2023).

Scheduled to run from November 13 to 20, 2023, the policy aimed to limit vehicular emissions by restricting cars with odd- and even-numbered plates to alternate days of operation. This initiative was a direct response to mounting public demand for stricter measures to combat air pollution. Online conversations, especially on Twitter, had amplified these calls, urging the government to take decisive steps to tackle emissions from traffic, a major source of pollution in the capital. By taking 10 lakh vehicles off Delhi's roads, the Odd-Even scheme reflected the influence of public discourse in shaping policy.

However, the government's decision-making process remained flexible and responsive to changing circumstances. As reported by *Down to Earth* (Nov 10, 2023), the Odd-Even scheme was later called off after unexpected rainfall led to a significant improvement in air quality. This highlights the complex interplay between environmental conditions and the influence of social and digital activism on policy decisions. While the campaign on Twitter spurred action, it also underscored the evolving nature of governmental responses to both public demands and real-time environmental changes. Ultimately, the episode illustrates how digital platforms, public accountability, and environmental conditions collectively shape the governance of air quality issues in Delhi.

The theme of Calls for Action Against Pollution was a central focus in both public discourse and the government's subsequent measures to tackle Delhi's air quality crisis. This was particularly evident in the tweets of Gopal Rai, Delhi's Environment Minister, who used social media to outline the government's initiatives in response to growing public pressure. Rai highlighted actions such as the formation of a special task force to enforce pollution control regulations, the distribution of anti-smog guns, and the introduction of the Odd-Even vehicle rationing rule aimed at reducing vehicular emissions. In one tweet, Rai announced, *"Delhi will implement the Odd-Even vehicle rule to combat pollution. #OddEven #DelhiFightsPollution"* (Rai, Nov 2023), reflecting the government's direct response to public calls for stricter pollution control measures. These efforts demonstrated the influence of digital activism in pressuring authorities to take immediate and visible steps to address the crisis.

The role of public activism was further evident in the implementation of the construction ban, a measure first enacted in early November. As reported by *India Today* (Nov 2, 2023) and *Times of India* (Nov 5, 2023), construction activities were halted in areas where the Air Quality Index (AQI) exceeded 400. This decision aligned with the

demands raised during the #DelhiAirPollution campaign, where citizens and activists called for urgent action to curb pollution sources. The ban targeted a significant contributor to Delhi's particulate matter levels, reinforcing the government's commitment to addressing the public's concerns. While these measures showed progress in combating pollution, they also revealed the socio-economic challenges of implementing such policies. According to a *Reuters* report (Nov 17, 2023), the construction ban adversely affected laborers who depended on daily wage work for their livelihoods, highlighting the complex trade-offs between environmental and social outcomes. Activists had raised similar concerns in the Study 1 findings on Health and Social Impact, emphasizing that measures to reduce pollution must also account for the well-being of vulnerable communities.

The theme of Pollution as a Political Issue emerged prominently during the air quality crisis, with political leaders leveraging the situation to critique each other's governance and policies. This was particularly evident in the rhetoric of Union Minister Bhupendra Yadav, who used the crisis to frame air pollution as a challenge tied to broader regional and political factors, extending beyond the jurisdiction of Delhi's local governance. In one tweet, Yadav criticized the AAP-led government for failing to curb stubble burning in neighboring Punjab, stating, *"The Punjab government has failed to make use of Central assistance for tackling the problem of stubble burning. My reply in Rajya Sabha today"* (Yadav, Dec 2023). This statement highlighted how political figures used the air pollution crisis not only as a governance issue but also as an opportunity to underscore their opponents' perceived shortcomings. Such political narratives align with the themes found in Study 1, where public discourse frequently reflected a blame game among political actors over pollution-related challenges. The politicization of air pollution was not limited to verbal criticisms but also extended to policy decisions and their framing. For instance, reports in the *Times of India* (Nov 11, 2023) detailed how the postponement of the Odd-Even vehicle rationing scheme followed the Supreme Court's decision to leave the matter to the Delhi government. This incident underscored the challenges of governance and accountability in managing the crisis, with political actors often shaping the narrative to emphasize their commitment or to shift blame.

Similarly, measures like the construction ban were framed as demonstrations of strong governmental willpower. According to *The Financial Express* (Nov 25, 2023), the ban was portrayed as a significant step toward achieving "a pollution-free tomorrow."

While this narrative showcased the government's determination, it also illustrated how policy actions during the crisis became a platform for political leaders to bolster their credibility and highlight their responsiveness to public demands.

The Health and Social Impact of Pollution emerged as a critical theme in governmental responses, particularly in light of sustained digital activism emphasizing the harmful effects of air pollution on vulnerable populations. Delhi Chief Minister Arvind Kejriwal addressed growing public health concerns by taking decisive measures to protect children from the adverse impacts of deteriorating air quality. On November 2, 2023, Kejriwal announced the closure of all government and private primary schools for two days, tweeting, *"In light of the rising pollution levels, all govt and private primary schools in Delhi will remain closed for the next 2 days."* This decision directly responded to the concerns raised by digital activists, who highlighted the heightened risks faced by children, the elderly, and individuals with respiratory conditions in campaigns such as #DelhiAirPollution.

The health implications of air pollution remained a recurring theme in public discourse and government actions alike. Measures such as school closures and work-from-home advisories were widely reported in media outlets, including *India Today* (Nov 2, 2023) and *Business Today* (Nov 15, 2023). These actions reflected a clear acknowledgment of the severe health risks posed by poor air quality, particularly during periods when the Air Quality Index (AQI) reached hazardous levels. The government's responses, driven by mounting public pressure, aimed to mitigate the immediate health impacts of pollution on the city's residents.

By prioritizing measures to protect vulnerable groups, such as temporary school closures and promoting remote work arrangements, the government demonstrated an alignment with concerns amplified by digital advocacy. These actions underscored the growing influence of online campaigns in shaping policy decisions, ensuring that public health considerations remained central to the discourse on air pollution management.

The theme of Technical and Scientific Recommendations featured prominently in government responses to Delhi's air pollution crisis, showcasing a willingness to embrace innovative and evidence-based solutions. Delhi Environment Minister Gopal Rai highlighted the exploration of artificial rain as a potential measure to combat winter pollution. In a tweet, Rai announced, *"Delhi is exploring artificial rain solutions with IIT*

Kanpur and CII experts to tackle winter pollution" (Rai, Nov 2023). This initiative underscored the government's openness to leveraging cutting-edge scientific research and collaboration with experts to address the pressing issue of air quality. Such approaches resonate with the demands of digital activists, who, as noted in study 1, consistently advocated for the adoption of technically informed and scientifically validated solutions to the pollution crisis.

Additionally, the implementation of the Graded Response Action Plan (GRAP) reflected a broader emphasis on systematic, data-driven policies. As reported by *Business Standard* (Nov 18, 2023), GRAP included measures such as bans on non-essential construction activities and restrictions on heavily polluting vehicles during peak pollution periods. These actions aligned with the technical recommendations frequently discussed in online campaigns like #DelhiAirPollution, where activists called for stricter enforcement of policies backed by scientific evidence.

4. Discussion and Conclusion

Based on the findings from this multi-study approach, researcher discovered that the #DelhiAirPollution campaign on Twitter (X) amplified public concerns, created spaces for collective dialogue on critical issues like air pollution in Delhi and this also influenced policy decisions. By analyzing the campaign's tweets, key themes emerged, including government accountability, calls for immediate action, the politicization of pollution, and its impacts on health and society. These themes reflected the diverse concerns and priorities of citizens engaging with the issue.

A notable finding is the significant surge in tweets during November, which accounted for over 60% of the total dataset. This increase coincided with the season when Delhi's air pollution typically reaches its peak, driven by a combination of stubble burning in nearby states, the use of firecrackers during Diwali, and adverse meteorological conditions that trap pollutants in the air. This heightened environmental crisis likely spurred widespread public discourse on social media, making November a focal point for the campaign.

Study 2 followed up Study 1 to examine the tweets of key political leaders and institutions along with the qualitative analysis to analyze news articles and policy measures discussed during the peak pollution season has shown the tangible impact of the digital activism on policy measures and government responses.

Public demands expressed through the campaign aligned with key interventions such as the Odd-Even vehicle rationing scheme, restrictions on construction activities, and even exploring innovative solutions like artificial rain. This clearly demonstrates how digital platforms can serve as a conduit for public sentiment, compelling policymakers to act. Engagement from political leaders, including Chief Minister Arvind Kejriwal and Environment Minister Gopal Rai, further underscores the growing influence of digital platforms in shaping governance. Public outcry on Twitter not only drove immediate policy responses but also emphasized the importance of long-term strategies, such as the Graded Response Action Plan (GRAP). News reports corroborated this dynamic, showing how social media discussions played a pivotal role in bridging public concerns with governmental action.

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