



Synthetic Environmental Activism in Pakistan: an Analysis of Audience Trust, Authenticity, and Ethical Concerns in AI-Based Environmental Activism

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ARTICLE INFO	ABSTRACT
Submission: July 19, 2026 Revised: August 08, 2026 Accepted: August 24, 2026 Available Online: September 04, 2026 Keywords: <i>Synthetic Activism; Artificial Intelligence; Environmental Communication; Virtual Influencers; Audience Engagement; Credibility and Authenticity</i> Corresponding author: Dr. Muhammd Manshoor Hussain Abbasi Email: manshoor_hussain@comsats.edu.pk	The fast-paced development of AI computer systems that can perform functions that usually require human intelligence is changing digital communication and activism around the world. One of the trends that is becoming common in this regard is known as synthetic activism, which refers to activism through virtual influencers created by AI. Such digital characters have been used to support environmental causes through different social media sites. This trend allows activists to create content in multiple languages and to create eye-catching visuals for audiences. Thus, this paper studies the impact of AI-created messages for environmental communication created by artificial intelligence systems, which have emerged in nations like Pakistan, in addition to the impact these messages create on the target audience. Qualitative and quantitative analyses are being used to measure the effects, ethics, and credibility of the synthetic activism created using artificial intelligence. The results reveal that the virtual messages created using AI are effective enough in engaging larger audiences as well as providing them access to environmental messages. However, the trust of the audience is largely dependent on the perception of authenticity and human intervention, as shown by issues relating to the transparency, misinformation, and bias of the content.

Introduction

Environmental Communication and Climate Awareness in Pakistan

Environmental problems have become a new global threat. It is a very challenging issue for nations that belong to developing or underdeveloped countries. Pakistan belongs to the group of nations that are at higher risk due to climate change in the world. However, this nation has not caused many carbon emissions in the world. Issues like floods, heat waves, melting glaciers, air pollution, and lack of water are very common in this country (Dunlap & McCright, 2011).

The need for environmental communication has been established as crucial in forming perceptions, causing changes in behavior, and responding with policies. According to various researchers, awareness of environmental concerns does not simply lie in the knowledge of science but in communication that makes an association between people's experiences and the environment. As suggested by Dewey (1927), effective involvement in issues on the part of the public is a consequence of understanding the way issues impact their lives. This is how communication has led to the creation of common concern.

Conventionally, environmental communication in Pakistan used to take place through television, radio, and newspapers. However, it has been revealed that "the traditional media coverage is largely on disaster-reporting rather than continuous environmental education and dialogue on environmental issues" (Bahria & Khan, 2026).

The availability of internet services and social media has been greatly influencing the communication practices in the environmental sector in Pakistan. Various environmental groups and activists have been using different social media sites, including Facebook, Instagram, TikTok, YouTube, and X (Twitter), to communicate with a large audience and engage them in the process. Some limitations of social media usage should be considered, including the authenticity of information (Ejaz & Ittefaq, 2024).

Emergence of Artificial Intelligence in Digital Environmental Activism

New vistas have been created using Artificial Intelligence in the realm of Digital Communication, especially for the creation of digital content and messaging. These new technologies, such as text-generating systems, artificial voices to narrate content, and virtual avatars, enable organizations to generate large amounts of content digitally. A new technology that has recently become a reality is "Virtual Influencers," created to communicate a specific message to the public.

At a global level, the use of virtual influencers to communicate marketing and social awareness messages is higher because of their ability to deliver messages consistently and produce visually appealing content. Environmental organizations are also exploring AI communication options to raise awareness of climate issues. Studies have shown that AI enables the communication of messages across cultures and languages, with high audience engagement (Beer, 2017).

In addition, linguistic diversity in Pakistan limits communication within the environment. AI systems can create content for the environment in Urdu and regional languages such as Punjabi, Sindhi, and Pashto. Multilingualism will enhance the accessibility of the environment and expand the scope for advancing climate awareness technology.

Trust, Authenticity, and Ethical Concerns in AI-Generated Activism

Though this strategy of AI activism is beneficial, it raises serious moral and social issues. For instance, authenticity becomes a serious concern in AI activism. Environmental activism thrives on human experiences, stories, and social participation. Therefore, when AI personalities are used to pass on environmental concerns, authenticity becomes a major question. Studies also indicate that public trust is closely related to transparency and authenticity for effective digital communication. Several studies regarding synthetic media have been conducted, and there is less trust in synthetic media even though people interact with it (Chesney & Citron, 2019). It might weaken public environmental campaigns.

Misinformation is another problem in relation to AI systems. AI systems can produce highly credible images and sounds, which makes it harder for this kind of content to be authenticated. Distorted pictures of the environment can also pose problems. AI systems may mislead in terms of their capability to produce media content by distorting environmental facts, stating that they have been created artificially (Aïmeur et al., 2024).

The ethical concerns associated with representation and culture are also present. Global data is normally used in the training sets of most AI systems, which do not take into consideration local environmental factors. This leads to the creation of designs in communication that do not represent the knowledge of indigenous cultures or local people. These phenomena are normally known as algorithmic bias, which involves culturally unequal technology (Benjamin, 2019).

Research Gap

The current studies about AI and communication have mostly considered political miscommunication, marketing communication, and the effect of digital media on communication. Nonetheless, the impact of Artificial Intelligence on environmental communication and environmental activism, particularly in underdeveloped countries such as Pakistan, has not received much attention so far. Furthermore, there is inadequate empirical study concerning the audience's attitude towards AI-based environmental communication.

This research fills the above gap by studying synthetic environmental activism in Pakistan and its impact on its audience.

Objectives of the Study

The objectives of the research are:

- To discuss the role of content generated by artificial intelligence in creating awareness for the environment.
- Audience Reaction towards Synthetic Activism and Virtual Environmental Influencers
- To evaluate the ethics involved with authenticity, misrepresentation, and transparency.
- Opportunities and Challenges of Artificial Intelligence in Environmental Communication in Pakistan.

Significance of the Study

This study is an addition to the discussion in the areas of digital communication, artificial intelligence, and environmental advocacy. This study gives great information to those working in the field of communications who wish to learn about the use of AI in environmental advocacy.

Literature Review

Environmental Communication and Public Participation

The importance of environmental communication has been recognized by many regarding its role in influencing public opinion about climate change and environmental sustainability. In this regard, researchers have argued that although environmental consciousness does not depend on scientific findings, it emerges through the process of communication within experts, policymakers, media organizations, and the public sector. In this context, Dewey (1927) stated that social involvement is caused by an individual's realization of the relationship of environmental/social issues with his or her life. The role of modern communication forums is just a medium between science-based environmental information and society.

Research findings indicate that awareness of the environment is enhanced by localized, culturally relevant communication efforts. For instance, in developing countries such as Pakistan, communication about the environment is influenced by literacy rates, cultural factors, and the availability of media technologies. Research on environmental journalism in the Pakistani media indicates that the media widely cover climate-related events such as floods, heatwaves, and droughts. Nevertheless, consistent media coverage of environmental policies and preventive measures is lacking (Bahria & Khan, 2026). Such inconsistent coverage of environmental events might result in temporary public awareness and engagement with the environment.

The adoption of digital media is seen to have greatly impacted the practice of environmental communication. Social media sites have been seen as offering a way for environmental organizations, journalists, and the public in general to share information. The media enable a limited degree of public participation and promote discussion of environmental issues among large groups of people. Although social media sites have been viewed as having the potential to increase the practice of environmental communication, there is a risk that information is watered down to levels that are not sufficiently scientific (Pariser, 2011).

Digital Activism and the Role of Social Media

"Digital activism" refers to activities that promote and mobilize social, political, and environmental causes through digital platforms. As evident in the literature, digital platforms have strengthened social movements by serving as effective tools of communication and mobilization for social activists and activists at large. Social media appears to be affecting environmental campaigns.

Woolley and Howard (2018) note that digital communication technologies also influence public discourse through messaging. Successful messaging by environmental communicators involves communication technologies that utilize the same interests. For instance, social media has identified users' interests and provided the most suitable content. Although this has helped the success of environmental campaigns, it has also contributed to the creation of information bubbles.

The rapid growth of the internet and the increasing accessibility of smart devices in Pakistan provide scope for digital activism. Young social networkers have the potential to create awareness about environmental issues. Some environmental organizations prefer to use social media tools as vehicles to raise awareness about environmental issues such as water pollution, deforestation, climate change, and waste management. Nevertheless, digital activism in Pakistan is constrained by misinformation, limited

access to digital technology, and digital illiteracy in the virtual world, particularly in rural areas of the country (Ejaz & Ittefaq, 2024).

Artificial Intelligence and Transformation of Digital Communication

Artificial Intelligence has brought significant changes to digital communication by enabling the generation of content, developing visual communication strategies, and personalizing communication approaches. AI can generate text, produce artificial vocal narration, generate visual content, and develop avatars to engage the target audience.

The most prominent feature of AI in communication is the rise of virtual influencers. Virtual influencers use AI to connect with audiences in a manner analogous to a human influencer. Studies have confirmed that virtual influencers receive considerable attention from audiences because of the way they communicate. Organizational firms use virtual influencers for marketing, branding, and creating awareness (Beer, 2017).

Moreover, AI communication software helps an organization communicate its message in various languages while maintaining consistency on all communication channels. With respect to environments such as Pakistan, which have linguistic diversity, AI communication software can communicate across linguistic divides. The fact that AI communication software helps communicate the complexity of environment-specific information through visual storytelling and narration makes it even more advantageous.

However, it is worth acknowledging the fact that the use of AI technologies to communicate faces numerous risks associated with authenticity, communicational transparency, and ethics. Thus, according to Chesney and Citron (2019), although the audience might be interested in communicating with virtual celebrities because of their hedonic qualities, it has been proven that communicational trust is negatively impacted by the perception that the content is generated artificially rather than by humans.

Synthetic Media and Misinformation Risks

The fear of misinformation and distrust across the globe has become worse because of the advent of synthetic media technologies, which include deep-fake videos and AI-produced audio. Synthetic media technology can create content that cannot be differentiated from real communication.

Chesney and Citron (2019) note that “New forms of digital misinformation result from the manipulation of visual and audio evidence by deepfake technologies.” Moreover, the threat of synthetic media extends beyond convincing misinformation to encompass the ambiguity and trustworthiness of actual information. Once the audience begins questioning the trustworthiness of digital information, it becomes easier to dismiss factual environmental evidence as false.

Misinformation risks in developing nations may be exacerbated by limited access to digital verification systems. The language barrier and digital literacy gap may make audiences in these countries even more vulnerable to erroneous environmental communication (Aïmeur et al., 2024). Environmental misinformation can lead to procrastination in addressing climate change, foster unawareness of it, and generate buzz about appropriate environmental policies.

Ethical Issues in AI-Based Environmental Activism

Ethical considerations are now a major subject of discourse regarding AI-generated activism. Environmental activism is already centered on human experience. A possible impact of AI-generated communication is the loss of authenticity that may result from incorporating AI-generated narratives.

Fricker (2007) points out that failing to consider community-based knowledge may result in epistemic injustice, in which local experiences and indigenous environmental knowledge may be oppressed. Failure to recognize local environmental realities due to the greater uptake of AI-generated communication may be a challenge.

Another ethical issue noted here is representation and algorithmic bias. For instance, artificial intelligence systems are trained on global datasets that may not reflect the local cultural and social landscape. Researchers argue that social inequality and cultural misrepresentation can be perpetrated using such technologies (Benjamin, 2019). In environmental communication, this could lead to stereotypical representations of certain environmental problems.

Gender representation is also confronted with another ethical dilemma in digital media. The findings from research studies suggest that the use of AI in the creation of imagery and narration “frequently seeks to engage members of the audience through

emotional or sensationalized portrayals.” One of the significant issues associated with this ethical dilemma is the significance of cultural sensibilities.

Research Gap and Study Contribution

Despite the abundance of research on digital activism, AI communication, and misinformation, the impact of AI on environmental activism in developing countries has been neglected. There is a lack of research assessing the Pakistani audience’s perception of AI-produced environmental activism.

The present research is an important contribution to the literature currently available on synthetic activism in the environment of digital communications in Pakistan. The present research is expected to provide some valuable empirical evidence on the topic of audience engagement, ethical problems, and the effectiveness of communications. The present research would also highlight the importance of transparency and AI usage.

Theoretical Framework

The research is anchored in a comprehensive theoretical framework based on communicative action theory, power in algorithms, and epistemic justice, which provides a theoretical understanding of the intricate connection between Artificial Intelligence, environmental activism, and trust.

Theory of Communicative Action

The theory was formulated by Habermas (1981). The theory describes the process of communication in collective comprehension and decision-making. Within the field of environmental activism, communicative action assists in translating environmental knowledge into collective consciousness and responsibility.

AI-generated environmental communication goes against the traditional form of communicative action because it might not be transparent to the audience. The AI-generated environmental communication might erode communicative trust because the audience is unaware that it is generated by AI.

Algorithmic Power Theory

The Algorithmic Power Theory seeks to explain how digital platforms and algorithmic technologies shape public discourse through data-driven content distribution. Scholars have suggested that algorithmic power influences communication by prioritizing information that elicits stronger reactions or emotions (Gillespie, 2014).

For example, in environmental activism, the application of AI-generated content could help achieve maximum audience engagement, especially through visual or emotional storytelling. Although the growing use of such algorithms may increase public awareness of environmental issues, it may still oversimplify them. The Algorithmic Power Theory may also explain how AI-driven communications affect the public’s perception of the environment.

Epistemic Justice Theory

Epistemic Justice Theory, developed by Fricker (2007), emphasizes justice in the production and representation of knowledge. The theory builds its claim on the assumption that some communities are adversely affected by a lack of participation in knowledge production. In the context of environmental communication, local communities possess valuable knowledge of their environments.

There is a risk of unintentional marginalization of local perspectives in artificially created environmental communications, particularly if the technology relies on global information that fails to account for local conditions. The application of Epistemic Justice Theory may serve as a method of analysis for the types of synthetic activism, whether they reflect the life of the region or substitute for it with a technological discourse.

Conceptual Application of the Theoretical Framework

When put together, the above-mentioned theories create a complete picture of the nature of synthetic environmental activism. The Theory of Communicative Action sheds light on the significance of trust and transparency in environmental communication. The Algorithmic Power Theory explains the significance of the influence of artificial intelligence in public communication and participation. Epistemic Justice Theory creates a greater understanding of the ethics of representation and cultural sensitivity.

In general, the above-mentioned theories create a wider perspective on the significance of AI-based environmental communication.

Methodology

Research Design

The research study examines the effects of Artificial Intelligence on environmental activism and audience perceptions in Pakistan. The subject of the research study requires an examination of content and audience perceptions, making it suitable for both qualitative and quantitative research approaches.

The qualitative component of the study examines the role of AI in fostering environmental awareness on social media platforms. The quantitative component uses an examination of survey responses on perceptions and trust. The use of both qualitative and quantitative approaches in the research study allows for an objective perspective on the focus.

The research adopts an AI-based environment of shared communication via popular social media platforms in the country, namely Facebook, Instagram, X (formerly Twitter), and TikTok.

Research Population and Sampling

1. Social Media Content Sampling

The data collection process began with selecting social media posts about environmental awareness campaigns that used AI or digital enhancement tools. Purposive sampling was conducted to choose content that evidently reflected synthetic environmental activism.

Data were collected from January 2024 to June 2025, a period when the number of environmental digital campaigns began to increase rapidly. Around 1,200 posts were selected based on their relevance to the environment, use of AI-generated visuals or narration, public interaction with them, and their general emphasis on environmental and Pakistan-related issues.

To make this diverse, keywords included climate change in Pakistan, flood awareness, water crisis, and air pollution, along with their Urdu translations. The materials were gathered from environmental groups, advocacy bodies, and independent awareness campaigns.

2. Audience Survey Sampling

The second phase, which included 400 social media users in Pakistan, utilized convenience sampling. The sample group for the survey consisted of people who consume environmental information from online sources. The respondents were sorted based on age to understand how the generations differed from one another, with more focus on the generation between 18 and 30 years old, which is the dominant generation on social media platforms.

The factors that we considered in this research were awareness of artificial intelligence (AI)-generated environmental content, trust in online environmental information, distribution of awareness campaigns, and lastly, the credibility of the content.

Data Collection Procedures

Data collection was conducted in two stages.

1. Social Media Content Collection

The social media posts were collected through observation and keyword searches. The chosen posts were grouped according to the type of content, platform, extent of social engagement, and communication format used. This included videos, animations with environmental themes, AI narration, and virtual influencers.

Any duplicated posts were excluded, and unique environmental awareness-oriented posts were included.

2. Audience Survey Administration

The survey was conducted based on an online questionnaire. The participants were informed of the study's purpose and volunteered to participate.

To facilitate deeper insights, the respondents were also provided with examples of both AI-generated and human-generated content on the environment. The answers were then judged on credibility, emotional value, and trustworthiness for comparison purposes.

Content Analysis Framework

Three key dimensions of qualitative analysis were used to examine the communication strategy used in AI-generated environmental campaigns.

1. Visual Representation

This aspect examined the visual depiction of issues such as floods, pollution, and climate-related disasters. Here, the focus was on the techniques used to tell stories, animations, and symbols employed to engage the audience.

2. Language and Messaging Style

It examined the narrative structure and language use to assess emotional appeal, scientific explanation, and information conveyance. Furthermore, it considered the usage of Urdu and regional languages for its assessment of accessibility.

Cultural Representation

The research also sought to determine whether AI-generated texts conveyed local cultures, particularly in terms of identity, including language, references to local environmental challenges, and other aspects.

Audience Response Analysis

Descriptive statistical methods have been used to analyze survey data about audience trust, credibility, and acceptance of AI-generated environmental communication.

A comparative study was conducted of the audience's response to environmental messages generated by humans and AI. The participants judged both types on credibility and trust scales, thus contributing to the identification of audience preferences.

Ethical Considerations

Ethical considerations were upheld throughout the study. The subjects were informed of the study's purpose. They were not coerced in any way. The subjects' anonymity and confidentiality were upheld. No personal information about the subjects was collected.

Social media data collection focused only on publicly available data to maintain privacy standards. Also, the study did not disseminate AI-generated data that could lead to misinformation.

Limitations of the Study

The study mostly represents respondents who use social media and have access to the internet. The opinions of people in the countryside might not have been represented. In addition, recognizing content produced by AI might not make sense, as it may have been mixed with human content. Moreover, the opinions gathered through the survey may not fully reflect long-term changes in behavior.

However, the use of various data sources adds to the study's credibility.

Results and Analysis

The results of this study were derived from a qualitative analysis of the communication strategy and a quantitative analysis of public perception of communication strategies used by Artificial Intelligence as they relate to the environment through social media channels. The overall results of this study can be divided into three categories: the growth of AI-based environmental communication and its impact on social media users; the level of user engagement with AI-based environmental communication on social media; and the public's views on artificial environmental activism (i.e., AI-generated content).

Expansion of AI-Generated Environmental Content

There has been an increase in the use of AI tools for environmental awareness campaigns, as evidenced by a qualitative content analysis across multiple sources. A variety of groups (e.g., environmental groups, digital advocacy groups, and social media content creators) have begun using AI tools to produce visually stimulating, easily understandable environmental images.

According to the analysis, the primary function of AI-generated environmental communications is simplifying complex environmental concepts. This simplification process uses animations, AI-generated voiceovers, and virtual stories to raise awareness of potential environmental hazards (e.g., climate change, flooding, air pollution, and water conservation).

The most frequently utilized AI-generated environmental content comes from “short-form video environments (e.g., TikTok, Instagram Reels, Facebook Shorts).” The characteristics of short-form video environments lend themselves to “visually compelling and emotionally charged stories,” therefore aligning them with the functional capabilities of AI-generated communication tools.

Table 1: Types of AI-Generated Environmental Content

Animated Environmental Awareness Videos	38%
AI Voice Narration Over Real Environmental Footage	27%
AI-Generated Visual Illustrations	21%
Fully Virtual Avatar-Based Environmental Messages	14%

Interpretation of Table 1

Using animated environmental videos as an AI form of communication is, so far, the most widely used method for communicating about the environment. These animated environmental videos were created using both storytelling and scientific methods, making it easier for users to understand different environmental concepts. Because of the high popularity of animated environmental videos, it seems that users prefer visually 'pretty' types of content, rather than simply factual content.

The next most popular type of communication technique is using an AI voice to provide written communication in multiple languages. This allows messages about environmental awareness to be spread across all regions of Pakistan, where people speak a variety of native languages.

Full virtual avatars are used less frequently for communicating about the environment than other AI methods. This shows a current trend toward using AI as a support or supplementary form of communication rather than as a substitute for human communicators. Similarly, Virtual Influencer AI communications are anticipated to be less popular because the audience may have too much doubt about trusting a Virtual Influencer.

Audience Engagement Patterns

The differences in engagement levels between AI-generated environment-related content and traditional/human-generated content can be analyzed quantitatively. The various indicators (likes, shares, comments, etc.) used to measure audience interaction provide evidence for these distinctions in audience engagement between AI-generated environmental content and the traditional message of raising awareness about the environment.

The results indicate that AI-generated messages focused on the environment receive greater audience engagement than traditional messages focused on raising awareness about the environment. The use of visual storytelling, animation, and emotional narratives helps improve audience interaction with these types of content, especially among young social media users.

Table 2: Audience Engagement Comparison

AI-Generated Environmental Content	5,200	1,450	820
Human-Created Environmental Content	3,600	980	640

Interpretation of Table 2

According to the data analysis, AI-generated environmental content has 30-40% higher engagement across all engagement metrics; these engagement rates indicate that AI-based communication can attract the audience's attention. Based on the Survey

Results, AI-generated images depicting environmental issues are perceived as more attractive and easier to understand than traditional images of Environmental Content. In addition, some of the respondents mentioned that using animation in storytelling helped in understanding the scientific aspects of environmental problems.

Although there were some trends identified in the engagement with environmental content, there is a need for more analysis to establish if higher engagement levels are associated with higher environmental awareness. It seems that most of the participants engaged with environmental content based on its entertainment value and not because of its educational importance.

Public Trust and Perception of Authenticity

Trust from the audience regarding AI-produced environmental activism was one of the most critical factors in their receptivity to it. When looking at the survey results, respondents reported relatively high to moderate levels of trust in both “environmental communication” and “the use of social media for environmental communication” before being made aware of the use of Artificial Intelligence in such communication. Respondents showed a significant increase in trust after being made aware that Artificial Intelligence was being used for communication.

Table 3: Public Trust Level Comparison

Human Environmental Activists	62%	28%	10%
AI-Generated Environmental Content	34%	41%	25%

Results demonstrate that people have greater trust in environmental messages delivered by human agents than in those delivered by any other method. Respondents could relate to and connect emotionally with the messages because of the experiences and challenges of the environment conveyed by the human agent.

In contrast to the messages described above, respondents had little trust in AI-generated environmental messages, even though they engaged with them at a higher rate. Respondents indicated concern that AI-generated messages might be overstating environmental risks, suggesting a need for authentic communication within environmental activism, which appears to be a function of the level of human involvement.

Perception of Transparency and Disclosure

Results from the survey showed that transparency is critical to gaining people’s confidence in AI-environmental communication. The majority of those who took part in the survey indicated they are more likely to accept AI-environmental communication if they know the businesses or organizations are using AI technology.

About 71% of interviewees supported mandatory disclosure of AI-generated environmental communications. Many of the interviewees expressed concern about the potential consequences of disseminating false information and agreed that it would be helpful for individuals to have a way to identify AI-generated content so they could critically evaluate the messages they receive.

Challenges Associated with AI-Based Environmental Activism

Success in environmental activism through synthetic means has revealed numerous challenges that could pose barriers to its success.

Risk of Misinformation

Individuals are concerned that the use of artificial intelligence to create and spread advertisement-like messages about the environment might become a problem. However, some individuals also had difficulty distinguishing genuine messages about the environment from those produced by an AI system.

Reduced Emotional Authenticity

According to the survey, AI-generated environmental communications lack the emotional authenticity of human storytelling. In contrast, participants showed a significantly higher intensity of emotional reactions to environmental information when it was shared by real individuals or communities that had suffered an environmental disaster.

Over-Simplification of Environmental Issues

Similarly, content analysis of AI-generated environmental campaigns showed that these campaigns often aim to simplify complex issues for easier accessibility. However, simplification might not be enough to raise awareness of the complex structural, political, and economic issues underlying environmental problems.

Opportunities Presented by AI-Based Environmental Communication

Nevertheless, the identified challenges offer opportunities to use AI in environmental activism.

“AI communication can assist in this by creating multilingual environmental awareness messages. This can prove to be extremely beneficial in a linguistically heterogeneous society like Pakistan. Further, AI can help environmental organizations to create awareness quickly and economically.”

Potentially, AI visual storytelling can also provide explanations of intricate environmental matters in simple terms, which would benefit public understanding. The aspect of AI in communication targeting younger digital natives would be advantageous for the development of AI in environmental activism.

Overall Analytical Interpretation

The study's findings indicated that Artificial Intelligence has the potential to become a major means of communication in Pakistan's environmental movement. The study indicated that using AI-generated content would lead to better audience engagement, make content more accessible to the public, and enhance the effectiveness of visual communication. Nonetheless, trust among the public is understood to be associated with authenticity.

The results suggest that it is most beneficial to use AI as a supporting communication tool rather than replacing human environmental activism. Adding AI-generated communication to environmental awareness campaigns, including stories of human participation, could improve their effectiveness.

Discussion

This paper's findings show the gradual impact of Artificial Intelligence upon environmental advocacy and awareness-raising activities in Pakistan. The ability to reach a wider audience through greater access to AI tools enables environmental advocates to raise awareness as never before; however, there are growing concerns about the trustworthiness, authenticity, ethical considerations, and cultural appropriateness of these technologies. The implications of the findings will now be related to the existing research literature and theoretical framework used in the study.

Artificial Intelligence as a Communication Support Tool

From the results, AI-generated content on environmental topics is effective at evoking viewer engagement and making environmental content easier to grasp. AI tools help make complex environment-related content more visually engaging and easier for the audience to understand.

Such findings have implications for the Algorithmic Power Theory, which describes the dynamics of the promotion of visually attractive, emotionally engaging content on online platforms. AI-based storytelling and related practices, such as animated videos and narratives, may gain more media space through social media algorithms due to their high interactivity.

In Pakistan, language diversity is a barrier to environmental communication. The study indicates that AI can address such limitations by generating content in the local language and/or Urdu.

The findings indicate that artificial intelligence (AI) is most effective when used in conjunction with human communication, rather than as a replacement. Human advocates can connect with affected individuals through shared experiences and emotions, which enhances the impact of environmental advocacy. Therefore, combining AI-driven communication with human-led advocacy is recommended to maximize the effectiveness of environmental campaigns.

Authenticity and Public Trust

A further key result concerns how authenticity relates to trust in an audience. While initially the motivation for engaging with the AI-created environmental material was for its aesthetics, once an audience member learned that it was solely produced by AI,

their faith in that material was reduced. This supports the Theory of Communicative Action, which argues that communication is effective and credible only when it is characterized by openness and honesty.

Traditionally, environmental activists use personal accounts and real-life encounters to promote their cause; however, the authenticity of communications from robots could become an issue in the future.

In addition, the results of the study suggest that when audiences are aware of the use of AI to produce environmentally focused communication, they are more likely to accept these types of messages. This indicates that meaningfully engaging with digital activists will require openness and honesty.

Ethical Concerns and Environmental Misinformation

According to the study, one major ethical dilemma posed by AI in environmental communication is the spread of misinformation. There are indications that AI technology can produce realistic images and/or sounds that can distort our perception of environmental threats through exaggeration. Participants in the study pointed out that there was confusion in differentiating between natural environmental imagery and images produced using AI.

Earlier research has yielded similar findings regarding the threat posed by synthetic media. As viewers begin to doubt the authenticity of all environmental information, both accurate and inaccurate, the potential for further doubt about awareness of environmental issues increases. In other words, the ability to confuse audiences by producing artificial evidence of an actual environmental problem could hinder a correct understanding of environmental integrity.

The study identifies the potential for AI media to render real forms of environmental concern unrecognized. If an audience fails to understand that what they see as “real evidence” is accurate, they may not attach significance to the integrity of the environment. Further, the study identifies the need to establish a comprehensive framework for the use of AI in environmental communication.

Cultural Representation and Local Knowledge

Additionally, the data support each of the principles of the Epistemic Justice Theory; thus, the importance of including Indigenous Knowledge within the communication process is further reinforced. AI-based Environmental Activism primarily relies on Artificial Intelligence (AI) but often neglects to incorporate Indigenous Knowledge and practices into the environmental issues being addressed.

AI models likely trained on global datasets (as they were developed) will produce generalized narratives and therefore will not accurately represent local environmental issues.

Thus, the data highlights the need for partnerships with experts in environmentally based research and with local communities to develop technologies that leverage effective cultural sensitivity in the exchange of information.

Implications for Environmental Activism in Pakistan

The results of this study indicate that A.I. has great potential to help grow the audience for environmental awareness campaigns in Pakistan, enhance how messages are delivered, and raise awareness of environmentally related issues. The success of A.I. in these roles depends on building a trusting relationship with the target audience that uses it.

As environmental campaigns rely heavily on automation, the potential to create a strong emotion-based connection with the target audience is limited. Therefore, A.I. should be used in tandem with human-led environmental communication.

Additionally, the findings of this study suggest that policies and guidelines for A.I. should be developed about ethics, transparency, and digital literacy. Increasing public awareness of the benefits and risks of A.I.-based media will build public trust, enabling more responsible environmental communication.

Future Directions of Synthetic Environmental Activism

Digital activism is likely to develop in new ways as Artificial Intelligence technology advances rapidly. If this continues, creating distinct human and AI-generated communication will likely prove impossible.

Moving forward, environmental campaigns should be designed to combine human-centered storytelling with technological advancements. Although AI can increase access to people, it may help improve how we communicate with one another, but the

elements of authenticity, cultural sensitivity, and trust will continue to be necessary for establishing a viable, sustainable movement.

Combining technology with participation could create a long-term framework for environmental activism in Pakistan.

Conclusion

In Pakistan, AI has been leveraged by environmental activists to raise awareness of climate change and other environmental issues. The study demonstrated that how AI-generated content is presented can drive high engagement, especially among younger audiences. The use of visual media, spoken words, and multiple languages can help communicate many of the more complex environmental issues by providing simpler content for people from different linguistic backgrounds.

Additionally, results indicated that there are strong relationships between public trust in the authenticity of a message and whether that message was conveyed by a person (or human) rather than AI. In fact, the public's perception of a message, when conveyed by a human, is more trustworthy than when conveyed by an AI-generated message, even though AI may have successfully captured the audience's initial attention. However, the use of AI-generated content can raise questions among the audience about the veracity of the information they receive.

Furthermore, the incorporation of AI-generated content into climate change messaging has raised new ethical issues. For example, AI-generated content can contribute to the spread of misinformation, inflate the prominence of certain environmental concerns, and ignore a geographic area's culture. In fact, AI-generated content is often based on a global environmental database, and the results may be too general to apply to local environmental knowledge.

Various theoretical approaches corroborate the above findings. The Theory of Communicative Action captures the significance of transparency and sincerity in fostering trust. Algorithmic Power Theory captures the role played by online media in promoting "engaging content." Epistemic Justice Theory captures the role played by local knowledge in environmental advocacy.

Overall, the study concluded that AI could enhance environmental communication. The best way to achieve this is by balancing AI technology with storytelling, community participation, and cultural messages. This helps raise awareness of the environment, thereby promoting active participation in protecting it.

Recommendations

Based on these findings, certain recommendations applicable from both practical and policy-oriented perspectives have been proposed.

Combining Human and AI Communication

A combination of communication methods would best suit environmental organizations. Even though artificial intelligence helps spread the message to a wider audience and provides better visual aids, human communicators are best at building connections and establishing trust. A campaign that combines technology with real-life experiences of caring for the environment is expected to attract greater public trust.

Ensuring Transparency in AI Use

The disclosure of the use of AI-generated environmental content is important, especially for maintaining audience trust. Therefore, organizations, advocacy groups, etc., must disclose the use of AI-generated content. This can help avoid any misinformation. There is a need for regulations regarding this, especially for social media.

Establishing Ethical Standards for AI Activism

There is a significant need to develop ethical guidelines for AI-determined environmental communication. The government, environmental groups, and cyber regulators should consider issues such as misinformation, the use of exaggerated environmental imagery, cultural misrepresentation, and algorithmic bias. These include ethics, which should consider issues of fairness, good communication, and the environment.

Expanding Multilingual Environmental Campaigns

In Pakistan, the problem with PA is that it may be impeded by the variety of languages that exist in the country. With the progress of AI technologies, we will be able to create content in other languages aside from English. The use of AI content in languages such as Urdu or Punjabi will help us target a bigger audience in different ways.

Training Environmental Communicators

Capacity-building programs can help develop digital literacy among environmental advocates (i.e., environmental journalists). Additionally, training workshops are required to increase awareness of the various AI - type tools and methodologies available to help create effective, successful campaigns to protect the environment. Another approach to developing valuable skill sets would be to produce highly targeted training programs that incorporate both the academic community and other environmental organizations, focusing specifically on the use of AI in environmental communication.

Promoting Digital Literacy Among the Public

Moreover, public education campaigns are an important means of informing people about both the advantages and dangers of using artificial intelligence in the media. Furthermore, it is important to promote digital literacy so that individuals can evaluate environmental media more critically. Finally, increasing digital literacy enhances public confidence in environmental digital campaigns.

Encouraging Community Participation and Local Knowledge

Environmental campaigns utilizing AI-based media should include community participation, engagement with environmental professionals, and the use of traditional knowledge from Indigenous Peoples to be successful. Campaigns that use AI-based media must incorporate cultural practices to have a greater impact on the environment. Involving communities in these campaigns will enable them to better leverage AI-based media for protecting the environment.

Strengthening Regulatory Oversight

Governments (digital regulators) need to create policies that will monitor the use of synthetic media for environmental awareness. In addition, government regulations should strive to limit the creation and distribution of misinformation, encourage the safe creation of content, and serve the public good by establishing standards for safe communication.

Supporting Future Research and Innovation

More research is required to gain a deeper understanding of the long-term environmental effects of AI activism and how emerging technologies, such as VR, AR, or AI-driven interactive storytelling, may impact activism over time. An additional area where we will need to conduct research is a comparative analysis of human activism and AI activism to determine which will be more effective communicators.

Developing Sustainable Digital Advocacy Models

Environmental groups must begin creating longer-term online strategies (not just run a few short-term social media campaigns). AI-driven solutions can help support ongoing education and awareness programs concerning the environment. A sustainable communications framework that combines technological innovation with a responsible attitude can encourage long-term, sustainable public involvement in successfully protecting the environment.

References

1. Aïmeur, E., Amri, S., & Brassard, G. (2024). Fake news, disinformation, and misinformation in social media: A review. *Social Network Analysis and Mining*, 14(1), 1–19. <https://doi.org/10.1007/s13278-023-01145-9>
2. Bahria, R., & Khan, S. (2026). Environmental reporting trends in Pakistani mainstream media. *Pakistan Journal of Media Studies*, 12(1), 78–95.
3. Beer, D. (2017). The social power of algorithms. *Information, Communication & Society*, 20(1), 1–13. <https://doi.org/10.1080/1369118X.2016.1216147>

4. Benjamin, R. (2019). Race after technology: Abolitionist tools for the new Jim Code. Polity Press. <https://doi.org/10.1002/9781509526435>
5. Chesney, R., & Citron, D. K. (2019). Deep fakes: A looming challenge for privacy, democracy, and national security. *California Law Review*, 107(6), 1753–1820. <https://doi.org/10.2139/ssrn.3213954>
6. Dewey, J. (1927). *The public and its problems*. Henry Holt and Company. (No DOI available)
7. Dunlap, R. E., & McCright, A. M. (2011). Organized climate change denial. In J. S. Dryzek, R. B. Norgaard, & D. Schlosberg (Eds.), *The Oxford Handbook of Climate Change and Society* (pp. 144–160). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199566600.003.0010>
8. Ejaz, W., & Ittefaq, M. (2024). Digital media and climate change awareness in Pakistan: Challenges and opportunities. *Journal of Environmental Media*, 5(1), 45–60. https://doi.org/10.1386/jem_00065_1
9. Fricker, M. (2007). *Epistemic injustice: Power and the ethics of knowing*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198237907.001.0001>
10. Gillespie, T. (2014). The relevance of algorithms. In T. Gillespie, P. Boczkowski, & K. Foot (Eds.), *Media technologies: Essays on communication, materiality, and society* (pp. 167–194). MIT Press. <https://doi.org/10.7551/mitpress/9780262525372.003.0009>
11. Habermas, J. (1981). *The theory of communicative action: Volume 1 – Reason and the rationalization of society*. Beacon Press.
12. Pariser, E. (2011). *The filter bubble: What the Internet is hiding from you*. Penguin Press.
13. Woolley, S. C., & Howard, P. N. (2018). *Computational propaganda: Political parties, politicians, and political manipulation on social media*. Oxford University Press. <https://doi.org/10.1093/oso/9780190931407.001.0001>



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