



EVALUATING GOVERNMENT DIGITAL COMMUNICATION CAMPAIGNS FOR ENVIRONMENTAL AWARENESS AND CITIZEN ENGAGEMENT: EVIDENCE FROM PUNJAB, PAKISTAN

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Abstract

Environmental degradation, climate change, air pollution, and increasing ecological challenges have intensified the need for effective government communication to educate citizens and encourage sustainable environmental practices. In Punjab, Pakistan, the Environment Protection & Climate Change Department (EP&CCD) has strengthened its public outreach through the Strategic Communication Cell (SCC), which utilizes digital media platforms to implement environmental awareness campaigns such as the Anti-Smog Campaign, CM Punjab Green Credit Program, Daily Air Quality Index (AQI) Updates, Detox Punjab Campaign, Plastic Reduction Campaign, and Climate Leadership Development Internship Program. While these initiatives have gained considerable public attention, there is limited empirical evidence regarding their effectiveness in enhancing environmental awareness, citizen engagement, and pro-environmental behavior. This study aims to evaluate the effectiveness of these government digital communication campaigns in promoting environmental awareness and encouraging active public participation in environmental protection initiatives across Punjab. A quantitative research design will be employed using a structured questionnaire administered to citizens from different districts of Punjab through probability sampling techniques. Data will be analyzed using SPSS, including descriptive statistics, reliability analysis, correlation, and multiple regression analysis to examine the relationships between campaign exposure, citizen engagement, environmental awareness, and environmentally responsible behaviour. The study is expected to reveal that well-planned digital communication campaigns significantly improve citizens' environmental knowledge, strengthen public trust in government initiatives, and increase participation in sustainable environmental practices. Furthermore, campaigns that provide timely, interactive, and visually engaging information are anticipated to generate higher levels of public engagement than conventional awareness approaches. The findings will contribute to the growing literature on strategic environmental communication, digital governance, and public relations by providing evidence-based recommendations for enhancing government communication strategies.

The study will also offer practical insights for policymakers, communication professionals, and environmental agencies seeking to design more effective digital campaigns that foster environmental responsibility, citizen participation, and sustainable development, thereby supporting Punjab's broader climate resilience and environmental governance objectives.

Keywords: *Citizen Engagement, Climate Change Communication, Environmental Awareness, Environmental Communication, Government Digital Communication, Pakistan, Pro-Environmental Behaviour, Punjab, Strategic Communication.*

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1. Introduction

Climate change has emerged as one of the most significant global challenges of the twenty-first century, posing serious threats to environmental sustainability, public health, biodiversity, food security, and economic development (IPCC, 2023; United Nations, 2024). According to the Intergovernmental Panel on Climate Change (IPCC), increasing global temperatures, extreme weather events, declining air quality, water scarcity, and ecological degradation require immediate and coordinated action from governments, organizations, and citizens (IPCC, 2023). While technological innovations and environmental policies are essential for addressing these challenges, effective communication has become equally important in encouraging public understanding, influencing environmental attitudes, and promoting sustainable behaviours (Cox & Pezzullo, 2021).

Pakistan is among the countries most vulnerable to the adverse impacts of climate change despite contributing only a small proportion of global greenhouse gas emissions (World Bank, 2022; Germanwatch, 2025). The country has experienced frequent floods, prolonged heatwaves, droughts, smog episodes, declining air quality, deforestation, biodiversity loss, and increasing pressure on natural resources (Government of Pakistan, 2021; World Bank, 2022). Punjab, being the most populous province, faces particularly severe environmental challenges, including seasonal smog, industrial emissions, plastic pollution, water contamination, and rapid urbanization (Government of Punjab, 2024). These issues not only affect public health but also hinder sustainable economic and social development. Consequently, increasing environmental awareness and encouraging public

participation have become important priorities for government institutions responsible for environmental protection (UNEP, 2024).

Environmental communication plays a vital role in informing citizens about environmental risks, government policies, and sustainable practices (Cox & Pezzullo, 2021). It refers to the strategic process of creating, disseminating, and evaluating messages that encourage environmentally responsible attitudes and behaviours among individuals and communities (Pezzullo & Cox, 2018). Governments worldwide increasingly recognize that environmental policies can achieve their intended outcomes only when supported by effective communication strategies that educate citizens, build trust, and encourage active participation in environmental initiatives (Hallahan et al., 2007). In recent years, digital technologies and social media platforms have transformed the way governments communicate with the public, enabling faster dissemination of information, interactive engagement, and real-time feedback (Mergel, 2016; OECD, 2024).

Digital government communication has become an integral component of modern public administration (OECD, 2024). Government agencies now utilize websites, social media platforms, mobile applications, and digital dashboards to communicate with citizens, enhance transparency, and encourage civic participation (United Nations, 2024). Compared with traditional communication channels, digital platforms provide broader audience reach, cost-effective information dissemination, immediate interaction, and data-driven evaluation of communication effectiveness (Mergel, 2016). These platforms also allow government organizations to respond rapidly during environmental emergencies such as smog alerts, heatwaves, floods, and air quality crises. Consequently, strategic digital communication has become an essential tool for promoting environmental awareness and encouraging sustainable public behaviour (Lovejoy & Saxton, 2012).

Public awareness is a fundamental prerequisite for environmental conservation and climate resilience (UNEP, 2024). Citizens who possess adequate environmental knowledge are more likely to adopt environmentally responsible behaviours, participate in community initiatives, comply with environmental regulations, and support government policies aimed at sustainable development (United Nations, 2024). However, awareness alone is often insufficient to produce behavioural change. Effective communication campaigns must also motivate citizens through persuasive messaging, interactive engagement, accessible information, and opportunities for participation (Hallahan et al., 2007). Therefore, evaluating whether government communication campaigns successfully influence public awareness and behaviour has become increasingly important for policymakers and communication practitioners (Zerfass et al., 2018).

Recognizing the importance of strategic communication, the Environment Protection & Climate Change Department (EP&CCD), Government of Punjab, established the Strategic Communication Cell (SCC) to strengthen public engagement on

environmental and climate-related issues (Environment Protection & Climate Change Department Punjab, 2025). The SCC is responsible for designing and implementing communication strategies that promote environmental awareness, encourage citizen participation, and enhance the visibility of departmental initiatives (Environment Protection & Climate Change Department Punjab, 2025). Through digital media platforms, the SCC manages public awareness campaigns, produces multimedia content, disseminates environmental information, and engages with diverse stakeholders across the province. Its communication efforts include the Anti-Smog Campaign, Daily Air Quality Index (AQI) Updates, CM Punjab Green Credit Program, Detox Punjab Campaign, Plastic Reduction Campaign, Climate Leadership Development Internship Program, and other environmental initiatives designed to encourage sustainable practices among citizens (Environment Protection & Climate Change Department Punjab, 2025).

These communication campaigns represent a significant shift toward evidence-based digital governance, where governments actively utilize social media, digital dashboards, and online engagement strategies to promote environmental responsibility (OECD, 2024).

2. Background

The Environment Protection & Climate Change Department (EP&CCD), Government of Punjab, is the principal public institution responsible for environmental governance, pollution control, climate change mitigation, environmental regulation, and the promotion of sustainable development within the province. The department formulates environmental policies, implements environmental legislation, monitors industrial compliance, promotes environmental awareness, and coordinates provincial initiatives aimed at addressing climate-related challenges. Through its regulatory arm, the Environmental Protection Agency (EPA), the department monitors environmental quality, enforces environmental standards, and undertakes measures to protect natural resources and public health (Government of Punjab, 2024; Environment Protection & Climate Change Department Punjab, 2025).

In recent years, the Government of Punjab has recognized that environmental policies alone are insufficient to address complex environmental challenges without active public participation. Consequently, the department has increasingly integrated strategic communication into its environmental governance framework to educate citizens, encourage behavioural change, and promote community participation. This shift reflects international trends emphasizing public engagement as an essential component of sustainable environmental management (United Nations, 2024; UNEP, 2024).

2.1. Strategic Communication Cell (SCC)

To strengthen public engagement and improve the dissemination of environmental information, the Environment Protection & Climate Change Department established the Strategic Communication Cell (SCC). The SCC serves as the department's specialized communication unit responsible for developing and implementing integrated communication strategies that increase environmental awareness, improve public understanding of environmental policies, and encourage citizen participation in environmental protection initiatives (Environment Protection & Climate Change Department Punjab, 2025).

The SCC performs multiple communication functions, including strategic planning, digital media management, content creation, public relations, media liaison, stakeholder engagement, campaign development, photography and videography, graphic design, and monitoring public responses across digital platforms. The unit produces evidence-based communication materials using visual storytelling, infographics, videos, documentaries, press releases, and social media campaigns to communicate environmental issues in an accessible and engaging manner. Through these activities, the SCC seeks to establish a transparent and interactive relationship between government institutions and the public.

2.2. Digital Transformation of Environmental Communication

The rapid growth of digital technologies has transformed public sector communication worldwide. Government agencies increasingly employ digital communication tools to improve transparency, accountability, service delivery, and citizen engagement (OECD, 2024). Recognizing these opportunities, the Environment Protection & Climate Change Department has adopted a digital-first communication strategy by utilizing official websites, Facebook, X (formerly Twitter), Instagram, YouTube, and other digital platforms to communicate environmental information efficiently.

Digital transformation enables the department to provide real-time updates, disseminate educational content, respond to public concerns, and measure communication effectiveness through engagement analytics. Unlike conventional communication methods, digital platforms facilitate two-way communication that allows citizens to interact directly with government institutions through comments, feedback, online registration systems, and public participation initiatives. This transformation represents an important step toward evidence-based digital governance and citizen-centered environmental communication (Mergel, 2016; OECD, 2024).

2.3. CM Punjab Green Credit Program

Among the department's flagship initiatives is the CM Punjab Green Credit Program (PGCP), which aims to encourage environmentally responsible behaviour through incentive-based participation. The program aligns with the Punjab Growth Strategy, Sustainable Development Goals (SDGs), and Pakistan's Nationally Determined

Contributions (NDCs) under international climate commitments. Initially launched in Lahore with plans for province-wide implementation, the program encourages individuals, educational institutions, communities, and organizations to undertake environmentally positive actions (Environment Protection & Climate Change Department Punjab, 2025).

Participants register through a web-based digital dashboard and submit evidence of activities conducted under six intervention areas: Air, Water, Waste, Land, Biodiversity & Ecology, and Environmental Awareness. Approved activities receive Green Credits that can be converted into monetary rewards. By integrating digital technology with behavioural incentives, the Green Credit Program seeks to enhance citizen participation while promoting environmental stewardship and sustainable community development.

2.4. Anti-Smog Campaign

Seasonal smog has become one of Punjab's most serious environmental and public health concerns. Every year, deteriorating air quality affects millions of residents, resulting in respiratory illnesses, reduced visibility, educational disruptions, and economic losses (World Bank, 2022). To address this challenge, the department launched the Anti-Smog Campaign as a comprehensive communication initiative aimed at increasing public awareness regarding the causes, health impacts, and preventive measures associated with smog.

The campaign disseminates educational messages through social media, television, print media, digital graphics, public service announcements, and awareness videos. Regular updates regarding environmental regulations, industrial inspections, crop residue burning, and health advisories are shared to encourage public cooperation in reducing air pollution. The campaign also highlights enforcement activities undertaken by the Environmental Protection Agency, thereby increasing transparency and public confidence in environmental governance (Environment Protection & Climate Change Department Punjab, 2025).

2.5. Air Quality Index (AQI) Dashboard

The Air Quality Index (AQI) Dashboard represents another important digital communication initiative introduced by the department. The dashboard provides citizens with real-time information regarding ambient air quality and pollution levels across different locations. By presenting scientifically measured environmental data in an easily understandable format, the AQI Dashboard enables individuals to make informed decisions regarding outdoor activities and health precautions.

Daily AQI updates are disseminated through social media and digital platforms, increasing public awareness regarding changing environmental conditions while encouraging preventive behaviours during periods of poor air quality. The integration of environmental monitoring with digital communication demonstrates the department's commitment to evidence-based public communication and environmental transparency.

2.6. Detox Punjab Campaign

The Detox Punjab Campaign is a province-wide environmental awareness initiative designed to encourage cleaner communities through improved waste management, pollution reduction, and environmentally responsible practices. The campaign promotes public participation in cleanliness drives, tree plantation activities, recycling initiatives, and pollution prevention measures while encouraging collaboration among government institutions, educational organizations, civil society, and local communities.

Through digital communication, community outreach, and multimedia campaigns, Detox Punjab emphasizes collective responsibility in environmental protection. The campaign illustrates how strategic communication can motivate behavioural change by connecting environmental sustainability with civic responsibility and community participation.

2.7. Plastic Reduction Campaign

Plastic pollution has emerged as a major environmental challenge affecting terrestrial ecosystems, water resources, biodiversity, and public health. In response, the Environment Protection & Climate Change Department initiated the Plastic Reduction Campaign alongside regulatory measures targeting single-use plastic products. The campaign combines policy enforcement with public awareness by educating citizens regarding the harmful environmental impacts of plastic waste while encouraging the adoption of sustainable alternatives.

Digital media campaigns, informational graphics, educational videos, stakeholder consultations, and enforcement updates are utilized to communicate policy objectives and increase public compliance. These communication efforts seek to reduce plastic consumption while promoting environmentally sustainable lifestyles throughout Punjab.

2.8. Climate Leadership Development Internship Program

Recognizing the importance of youth engagement, the department introduced the Climate Leadership Development Internship Program to develop future environmental leaders. The program provides university graduates and young professionals with practical experience in climate governance, environmental policy, communication, research, and community engagement.

Participants contribute to awareness campaigns, environmental projects, research activities, and digital communication initiatives while developing professional competencies in environmental management. The internship program reflects the department's long-term strategy of building human capacity for climate action and strengthening youth participation in sustainable development initiatives (Environment Protection & Climate Change Department Punjab, 2025).

Collectively, these initiatives demonstrate the Environment Protection & Climate Change Department's transition from conventional environmental regulation toward integrated digital governance, strategic communication, and citizen-centered environmental management. They also provide the institutional context for the present study, which evaluates the effectiveness of these digital communication campaigns in enhancing environmental awareness, citizen engagement, and environmentally responsible behaviour among the people of Punjab.

3. Problem Statement

Climate change, environmental degradation, air pollution, plastic waste, biodiversity loss, and declining environmental quality have become major public policy challenges in Pakistan, particularly in the province of Punjab. In response, the Government of Punjab, through the Environment Protection & Climate Change Department (EP&CCD), has invested considerable resources in developing and implementing digital communication campaigns aimed at increasing environmental awareness, encouraging citizen participation, and promoting environmentally responsible behaviour. Through its Strategic Communication Cell (SCC), the department has launched several high-profile initiatives, including the Anti-Smog Campaign, CM Punjab Green Credit Program, Daily Air Quality Index (AQI) Updates, Detox Punjab Campaign, Plastic Reduction Campaign, and Climate Leadership Development Internship Program. These initiatives utilize digital media platforms, social media, multimedia content, and online engagement strategies to communicate environmental information and encourage public involvement (Environment Protection & Climate Change Department Punjab, 2025).

Although these communication campaigns have significantly expanded the government's digital presence, their actual effectiveness in achieving behavioural and communication objectives remains largely unknown. While campaign performance is often assessed using digital metrics such as reach, impressions, views, likes, comments, and shares, these indicators do not necessarily demonstrate whether citizens have developed greater environmental awareness, increased trust in government communication, actively participated in environmental initiatives, or adopted environmentally responsible behaviours (Mergel, 2016; Zeffass et al., 2018). Consequently, relying solely on social media analytics provides only a partial understanding of campaign effectiveness.

4. Literature Review

4.1. Government Communication

Government communication has become an essential function of public administration, enabling governments to disseminate information, enhance transparency, build public trust, and encourage citizen participation in policymaking and public service delivery (Lee & VanDyke, 2015). Traditionally, government communication relied on

press releases, newspapers, television, and radio to inform citizens about policies and public services. However, rapid technological advancement has transformed governmental communication from a one-way information dissemination model to an interactive and citizen-centered approach supported by digital technologies (Mergel, 2016).

Effective government communication not only informs citizens but also strengthens democratic governance by promoting transparency, accountability, and public engagement (OECD, 2024). Governments increasingly recognize that successful policy implementation depends on public understanding, acceptance, and participation. Consequently, communication has evolved into a strategic management function that facilitates dialogue between governments and citizens while enhancing institutional legitimacy (Zerfass et al., 2018).

The emergence of digital government has significantly changed how public institutions communicate. Social media platforms, official websites, mobile applications, and online portals enable governments to provide real-time information, respond quickly to public concerns, and collect citizen feedback. These platforms have become particularly valuable during crises such as pandemics, natural disasters, and environmental emergencies because they facilitate timely information dissemination and interactive engagement (United Nations, 2024).

4.2. Strategic Communication

Strategic communication has emerged as one of the most important disciplines in public administration, corporate management, public relations, and organizational communication. Unlike traditional communication, which primarily focuses on information dissemination, strategic communication involves the deliberate planning, implementation, and evaluation of communication activities to achieve organizational objectives and establish mutually beneficial relationships with stakeholders (Hallahan et al., 2007). It integrates communication planning with organizational strategy to influence perceptions, encourage stakeholder engagement, and support policy implementation.

The concept of strategic communication has evolved considerably during the past two decades. Zerfass et al. (2018) define strategic communication as the purposeful use of communication by organizations to fulfil their mission and achieve long-term goals through effective stakeholder relationships. This perspective highlights that communication is no longer regarded as merely a supporting organizational function but rather as a strategic management process that contributes directly to organizational performance, reputation management, and public trust.

In the public sector, strategic communication has become increasingly important as governments seek to improve transparency, accountability, and citizen engagement. Modern governments operate within complex communication environments characterized by rapidly changing media ecosystems, digital technologies, and increasing public demand

for openness and participation. Consequently, communication strategies have shifted from one-way dissemination of official information toward two-way, interactive, and participatory communication models that encourage dialogue between governments and citizens (OECD, 2024).

Research indicates that strategic communication significantly improves public understanding of government policies and strengthens institutional legitimacy. Well-designed communication strategies enhance message consistency, increase policy acceptance, reduce misinformation, and encourage behavioural change among target audiences (Zerfass et al., 2018).

4.3. Environmental Communication

Environmental communication has emerged as a multidisciplinary field that integrates communication studies, environmental science, public relations, media studies, and public policy to facilitate public understanding of environmental issues and promote sustainable behaviour. It encompasses the creation, dissemination, and evaluation of messages related to environmental protection, climate change, biodiversity conservation, pollution control, and sustainable development (Cox & Pezzullo, 2021). As environmental challenges become increasingly complex and global, effective communication has become an indispensable component of environmental governance, influencing public knowledge, attitudes, policy support, and behavioural change.

5. Theoretical Framework

Theoretical frameworks provide the intellectual foundation for empirical research by explaining the relationships among variables and guiding the interpretation of research findings (Creswell & Creswell, 2023). In communication research, theories are essential for understanding how communication influences individuals' knowledge, attitudes, engagement, and behavioural intentions. Particularly in studies examining government communication campaigns, theoretical perspectives help explain why some citizens receive, accept, and act upon communication messages while others ignore or reject them.

The present study evaluates the effectiveness of digital communication campaigns implemented by the Environment Protection & Climate Change Department (EP&CCD), Government of Punjab, through its Strategic Communication Cell (SCC). The campaigns include the Anti-Smog Campaign, CM Punjab Green Credit Program, Daily Air Quality Index (AQI) Updates, Detox Punjab Campaign, Plastic Reduction Campaign, and Climate Leadership Development Internship Program. These initiatives seek not only to disseminate environmental information but also to improve environmental awareness, strengthen citizen engagement, increase trust in government communication, and encourage environmentally responsible behaviour.

Understanding the effectiveness of these campaigns requires theoretical perspectives capable of explaining both the diffusion of environmental information and

the varying responses of different audience groups. Consequently, this study integrates Diffusion of Innovation Theory (DOI) (Rogers, 2003) and the Situational Theory of Publics (STP) (Grunig, 1997; Grunig & Hunt, 1984). The integration of these theories provides a comprehensive framework for examining how environmental communication spreads through society and how different categories of citizens respond to government communication initiatives.

5.1. Diffusion of Innovation Theory

Diffusion of Innovation Theory was originally developed by Everett M. Rogers, who first published the theory in 1962 and later refined it through several editions, culminating in the widely cited fifth edition published in 2003. The theory is regarded as one of the most influential frameworks in communication, sociology, public health, agricultural extension, marketing, and technology adoption research. Rogers (2003) defines diffusion as the process through which an innovation is communicated over time among members of a social system through particular communication channels.

According to Rogers (2003), diffusion involves four interrelated elements:

- Innovation
- Communication channels
- Time
- Social system

These four components collectively explain how innovations are introduced, communicated, adopted, and institutionalized within society.

In the context of environmental communication, innovations do not necessarily refer only to technological inventions. Rather, they include new environmental policies, sustainable practices, behavioral changes, environmental awareness campaigns, and citizen participation initiatives. For example, the CM Punjab Green Credit Program encourages citizens to adopt environmentally responsible practices that represent behavioral innovations. Likewise, the Anti-Smog Campaign promotes preventive behaviors aimed at reducing health risks during periods of severe air pollution.

Communication channels play a central role within the diffusion process. Rogers emphasized that interpersonal communication and mass communication jointly facilitate innovation adoption. Today, digital communication platforms such as Facebook, Instagram, X (formerly Twitter), YouTube, websites, mobile applications, and online dashboards have become dominant communication channels through which governments disseminate environmental information. These platforms enable rapid information diffusion while facilitating interaction, public participation, and continuous feedback.

Time represents another important component of diffusion. Adoption rarely occurs immediately after exposure to communication messages. Instead, individuals move

gradually through different stages of the innovation-decision process before behavioral adoption occurs. Rogers identified five stages of this process:

5.2. Knowledge

Individuals first become aware of an innovation through communication exposure. Within this study, citizens receive information regarding environmental campaigns through the digital communication initiatives of the Strategic Communication Cell.

5.3. Persuasion

After gaining awareness, individuals develop favourable or unfavourable attitudes toward the innovation. Communication quality, message credibility, emotional appeal, and perceived usefulness significantly influence persuasion.

5.4. Decision

Citizens decide whether to adopt or reject environmentally responsible behaviours promoted by government campaigns.

5.5. Implementation

Individuals begin practicing the recommended environmental behaviour, such as reducing plastic usage, participating in environmental campaigns, monitoring AQI updates, or registering for the Green Credit Program.

5.6. Confirmation

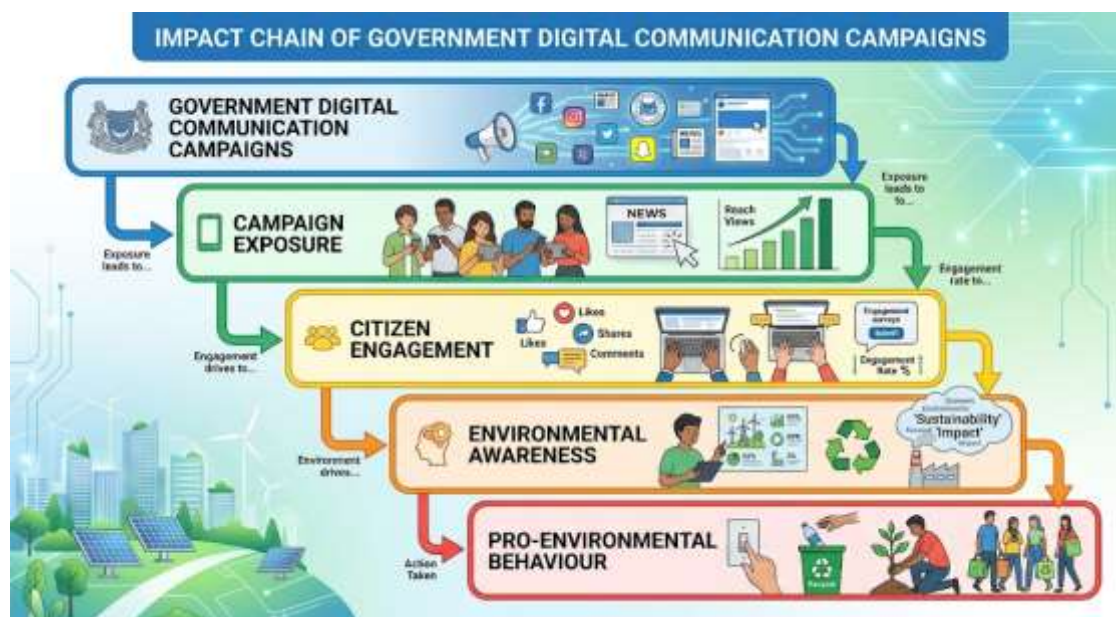
Individuals continue the adopted behaviour after evaluating its perceived benefits and reinforcing their environmental attitudes.

The theory further classifies adopters into five categories according to their willingness to embrace innovation:

- Innovators
- Early Adopters
- Early Majority
- Late Majority
- Laggards

Within environmental communication, innovators may include environmental activists and highly environmentally conscious citizens. Early adopters may consist of educated urban residents who actively engage with government social media platforms. The early and late majority represent broader segments of society that adopt environmental practices once they become socially accepted.

Figure 1. Government Digital Communication Campaign



6. Conclusion

Based on the theoretical framework, previous empirical studies, and the communication initiatives undertaken by the Environment Protection & Climate Change Department (EP&CCD), Government of Punjab, this study is expected to demonstrate that government digital communication campaigns play a significant role in enhancing environmental awareness, citizen engagement, and pro-environmental behaviour among the citizens of Punjab. It is anticipated that effective communication strategies characterized by accurate information, clear messaging, visual appeal, campaign credibility, and consistent dissemination through digital platforms will positively influence citizens' environmental knowledge and attitudes.

Among the departmental initiatives, the Anti-Smog Campaign and the Daily Air Quality Index (AQI) Updates are expected to generate relatively higher levels of public awareness because they provide timely, relevant, and frequently updated information directly related to citizens' health and daily lives. Their continuous visibility on digital platforms is likely to enhance message recall and environmental risk perception.

The CM Punjab Green Credit Program is expected to demonstrate the highest level of citizen engagement. As the program encourages active public participation by offering recognition and incentives for environmentally responsible actions, it is anticipated to motivate greater involvement in environmental activities, volunteerism, and registration for sustainable initiatives. This participatory approach is expected to strengthen the relationship between government communication and community engagement.

Conversely, comparatively lower levels of public awareness may be observed regarding campaigns such as the Plastic Reduction Campaign, particularly if communication frequency, public outreach, or audience engagement are relatively limited. These findings would indicate the need for stronger communication strategies, improved campaign visibility, and broader public participation.

Furthermore, the study is expected to reveal a significant positive relationship between government digital communication campaigns and environmental awareness. Campaign exposure is anticipated to increase citizen engagement through interactions such as viewing, sharing, commenting, participating in online discussions, and joining environmental initiatives. Increased engagement is, in turn, expected to enhance environmental knowledge, strengthen positive environmental attitudes, and encourage environmentally responsible behaviours.

The findings are also expected to support the mediating role of citizen engagement in explaining how government communication campaigns influence environmental awareness and pro-environmental behaviour. Citizens who actively engage with government digital content are likely to demonstrate higher levels of environmental knowledge, stronger trust in government communication, and greater willingness to adopt sustainable practices.

Overall, the study is expected to provide empirical evidence that strategic digital communication is an effective instrument for promoting environmental governance. The findings will offer practical guidance for the Environment Protection & Climate Change Department (EP&CCD) to optimize future communication campaigns, improve audience targeting, strengthen digital engagement, and support sustainable environmental development across Punjab.

References

- Corner, A., Markowitz, E., & Pidgeon, N. (2015). Public engagement with climate change: The role of human values. *WIREs Climate Change*, 5(3), 411–422.
- Cox, R., & Pezzullo, P. C. (2021). *Environmental Communication and the Public Sphere* (6th ed.). SAGE Publications.
- Environment Protection & Climate Change Department Punjab. (2025). *Strategic Communication Cell: Departmental initiatives and digital communication campaigns*. Government of Punjab.
- Hallahan, K., Holtzhausen, D., Van Ruler, B., Verčič, D., & Sriramesh, K. (2007). Defining strategic communication. *International Journal of Strategic Communication*, 1(1), 3–35.
- Mergel, I. (2016). Social media institutionalization in the U.S. federal government. *Government Information Quarterly*, 33(1), 142–148.
- OECD. (2024). *Digital Government Index 2024*. OECD Publishing.

United Nations Environment Programme. (2024). *Global Environment Outlook*. UNEP.
United Nations. (2024). *The Sustainable Development Goals Report 2024*. United Nations.
Zerfass, A., Verčič, D., Nothhaft, H., & Werder, K. P. (2018). Strategic communication:
Defining the field and its contribution to research and practice. *International
Journal of Strategic Communication*, 12(4), 487–505.