Visual communication-based social campaign design for waste sorting awareness

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ABSTRACT

This study analyzes the effectiveness of a visual communication-based social campaign in improving public knowledge, attitudes, and behavior regarding waste sorting at Baqbatoa Beach and Rumede Village tourist attractions in Polewali Mandar Regency. A mixed-method approach was employed, combining quantitative and qualitative techniques through pre- and post-campaign questionnaires, field observations, and social media data analysis. The findings reveal that while visitors already possessed good initial knowledge, the campaign enhanced their technical understanding. In terms of attitudes, scores increased at Baqbatoa Beach (from 4.26 to 4.43), while Rumede Village maintained a consistently high level (4.76). The most significant change occurred in behavioral aspects, with scores at Baqbatoa Beach rising from 1.56 to 4.17 and at Rumede Village from 1.84 to 4.62, confirming the campaign's tangible impact on waste-sorting practices. Dissemination through Instagram (@polman_update) also showed strong audience engagement, generating 115 likes, 6 saves, 6 shares, and 123 total interactions. Qualitative findings indicate that the campaign design was perceived as attractive, clear, easy to understand, and motivational. Overall, the study confirms that visual communication-based campaigns effectively strengthen environmental literacy and promote sustainable waste management practices. This research contributes to the field of communication and environmental studies by demonstrating how visual communication strategies can be effectively applied to foster behavioral change in waste management at tourist destinations. The findings provide practical insights for policymakers, tourism managers, and environmental organizations in designing impactful campaigns that support sustainable tourism.

1. Introduction

Waste is a major problem that continues to face humanity, and to date, it has not been optimally resolved. Waste generated from human activities consists of 60–70% organic waste, while the remaining 30–40% is non-organic waste (Awasthi & Li, 2018; Okeke et al., 2024; Pallewatta et al., 2023). The issue of waste management at tourist attractions is a crucial issue and a pressing need for this research, particularly in Polewali Mandar Regency, which is the largest waste producer in West Sulawesi, generating 64,616 tons of waste per year. Increasing population growth has resulted in an increase in waste generation each year. This situation indicates that public awareness and participation are still far from what is expected, while waste management facilities and infrastructure are inadequate (Hidayat et al., 2025; Nazar et al., 2024).

Lack of public awareness about disposing of waste appropriately is a social problem, leading to environmental pollution, a decline in the aesthetic appeal of tourist attractions, and impacting public health. If left untreated, waste will threaten the survival and sustainability of natural tourist areas. Conversely, if properly managed, waste has the potential to create jobs, improve the quality and beauty of the environment, and provide other benefits (Kite et al., 2024; Record et al., 2023).

This research was conducted at two tourist attractions in Polewali Mandar Regency: Baqbatoa Beach in Lapeo Village, Campalagian District, and Rumede Village in Kunyi Village, Anreapi District. The selection of these two locations was based on a phenomenon observed by the researchers, where both are currently gaining popularity among tourists and the Polewali Mandar community. Furthermore, Baqbatoa Beach represents marine tourism with coastal characteristics, while Rumede Village represents mountain nature tourism. Therefore, these two locations are considered representative for observing the dynamics of waste management in two different types of tourist destinations (August et al., 2023; Evans et al., 2019; Thorn et al., 2020).

One of the best ways to address this waste problem is to separate waste according to its type. In countries that have implemented integrated waste management, each type of waste is placed according to its type. Waste is separated into three categories: organic (wet), inorganic (dry), and hazardous and toxic materials (B3). Separating waste based on its classification facilitates waste management and processing at every stage (Davis et al., 2016; Fuste-Forne & Filimon, 2021).

To be able to classify waste according to its type, awareness and behavioral habits are needed in society. Cultivating good behavior is not easy. One step that can be taken is to continuously introduce and remind the public about the importance of good habits, namely by applying the concept of visual communication, through creating designs and conducting social campaigns. In the book Design and the Real World: Human Ecology and Social Change, author Papanek concludes that the role of design and its designers is to strive to be pioneers in addressing change and renewal (Arifin et al., 2025; Vernier, 2024).

This spirit is expected to guide us toward improving our visual communication designs. In visual communication design, there are several visual tools that can facilitate communication (Khatibi & Khaidzir, 2022; Pizzocaro, 2024). Campaigns are considered the most appropriate means to remind the public what they should do to achieve their goal of a healthy lifestyle (Cossio, 2024; Sala, 2024). The research questions are as follows: (1) How can a social campaign strategy based on visual communication design be effectively designed to convey the message about the importance of waste sorting in a way that is easily understood and encourages behavioral change? (2) To what extent is visual communication design effective in a social campaign in increasing public understanding, awareness, and engagement with the issue of waste sorting in tourist destinations?

Previous research conducted by researchers, namely regarding the digital branding communication model, showed the effectiveness of social media in improving the image of an institution. Aswad (2023) found that digital branding communication through social media had a positive impact on expanding the audience and improving the hospital's image. In line with this, research Carolin et al., (2021) proves that public understanding of waste problems is more effective if conveyed through visual media than text. Arifin et al., (2025) also showed that social media campaigns on climate change issues were able to encourage public awareness and lifestyle changes. Similar findings were shown by Baskerville et al., (2016) that digital campaigns can complement traditional services in encouraging behavior change, particularly in smoking cessation programs. Rachmad (2024) even emphasizes the importance of carefully designed graphic indicators as an effective means of attracting attention and influencing environmental behavior.

The novelty of this research lies in the application of visual communication in social campaigns on waste management at tourist attractions, a topic that has not been extensively researched. Unlike previous research that focused on branding health institutions and climate campaigns, this study targets changing tourist behavior in sorting waste through visual-based campaign design. Furthermore, this study applies findings on the effectiveness of visuals compared to text to real-world situations at tourist sites and expands its reach by utilizing digital media to foster better environmental habits.

The urgency of this research stems from the increasing volume of waste in tourist destinations, which threatens environmental sustainability, aesthetic values, and visitor comfort. Without effective communication strategies, awareness of proper waste sorting will remain low and hinder sustainable tourism development. The purpose of this study is to design and analyze the effectiveness of a visual communication-based social campaign in improving public knowledge, attitudes, and behaviors toward waste sorting at tourist sites in Polewali Mandar Regency. The contribution of this research lies in offering empirical evidence of how visual communication strategies can successfully influence environmental behavior in tourism contexts. The findings enrich the literature on communication for social change, particularly in waste management, and provide practical guidance for policymakers, tourism managers, and community organizations in implementing sustainable environmental campaigns.

2. Method

The research method used is a mixed method that combines qualitative and quantitative, including literature studies, field observations, interviews and surveys with tourists, tourism managers, and local communities. Focus Group Discussions (FGDs) were also conducted with partners from the Environment and Forestry Office of Polewali Mandar Regency and the Youth, Sports, and Tourism Office of Polewali Mandar Regency. Based on the analysis results, a campaign design will be developed in the form of posters, infographics, social media content, and signage at tourist attractions. This campaign will then be tested to measure its effectiveness in raising awareness and changing community habits in sorting waste (Donato, 2025; Rice et al., 2023).

This research also uses a case study approach. A number of case studies were reviewed from the literature on social campaigns, visual communication design, and from the corporate sector, which fall well outside the scope of visual communication. This case study review approach was used because the availability of high-quality published evaluations of social media campaigns is very limited. Furthermore, given the varying topics and objectives of social media campaigns, the case study approach allows for a richer and more detailed understanding of what contributed to the success of each campaign studied. A traditional, systematic keyword search in academic databases for relevant papers was not conducted, as there was very little published data of direct interest. Case studies were primarily identified through an online literature search of relevant articles, institutions, and organizations (Freeman et al., 2015; Vallverdu-Gordi & Marine-Roig, 2023).

The qualitative case study method allows researchers to conduct in-depth observations and analyses of the topic being studied. This approach was pioneered by Weberd, with the concept of empathic understanding, or verstehen. This approach views human social behavior as aiming to understand the social meaning of a social phenomenon and uncover the hidden reasons behind a social action (Aswad, 2023; Weinberg & Gould, 2023).

This research examined five aspects. First, community behavior regarding waste management, including waste disposal and sorting habits, factors influencing compliance, and awareness of cleanliness at tourist attractions. Second, the effectiveness of visual communication in social

campaigns, assessed by the ability of visual media such as posters and digital content to convey messages, tourist preferences for design, and their influence on behavioral change (Hosta & Zabkar, 2021; Tan & Zhu, 2022). Third, the campaign media design aspect, encompassing visual principles such as color and typography, audience suitability, and appeal. Fourth, the effectiveness of digital campaigns through social media, assessed by audience reach, engagement levels, and comparison with in-person campaigns at tourist locations. Fifth, the campaign impact evaluation aspect, including behavioral changes before and after the campaign, pre- and post-test results, and implementation barriers in the field.

This research approach combined qualitative and quantitative data to understand community habits and measure the effectiveness of visual communication-based social campaigns at several tourist attractions in Polewali Mandar Regency. The qualitative approach was conducted through literature studies, observations, and interviews with tourists and tourism managers, while the quantitative approach used surveys and field experiments to assess behavioral changes before and after the campaign was implemented (Etumnu, 2021; Kalal et al., 2023).

The problem-solving strategy began with an analysis of the target audience, including the characteristics of tourists and the surrounding community. Next, campaign media was designed, including posters, infographics, social media content, and signage at tourist locations, using attractive and easy-to-understand designs. The campaign was implemented at several strategic tourist attractions. The digital campaign was also implemented through social media to increase audience reach and engagement.

Effectiveness was evaluated through pre- and post-tests, surveys of visitors and tourism managers, analysis of social media responses, and the use of analytical metrics to measure the performance of social media content. With this strategy, the campaign is expected to raise awareness and change the behavior of tourists and local communities regarding waste sorting, in order to create a cleaner and more sustainable tourism environment (Boldureanu et al., 2020; Kim et al., 2017).
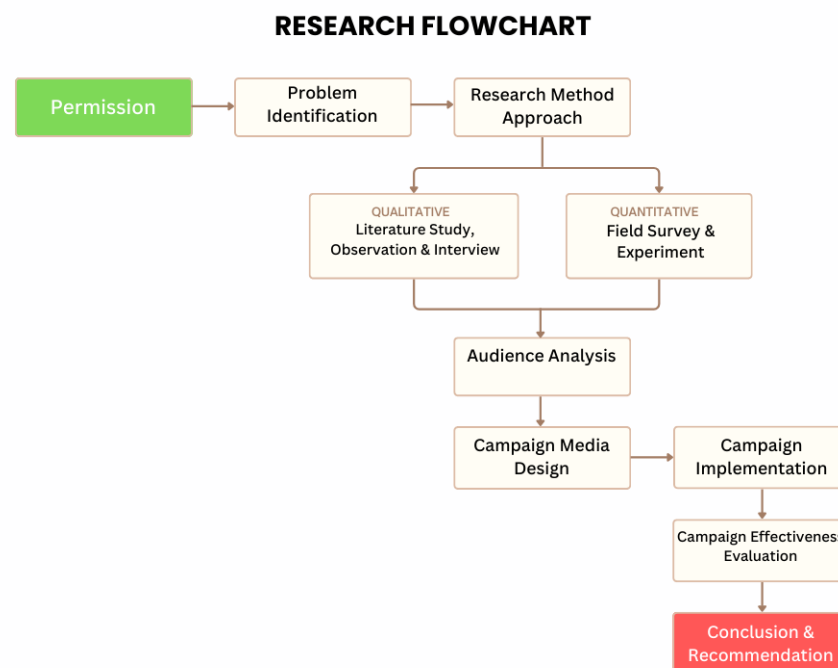

Fig. 1. Research Flowchart

As seen in Fig. 1, this research flowchart begins with problem identification, which analyzes community waste management habits at tourist attractions and the challenges in implementing a visual communication-based social campaign. The research then employs qualitative and quantitative methods. The qualitative approach involved observations and interviews with tourists and tourism managers, while the quantitative approach included surveys and field experiments to measure behavioral changes before and after the campaign was implemented (Lestari et al., 2024; Lestari & Paripurno, 2020).

The next step is target audience analysis, which involves examining the characteristics of tourists and local communities to understand their preferences for receiving visual communication messages. Based on this analysis, campaign media is designed, including posters, infographics, signage at tourist locations, and engaging and easy-to-understand digital content (Febriyanti & Ida, 2023).

The designed campaign media was then implemented at several strategic tourist attractions. Furthermore, the campaign was expanded through social media to increase audience reach and engagement. After the campaign was launched, its effectiveness was evaluated through pre- and post-tests with tourists and tourism managers, field surveys, and response analysis, including the use of analytical metrics to measure the performance of social media content.

The final stage is the conclusions and recommendations, which focus on evaluating the campaign's impact on public awareness and behavior change regarding waste sorting. Based on the research results, the most effective visual communication strategy to support waste management education at tourist attractions will be formulated, in order to create a cleaner and more sustainable environment.

3. Result and Discussion

The social campaign on the importance of disposing of waste according to its type is implemented through various visual media that are easy to see and understand by visitors. As seen in Fig. 2, the main media used is a 2x3 meter banner. This banner contains educational information about the differences between organic and inorganic waste, examples, and the reasons why waste needs to be sorted. The visual display is made attractive with illustrations of children's characters, trash icons, and contrasting colors that differentiate between organic (green) and inorganic (yellow) waste, so that the message can be clearly conveyed to all groups.

Design on Baqbatoa Beach Design on Rumede Village Trash Can Sticker Design

Fig. 2. Design Results

In addition to banners, the campaign was also strengthened with A3-sized posters placed in public areas and educational stickers on sorting trash bins. As seen in Fig. 2, These stickers were designed with simple visuals in the form of an icon of a person throwing away trash and a character depicting trash to be more communicative, while also making it easier for visitors to recognize the difference between organic (green) and inorganic (yellow) trash bins. In its implementation, the provision of trash bins was only focused on two types, namely organic and inorganic, without including the category of B3 waste. This decision was made based on the results of interviews with tourism managers and tourists, who stated that providing three types of trash bins would actually be difficult. Therefore, the initial strategy of the campaign began with the provision of two sorting trash bins, which were considered more practical and easier to implement.

The campaign design was also differentiated based on the characteristics of the research locations. At Baqbatoa Beach, the campaign visuals were created with a beach feel, such as illustrations of the sea, sand, and coconut trees, to be more relevant to the marine tourism environment. Meanwhile, in Rumede Village, the design used a mountain feel, featuring natural elements such as trees and greenery, thus better fitting the character of the location. In addition to being implemented in print media in the field, this campaign design was also implemented through social media, specifically the local account @polman_update, to expand the reach of the educational message and raise public awareness digitally.

The results of this study indicate that visitor knowledge at both research locations, Baqbatoa Beach and Rumede Village, was already quite good even before the campaign was implemented. At Baqbatoa Beach, all respondents (100%) understood the definition of waste sorting, although only 88% were able to correctly identify examples of organic waste. After the campaign, more than 90% of respondents stated they understood how to sort waste properly, thus strengthening their technical understanding. Meanwhile, in Rumede Village, the initial level of awareness was also high. Therefore, the visual campaign at both locations played a significant role in strengthening technical understanding and increasing the clarity of messages related to waste sorting.
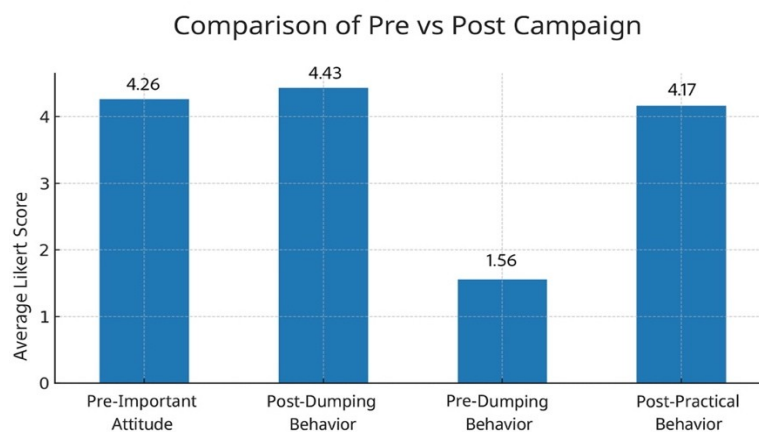

Fig. 3. Comparison of Pre vs Post Campaign in Baqbatoa Beach

Research at Baqbatoa Beach showed a significant improvement in respondents' attitudes and behaviors after a visual communication-based social campaign was implemented. As seen in Fig. 3, Based on questionnaire data visualized in a graph, respondents' attitudes toward the importance of waste sorting increased from an average score of 4.26 (pre-campaign) to 4.43 (post-campaign).

This confirms that the campaign successfully strengthened respondents' awareness of the urgency of waste sorting.

Furthermore, behavioral aspects showed the most significant change. Before the campaign, the average waste disposal behavior score was only 1.56, reflecting respondents' tendency to dispose of waste without sorting. However, after the campaign, sorting behavior increased significantly, with an average score of 4.17, with the majority of respondents immediately practicing waste sorting at tourist sites. This dramatic change demonstrates that the visual campaign not only impacted cognitive (knowledge) and affective (attitude) aspects but also significantly impacted conative (behavior) aspects.
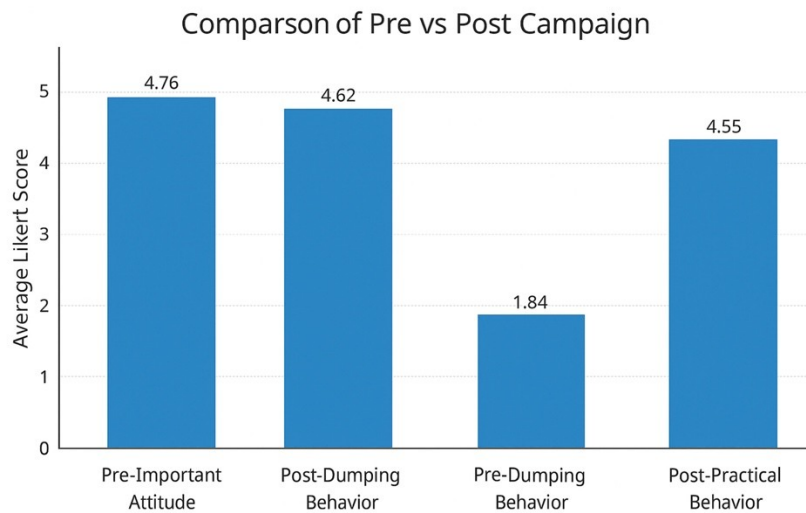

Fig. 4. Comparison of Pre vs Post Campaign in Rumede Village

The results of the study at the Rumede Village tourist site also showed significant changes in respondents' attitudes and behaviors after the visual communication-based social campaign was implemented. As seen in Fig. 4, based on questionnaire data visualized in a graph, respondents' attitudes regarding the importance of waste sorting before the campaign had a high average score of 4.76. However, a more striking change was seen in the behavioral aspect. Before the campaign, respondents' behavior regarding waste disposal only averaged 1.84, indicating low levels of waste sorting practices. After the campaign, this behavior increased significantly, with an average score of 4.62 for waste disposal behavior and 4.55 for practical behavior.

This demonstrates that the social campaign in Rumede Village not only strengthened respondents' awareness but also significantly impacted changes in daily behavior. This means that the visual communication-based campaign successfully encouraged a shift from merely positive attitudes to direct practice in waste sorting at the tourist site.

As seen in Fig. 5, The campaign design results, published on Instagram by the local media account @polman_update, also demonstrated strong audience engagement. According to Instagram Insights data, the campaign post received 115 likes, 6 saves, 6 shares, and 1 comment from users. Overall, 123 accounts interacted with the content. Furthermore, the campaign encouraged audiences to explore further, as evidenced by 31 profile visits, although no new followers were generated.

Demographically, the campaign's audience distribution showed that the campaign reached 52.7% women and 47.3% men, with relatively balanced engagement between the genders. This indicates that the campaign's message resonated with diverse audience groups on social media.

The findings of this study demonstrate that visual communication-based social campaigns are effective in improving environmental awareness and behavior, particularly in the context of waste sorting at tourist destinations. The significant increase in behavioral scores at both Baqbatoa Beach and Rumede Village indicates that visual campaigns not only strengthen knowledge and attitudes but also translate into concrete actions. This finding aligns with Papanek's (1985) perspective on the role of design as a catalyst for social change, where design functions not only as an aesthetic tool but also as a medium to encourage behavioral transformation in society.
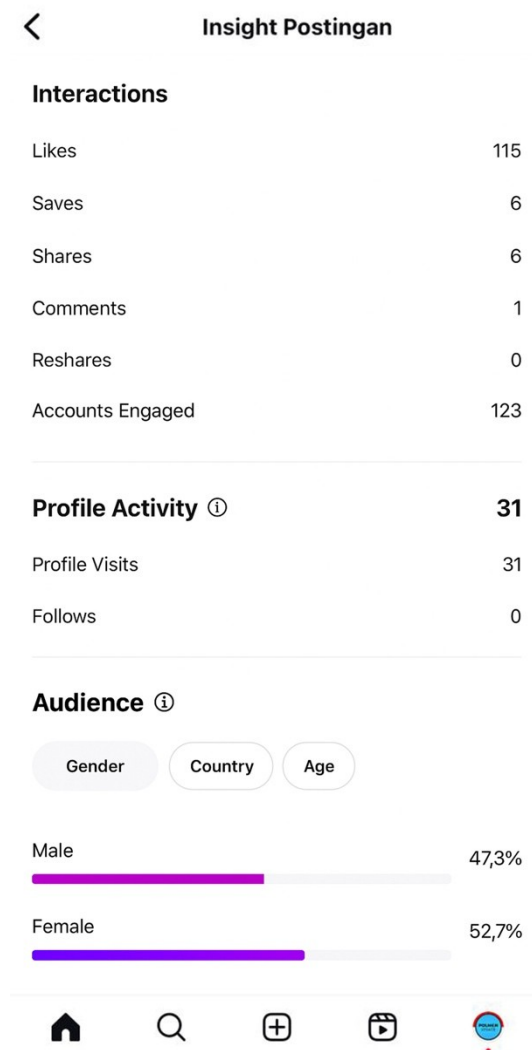

Fig. 5. Insight Campaign on Instagram Polman Update

The improvements in technical understanding and behavioral compliance after exposure to the campaign materials confirm the effectiveness of visual communication as a persuasive medium. This supports the conclusions of Carolin et al. (2021), who highlighted that public understanding of waste management is more effective when delivered through visual formats rather than text. The results also resonate with Arifin et al., (2025), who found that social media campaigns on climate change issues encouraged shifts in public awareness and daily practices. Similarly, Baskerville et

al., (2016) showed that digital campaigns can complement traditional communication strategies in promoting behavior change, particularly in health-related contexts.

A notable contribution of this study lies in its focus on tourist destinations, a domain less explored in previous visual communication research. Unlike branding or climate-focused campaigns, this research demonstrates that visitors at tourist sites, despite already having baseline knowledge, require visual interventions to translate awareness into practice. The case of Baqbatoa Beach, where knowledge was relatively high but sorting behavior was initially very low, illustrates the gap between awareness and practice. This gap was effectively reduced through the campaign, confirming that carefully designed visual messages can bridge cognitive understanding and behavioral execution.

The results also reaffirm theories of communication effectiveness in environmental campaigns, particularly the concept of visual literacy and behavioral cues. The use of icons, colors, and contextualized designs (beach-themed at Baqbatoa and mountain-themed at Rumede) provided visitors with cues that were not only clear but also culturally and environmentally relevant. This contextual approach echoes Rachmad (2024) argument that graphic indicators, when designed with contextual sensitivity, can enhance environmental behavior by making the message more relatable and persuasive.

Digital dissemination via Instagram further amplified the campaign's impact. The audience engagement metrics, likes, saves, and shares, demonstrated that visual messages have high resonance in social media environments. These findings align with Aswad (2023), who confirmed that social media branding communication enhances institutional image and audience reach. While direct behavioral observation is not possible through digital analytics, the high level of online interaction suggests potential spillover effects, where digital engagement may strengthen collective awareness and encourage offline practices.

Despite its success, the study also revealed limitations such as uneven media placement and limited design variations. These challenges reflect broader issues in campaign sustainability, where repeated exposure and strategic placement are necessary to maintain long-term behavior change (Freeman et al., 2015). The respondents' suggestions to diversify media formats confirm the importance of reinforcing messages through multiple channels, as also suggested by Cossio (2024) ; Sala, (2024), who emphasized campaigns as continuous reminders to sustain lifestyle changes.

In sum, the discussion highlights that visual communication-based campaigns function as more than simple awareness tools; they serve as behavioral triggers that activate knowledge into practice. This aligns with the three dimensions of communication effects, cognitive, affective, and conative, demonstrated in this research. By connecting theoretical perspectives, empirical findings, and comparative studies, this research affirms the strategic role of visual communication in promoting sustainable tourism through waste management practices.

4. Conclusion

This study confirms that visual communication-based social campaigns are highly effective in enhancing knowledge, reinforcing positive attitudes, and encouraging tangible behavioral changes in waste sorting at tourist destinations. The results at Baqbatoa Beach and Rumede Village revealed significant behavioral improvements, demonstrating that visual communication can effectively bridge the gap between awareness and practice. Campaign designs that applied visual principles, such as color, typography, and context-specific illustrations, proved successful in capturing attention, fostering awareness, and motivating behavioral change. Dissemination through social media, particularly Instagram, further extended audience engagement and complemented on-site

interventions. Despite some limitations, such as limited media variety and uneven distribution, the campaign was still considered successful in building collective awareness and promoting sustainable tourism practices.

Theoretically, this study contributes to the field of communication for social change and environmental communication by affirming that visual communication not only influences cognitive and affective aspects but also strongly drives conative outcomes that lead to behavioral change, supporting theories of visual literacy and persuasion. Practically, the findings provide actionable insights for policymakers, tourism managers, and community organizations in designing effective waste management campaigns that are context-sensitive, visually engaging, and strategically distributed across physical and digital spaces. Future research should examine the long-term sustainability of behavioral change, explore the use of interactive or digital technologies (such as augmented reality and gamified tools), and compare the effectiveness of different visual strategies across cultural and demographic contexts to optimize the role of visual communication in advancing environmental sustainability.

Acknowledgment

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