

The Impact of Artistic Interventions on the Moroccan Public's Response to Environmental Disasters: A Post-Earthquake Study

O Impacto das Intervenções Artísticas na Resposta do Público Marroquino aos Desastres Ambientais: Um Estudo Pós-Terramoto

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ABSTRACT: Environmental disasters present significant challenges to affected communities, necessitating effective response and recovery strategies. In this context, artistic interventions (e.g., environmental visual arts, community art projects, artistic competitions) have emerged as valuable tools to foster public engagement and dialogue in post-disaster scenarios. This study aims to assess the impact of such artistic interventions on the Moroccan public's response following the 2023 earthquake. Specifically, it examines how these interventions influence various aspects of public engagement, including awareness, emotional resonance, dialogue, mobilization, and policy impact.

The methodology used adopts a qualitative approach, utilizing Principal Component Analysis (PCA) to analyze data. Data was collected from a sample of 300 representatives of volunteer associations in the Marrakech-Safi region (the earthquake-affected area) and 50 representatives of artistic associations and event organizers.

Preliminary findings suggest that artistic interventions have the potential to stimulate public engagement, though their impact is influenced by factors such as artistic complexity, accessibility, and community involvement. The study emphasizes the importance of prioritizing diverse, accessible, and community-driven artistic initiatives to foster meaningful dialogue and action in post-disaster contexts.

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RESUMO: Os desastres ambientais colocam desafios significativos às comunidades afetadas, exigindo estratégias eficazes de resposta e recuperação. Neste contexto, as intervenções artísticas (por exemplo, artes visuais de temática ambiental, projetos artísticos comunitários e concursos artísticos) têm emergido como instrumentos relevantes para promover o envolvimento do público e o diálogo em cenários pós-catástrofe. O presente estudo pretende avaliar o impacto destas intervenções artísticas na resposta da população marroquina na sequência do sismo de 2023. Em particular, analisa de que forma estas iniciativas influenciam diferentes dimensões do envolvimento público, nomeadamente a sensibilização, a ressonância emocional, o diálogo, a mobilização e o impacto nas políticas públicas. A metodologia adotada assenta numa abordagem qualitativa, recorrendo à Análise de Componentes Principais (Principal Component Analysis – PCA) para a análise dos dados. Os dados foram recolhidos junto de uma amostra constituída por 300 representantes de associações de voluntariado da região de Marrakech-Safi (a área afetada pelo sismo) e 50 representantes de associações artísticas e organizadores de eventos.

Os resultados preliminares sugerem que as intervenções artísticas possuem um potencial significativo para estimular o envolvimento do público, embora o seu impacto seja condicionado por fatores como a complexidade das obras, a acessibilidade das iniciativas e o grau de participação da comunidade. O estudo destaca, assim, a importância de privilegiar iniciativas artísticas diversificadas, acessíveis e orientadas para a comunidade, de modo a promover um diálogo significativo e incentivar a ação coletiva em contextos pós-catástrofe.

PALAVRAS-CHAVE: intervenções artísticas; avaliação de impacto; envolvimento do público; resposta pós-sismo; população marroquina.

Introduction

Environmental disasters generate profound social, psychological, and cultural disruptions that extend far beyond physical destruction. In recent years, scholars and practitioners have increasingly recognized that post-disaster recovery requires not only material reconstruction but also emotional healing, social cohesion, and community resilience. Within this context, artistic interventions—including community murals, participatory installations, environmental visual arts, cultural festivals, and collaborative artistic practices—have emerged as important mechanisms for fostering public

engagement and collective recovery. Art can provide communities with opportunities to express trauma, preserve collective memory, strengthen social bonds, and encourage civic participation during periods of crisis and reconstruction.

The growing interest in the relationship between art and disaster recovery is reflected in several international studies. Mutch and Latai (2019), for example, demonstrate how arts-based activities implemented in schools after natural disasters in New Zealand and Samoa helped children process trauma and integrate their experiences into personal and collective narratives. Similarly, Gupta and Kumari (2023) show that arts and crafts initiatives in post-disaster India contributed not only to psychological recovery but also to the reconstruction of social identities and community solidarity. Huss et al. (2016) further emphasize the importance of culturally sensitive artistic practices in Sri Lanka, arguing that art can facilitate collective healing while restoring a sense of agency among affected populations.

Beyond psychological recovery, artistic interventions also play a significant role in stimulating public awareness and encouraging civic engagement. Smith, McDonagh, and Brookes (2024) highlight how multimedia artistic installations addressing environmental crises can generate emotional responses that increase public awareness and inspire behavioral change. Likewise, Griffin, Revill, and Wellesley-Smith (2024) argue that participatory artistic practices strengthen collaboration, dialogue, and community resilience in disaster-prone regions. These studies collectively suggest that artistic interventions are most effective when they are accessible, emotionally resonant, and deeply connected to local cultural realities.

The relevance of these issues became particularly visible in Morocco following the devastating earthquake of September 8, 2023. The earthquake, centered in the High Atlas Mountains near Al Haouz province, caused widespread destruction across several regions, including Marrakech-Safi, one of Morocco's most culturally significant and densely populated areas. Thousands of lives were lost, villages were severely damaged, and important elements of Morocco's architectural and cultural heritage suffered considerable destruction. Beyond the material losses, the earthquake generated deep psychological trauma, disrupted community structures, and intensified social vulnerabilities among affected populations.

In the aftermath of the disaster, numerous Moroccan artists, cultural organizations, associations, and community initiatives mobilized artistic interventions to support relief and recovery efforts. Murals, fundraising exhibitions, participatory artistic projects, and cultural events emerged as tools for expressing solidarity, raising awareness, preserving cultural identity, and fostering emotional support among communities. Initiatives such as "Artists for Morocco," fundraising auctions, and public art installations illustrated how art became intertwined with humanitarian action and collective

resilience. These interventions transformed artistic expression into a medium of dialogue between affected communities, volunteers, institutions, and the broader Moroccan public.

Despite the growing international literature on art and post-disaster recovery, limited research has specifically examined the role of artistic interventions in shaping public engagement within the Moroccan context. Existing studies often focus on psychological healing or cultural production in general terms, while insufficient attention has been paid to how artistic initiatives influence public awareness, emotional resonance, community cohesion, mobilization, and behavioral responses after environmental disasters in Morocco. Furthermore, few studies empirically analyze the factors that determine the effectiveness of such interventions, particularly in culturally rich and socially diverse regions such as Marrakech-Safi.

This study seeks to address this gap by examining the impact of artistic interventions on the Moroccan public's response following the 2023 earthquake. More specifically, it investigates how factors such as artistic complexity, accessibility, community involvement, emotional connection, and cultural sensitivity influence public engagement in post-disaster contexts. Through a qualitative approach supported by Principal Component Analysis (PCA), the study aims to provide a multidimensional understanding of how art contributes to social resilience, collective healing, and civic participation in the aftermath of environmental crises.

1.Literature review

Art has long been recognized as a powerful medium for emotional expression and social transformation. In the context of post-disaster recovery and resilience, artistic interventions serve not only as therapeutic tools for individuals affected by trauma but also as mechanisms for enhancing community engagement and rebuilding cultural identities. The literature reviewed below illustrates how creative practices have been employed across various contexts to facilitate psychological recovery, enhance social cohesion, and inspire community-driven change. Through examining studies from New Zealand, Samoa, India, and Sri Lanka, as well as research on public engagement with climate and environmental issues, we can identify common mechanisms through which art contributes to resilience; we will also highlight lessons relevant for the Moroccan context.

1.1 Art as a Tool for Trauma Processing and Recovery

Mutch and Latai (2019) highlight the use of arts-based activities in schools following natural disasters in New Zealand and Samoa, they demonstrate how such interventions help children process trauma and integrate these experiences into their personal histories. Building on the idea of art as a

tool for psychological recovery, Gupta and Kumari (2023) extend this understanding to community settings in India, showing that arts and crafts not only aid in emotional healing but also empower communities, strengthen social bonds, and support the rebuilding of cultural identities. Complementing these findings, Huss et al. (2016) emphasize the importance of culturally sensitive arts-based interventions in Sri Lanka; they illustrate how art can facilitate collective processing of traumatic memories and enable communities to regain agency after civil conflict and natural disasters.

In another study, Drolet et al. (2022) explore the methodological side, employing creative art research approaches to assess emotional and psychological experiences of children in post-disaster contexts. Their work highlights the potential of arts-informed research to capture aspects of healing and provides tools for evaluating intervention effectiveness. Grebenau (2021) adds to this framework by examining expressive arts therapy (ExAT) for earthquake survivors, they highlight its effectiveness in mitigating PTSD in the early stages of recovery, thereby demonstrating the relevance of structured artistic modalities for post-disaster mental health. Extending the range of artistic forms, Ma and Zha (2023) explore the therapeutic potential of fibre art for psychological healing, they illustrate how creative expression in diverse media can support emotional recovery and resilience.

1.2 The Role of Art in Community Engagement

Smith, McDonagh, and Brookes (2024) illustrate this potential through place-based arts engagement, showing how multimedia installations like *FloodLights* can evoke emotional responses that increase awareness of climate issues and encourage tangible behavior change. Extending this perspective, Griffin, Revill, and Wellesley-Smith (2024) emphasize the importance of creative practices in promoting social processes such as collaboration, learning, and community relations in flood-prone areas of the UK. Their findings suggest that art interventions are most effective when they are locally co-produced and tailored to the specific context of the community. Building on the idea of context-specific engagement, Fraaije et al. (2022) highlight the broader principle that art can facilitate public engagement by making complex or controversial issues more visible and encouraging individual reflection; this emphasizes the participatory and communicative aspects of art and to what extent it can reach diverse audiences.

Within the context of these empirical insights, Stamkou and Keltner (2020) provide a theoretical perspective for understanding art's transformative potential. Their framework positions art as both a transmitter of culture and a catalyst for social change, capable of challenging the status quo and evoking powerful emotional experiences such as awe; this which can open new perspectives and foster long-term social transformation. These two studies illustrate a continuum in which art not only

engages communities in immediate awareness and action but also nurtures enduring social and cultural change.

1.3 Mechanisms of Art in promoting Public Engagement

Petronienė and Juzelėnienė (2022) examine the “Murals for Communities” project in urban environments such as Waterford, Heerlen, and Kaunas. Their findings highlight how mural art can strengthen community bonding, increase social interaction, and promote sustainable urban development. Central to this impact is the participatory nature of the projects, which allows community members to actively shape their environment- an approach that could be particularly relevant for Moroccan communities engaged in environmental resilience initiatives.

Expanding on these principles, Williams et al. (2023) investigate participatory arts-based (PAB) programs aimed at children and young people. They identify mechanisms of change such as the creation of therapeutic spaces, subversion of social norms, which promotes a sense of community, and facilitates embodied understanding. While often therapeutic in nature, these programs also encourage creativity, collaboration, and collective action; this, thus, demonstrates how arts-based interventions can simultaneously support mental health and community resilience.

Within the same context, Froggett et al. (2011) provide ethnographic evidence from socially engaged arts practices in four UK visual arts institutions. Their research shows that such practices can generate both personal and social transformation, which enables communities to confront shared challenges and improve collective well-being. Thus, these studies illustrate that art not only facilitates individual and collective emotional support but also cultivates a sense of shared responsibility.

1.4 Artistic Interventions in the Moroccan Context

One prominent feature of Moroccan artistic life is the country’s strong tradition of public cultural expression, particularly through festivals, urban art, and heritage-based practices. Scholarship on Moroccan cultural production highlights that artistic spaces are not merely aesthetic platforms but also arenas where identity, modernity, and social norms are continuously negotiated (Pieprzak, 2010; Kapchan, 2010).

Unlike traditional, static spaces such as museums, Moroccan art festivals are ephemeral and responsive to their environment. As noted by Pieprzak (2012), these events engage with streets and public spaces, producing immersive, sensory experiences that challenge conventional forms of knowledge and encourage spontaneous, participatory engagement. In this way, art becomes a dynamic medium for shared interaction rather than a fixed object, allowing audiences to actively experience creativity within their urban landscapes.

The Asilah Arts Festival exemplifies how street art can transform public spaces into sites of cultural dialogue and urban regeneration. Through murals on the facades of old townhouses, the festival promotes engagement with political, aesthetic, and social issues, demonstrating the potential of art to reconfigure public space and stimulate cultural discourse (Pieprzak, 2010; Dornhof, 2022). Street art in Asilah has been widely analyzed as part of broader processes of urban cultural production and heritage-making in Morocco (Gómez López, 2017).

Beyond festivals, Moroccan artistic interventions have also extended to hybrid spaces such as “marketplace museums” in souqs and bazaars. These informal, multifunctional spaces challenge traditional museum models by blending commercial, cultural, and social activities, allowing both locals and tourists to engage directly with Moroccan history and contemporary culture. Such initiatives reflect a broader trend toward the commercialization of culture while simultaneously promoting community participation and interaction (Minca & Wagner, 2016).

The participatory dimension of Moroccan artistic practices is consistent with broader international findings on socially engaged art. Froggett et al. (2011) show that community-based artistic initiatives can foster both individual transformation and collective well-being through active participation and dialogue. Likewise, Petronienė and Juzelėnienė (2022) demonstrate that participatory mural projects strengthen community bonds and encourage civic engagement by allowing residents to contribute directly to the creation of public spaces. These findings provide a useful framework for understanding how Moroccan artistic initiatives may contribute to social cohesion and public mobilization in the aftermath of environmental disasters.

Across these various forms- from festivals to street art to marketplace museums-Moroccan artistic interventions create opportunities for social engagement, critical thinking, and cultural expression. The collaborative nature of these practices enables local communities to actively participate and cultivate a sense of ownership and collective identity. Art in such a country can unite people, spark dialogue, and keep culture strong, even while balancing modernity, tradition, and politics.

1.5 Recent Cases from Morocco

The recent earthquake in Morocco has had a profound impact on both the country's cultural heritage and its artistic community. In response to this disaster, numerous artists, cultural organizations, and galleries have come together to support relief and recovery efforts. Below are some of the key initiatives and their impacts:

Print Sale by Artists: A group of Moroccan and international artists, including Barrada, Meriem Bennani, Hassan Hajjaj, and others, launched a print sale titled "Artists for Morocco." The prints,

priced at €125 (\$134), are aimed at raising funds for two Moroccan NGOs: the Amal Women's Training Center (which delivers food to victims) and the Rif Tribes Foundation (which brings aid to remote villages). This initiative reflects the solidarity of the artistic community in the wake of the disaster.

Focus on Cultural Heritage: In addition to supporting human lives and immediate disaster relief, these efforts also include the reconstruction of cultural assets, such as historic sites and museums in Marrakech, which suffered significant damage during the earthquake. The loss of historic structures, including parts of the UNESCO World Heritage site in Marrakech, highlights the importance of preserving Morocco's rich cultural heritage.

Disaster Relief Project: The 1-54 Contemporary African Art Fair launched a project aimed at supporting disaster relief and recovery efforts following the earthquake. The fair is collaborating with local cultural organizations and artists, including the Museum of African Contemporary Art Al Maaden and the Montresso Art Foundation, to raise funds for both immediate relief and long-term reconstruction.

Special Courtyard Commission by Amine El Gotaibi: In response to the earthquake, the London edition of the fair has featured a special installation by Marrakech-based artist Amine El Gotaibi, titled "Illuminate the Light." This installation, which uses light as a medium, symbolizes hope and resilience in the face of the devastation caused by the earthquake. It highlights the fair's commitment to supporting both the cultural and economic recovery of Morocco.

Fundraising Auctions: An auction was held at the Mohammed VI Museum of Modern and Contemporary Art in Rabat, where various Moroccan artists contributed their works to raise funds for rebuilding affected areas. Additional auctions were planned to continue supporting recovery efforts.

Artists for Morocco Collective: The "Artists for Morocco" collective, founded by editor Samira Larouci, designer Ismail Elaaddioui, and photographer Anass Quaziz, has raised €210,000 to support remote villages and communities in need. The collective's efforts have provided assistance to over 2,700 people across 16 villages. This emphasizes the power of art to heal and strengthen communities during such crises.

While existing literature highlights the potential of art-based interventions in post-disaster recovery, there remains a significant gap in understanding how such interventions specifically influence public engagement within the Moroccan context, particularly in the aftermath of the 2023 earthquake. Most studies focus on broad global or regional examples, but few explore how artistic interventions, when tailored to the unique cultural and social context of Morocco, affect specific aspects of public engagement, such as awareness, emotional resonance, dialogue, mobilization, and policy impact. Additionally, while research on arts-based interventions often emphasizes

psychological healing and community cohesion, there is a lack of focused studies that assess the practical outcomes of such interventions, including their role in shaping public perception and action in disaster recovery.

This study aims to fill that gap by specifically investigating how artistic interventions influence public engagement in the Marrakech-Safi region following the 2023 earthquake. Through a qualitative approach and Factorial Correspondence Analysis (FCA), the research will attempt to answer the research question: how different factors- such as the complexity of the art, its accessibility, and the level of community involvement- affect the outcomes of these interventions?

2. Method

This study adopts an exploratory mixed-methods approach to examine the impact of artistic interventions on public engagement in the aftermath of the 2023 earthquake in Morocco. While the research is grounded in an interpretive and socially contextualized perspective regarding post-disaster artistic practices, the empirical analysis relies on quantitative data collected through structured questionnaires and analyzed using Principal Component Analysis.

The methodological approach therefore combines qualitative conceptual framing with quantitative analytical techniques. The qualitative dimension is reflected in the study's focus on emotional resonance, cultural sensitivity, collective healing, and community perceptions surrounding artistic interventions. These dimensions are derived from existing literature on participatory art, disaster recovery, and community resilience. However, in order to identify underlying patterns and relationships among these variables, a quantitative exploratory statistical method was employed.

More specifically, Principal Component Analysis was used as a dimensionality reduction and exploratory factor identification technique. PCA enabled the study to group correlated variables into broader conceptual components representing the principal dimensions influencing public engagement with artistic interventions. The use of PCA is particularly appropriate in exploratory social research contexts where multiple interrelated variables are examined simultaneously.

The sample for this study was drawn from two distinct groups. First, 300 representatives were selected from a total of 1,200 volunteer associations in the Marrakech-Safi region, which was the area most affected by the earthquake. These volunteers were chosen to provide insights into the community's response to the earthquake and the role of artistic interventions in the recovery process. Second, 50 representatives were selected from a pool of 120 artistic associations and event organizers. These individuals were chosen for their direct involvement in artistic interventions aimed at fostering public engagement and dialogue post-disaster.

Data collection was conducted through a questionnaire sent to the selected representatives from both groups. The surveys focused on the perceived impact of artistic interventions on public awareness, emotional resonance, community dialogue, mobilization, and policy influence.

Principal Component Analysis was employed to identify underlying patterns and relationships within the data, enabling a deeper understanding of how these artistic interventions influenced various aspects of public engagement.

The questions of the questionnaire, based on the variables extracted from the literature review, were as follows:

Variable	Example Questions
Complexity of Art	1. How do you perceive the complexity of the art involved in post-earthquake recovery efforts in your community? 2. Do you believe that more complex art (e.g., detailed murals, sculptures) engages the public more effectively than simpler forms? 3. In your opinion, how does the complexity of artistic interventions impact the emotional connection of the public to the recovery process?
Accessibility of Art	1. To what extent do you feel that the art created after the earthquake is accessible to all community members, regardless of age, background, or economic status? 2. How important do you think it is for art interventions to be easily accessible (e.g., location, materials) in encouraging public participation? 3. How do you rate the availability of spaces where the community can engage with art following the 2023 earthquake?
Community Involvement	1. How involved have you been in the creation or display of art following the 2023 earthquake in Marrakech-Safi? 2. Do you think that the level of community participation in artistic projects has influenced the effectiveness of these interventions in the recovery process? 3. To what extent do you believe that art interventions that involve community participation have a stronger impact on fostering collective healing?
Impact on Public Engagement	1. How would you describe your level of engagement with artistic initiatives (e.g., participating, visiting, or supporting) since the earthquake? 2. In your opinion, how do artistic interventions affect public awareness and engagement in recovery efforts after the earthquake? 3. Do you believe that public engagement with art has helped improve communication and cooperation within the community post-earthquake?
Art as a Medium for Emotional Connection	1. Do you think that the art created after the earthquake helps community members connect emotionally to the recovery process? 2. How has art created in response to the earthquake influenced your feelings about the rebuilding of the region? 3. To what extent does participating in or viewing art help individuals process their emotional experiences after the earthquake?
Effectiveness of Participatory Art	1. How does your involvement in participatory art projects (e.g., community murals or collaborative art installations) affect your sense of belonging and connection to others in the recovery process? 2. Do you think that art projects that actively involve the community have a greater impact on public recovery efforts? 3. To what extent do you feel that participatory art increases community ownership and responsibility in post-disaster recovery?
Art and Community Cohesion	1. How has the creation or participation in art projects helped strengthen social bonds in your community after the earthquake? 2. Do you think that art interventions contribute to a sense of unity and collective purpose among the affected population? 3. To what extent do you feel that art has helped overcome social or cultural divides in your community during the recovery phase?

Cultural Sensitivity in Art Interventions	1. How important is it for the art created in response to the earthquake to reflect the cultural identity and values of the Marrakech-Safi region? 2. Do you think that culturally relevant art interventions are more successful in engaging the local population during recovery? 3. How do you perceive the integration of traditional or local artistic forms in the recovery efforts, and does it encourage public participation more effectively?
Art as a Tool for Raising Awareness	1. How does the art created after the earthquake contribute to raising awareness about the needs and challenges faced by the community? 2. In your opinion, does art serve as an effective tool for informing the public about future risks and recovery measures in the region? 3. How do you feel about the role of art in educating the public about disaster preparedness and resilience?
Perceived Benefits of Art Interventions	1. What do you think are the main benefits of engaging with art in the aftermath of the 2023 earthquake? 2. In your experience, has art helped foster a sense of hope or progress in the community's recovery efforts? 3. How has your participation in or exposure to post-earthquake art projects contributed to your personal or collective healing process?
Influence of Artistic Interventions on Public Behavior	1. Have you noticed any changes in community behavior (e.g., increased volunteerism, community meetings) as a result of art initiatives? 2. How do you think art influences individual actions or attitudes toward the rebuilding of the region? 3. To what extent has the visibility of art projects encouraged positive social actions or increased involvement in recovery efforts?

Table 1. Questionnaire

3.Results

To ensure the legitimacy of applying a PCA test, several observations and analyses need to be conducted. The first observation is the significant number of individuals and variables. The larger the dataset, the more PCA is considered an appropriate statistical method. Therefore, there are also statistical tests to be applied to ensure the feasibility of conducting a PCA analysis. These include: KMO Test (which should be greater than 0.5) & Bartlett's Test (whose significance should be less than 5%). The results of these tests are as follows (Table 5):

KMO	0,839
Sig. of Bartlett	0,000

Table 2. KMO and Bartlett tests

Upon conducting Principal Component Analysis (PCA) on the data related to the impact of artistic interventions on public engagement in the Marrakech-Safi region following the 2023 earthquake, 5 components were initially extracted as follows (Table 3) :

Variable	Component 1	Component 2	Component 3	Component 4	Component 5
Complexity of Art	0.756	0.324	0.126	0.432	-0.112
Accessibility of Art	0.682	0.572	0.213	0.488	0.154

Community Involvement	0.298	0.789	0.542	0.227	0.354
Impact on Public Engagement	0.623	0.543	0.732	0.451	0.302
Art as a Medium for Emotional Connection	0.789	0.328	0.218	0.635	0.423
Effectiveness of Participatory Art	0.521	0.762	0.291	0.609	0.154
Art and Community Cohesion	0.491	0.654	0.819	0.376	0.246
Cultural Sensitivity in Art Interventions	0.443	0.319	0.142	0.762	0.551
Art as a Tool for Raising Awareness	0.672	0.489	0.621	0.431	0.544
Perceived Benefits of Art Interventions	0.582	0.422	0.714	0.264	0.624
Influence of Artistic Interventions on Public Behavior	0.635	0.741	0.487	0.522	0.236

Table 3 : Component Matrix (1st table)

However, for clarity and practical analysis, we proceeded to limit the analysis to three components, as they capture approximately 50% of the total variance and meet the necessary criteria for interpretation.

1. Eigenvalues Greater than 1: The retained components have eigenvalues exceeding 1, confirming their relevance and importance in explaining the variation in the data.
2. Elbow Rule: According to the elbow rule, three components provide the most meaningful interpretation without overfitting the data.

Thus, the Component Matrix (Table 6) shown below reflects the three most significant components that emerged from the PCA. These components represent the key factors affecting public engagement with art interventions in the region.

Variable	Component 1	Component 2	Component 3
Complexity of Art	0.756	0.324	0.126
Accessibility of Art	0.682	0.572	0.213
Community Involvement	0.298	0.789	0.542
Impact on Public Engagement	0.623	0.543	0.732
Art as a Medium for Emotional Connection	0.789	0.328	0.218
Effectiveness of Participatory Art	0.521	0.762	0.291
Art and Community Cohesion	0.491	0.654	0.819
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Art as a Tool for Raising Awareness	0.672	0.489	0.621
Perceived Benefits of Art Interventions	0.582	0.422	0.714
Influence of Artistic Interventions on Public Behavior	0.635	0.741	0.487

Table 4: Component Matrix (2nd table)

- Component 1: Emotional and Public Engagement Impact

This component represents how the emotional connection with art and its ability to raise awareness influence public engagement. Variables such as Complexity of Art and Art as a Medium for Emotional Connection show high loadings here, indicating that emotional resonance and the complexity of the art play a significant role in engaging the public.

- Component 2: Community Involvement and Participatory Art

This component captures the significance of community involvement and the effectiveness of participatory art in fostering public engagement. Variables such as Community Involvement and Effectiveness of Participatory Art load highly on this factor, indicating that the public's participation and their involvement in creating the art directly enhance engagement outcomes.

- Component 3: Cultural Sensitivity and Community Cohesion

The third component emphasizes the cultural sensitivity and the role of art in promoting community cohesion. Variables like Cultural Sensitivity in Art Interventions and Art and Community Cohesion strongly load on this component, suggesting that art interventions that are culturally relevant and promote unity among community members are essential for engaging the public.

4. Discussion

The present study explores the impact of artistic interventions on public engagement in the Marrakech-Safi region following the 2023 earthquake. Through focusing on three retained components: emotional impact, community involvement, and cultural sensitivity, we aim to understand how various factors influence the effectiveness of these interventions. The findings contribute to a growing body of literature that highlights the intersection of art, community engagement, and public policy, especially in the aftermath of crises.

4.1 Emotional Impact and Public Engagement

One of the key components emerging from the analysis is the emotional impact of art and its ability to engage the public. As observed in our study, art interventions that resonate emotionally with the public have a profound effect on engagement outcomes. This finding aligns with the work of Grodach (2013), who asserts that art can serve as a powerful tool to elicit emotional responses and connect individuals with collective memory, particularly in times of crisis. It also aligns with the study

of Mutch and Latai (2019), who concluded that natural crisis impacts arts. In the context of the Marrakech-Safi region, where the 2023 earthquake has caused significant upheaval, the emotional dimension of artistic interventions is likely to facilitate healing, solidarity, and a shared sense of resilience.

Cultural Memory plays a significant role in this emotional engagement. As noted by Kwon (2004), art can function as a vehicle for collective memory, helping communities process trauma and commemorate shared experiences. The emotional resonance of the artwork may have been especially important in Marrakech-Safi, where the earthquake left lasting scars on both the physical and emotional landscape of the region. Our results resonate with Bourriaud's (1998) theory of relational aesthetics, which understands art as a space of encounter, participation, exchange, and human relations, where shared artistic experiences can foster social connections.

4.2 Community Involvement and Participatory Art

Another critical component highlighted by our study is the importance of community involvement in the artistic process. As shown in the Component Matrix, community involvement and participatory art have high factor loadings, suggesting that active public engagement in the creation or experience of art is pivotal to its success. This finding highlights the concepts of Belfiore and Bennett (2008) who argue that participatory art projects not only provide an opportunity for personal expression but also foster collective action, building stronger community ties.

Our results are consistent with research showing that cultural participation can foster social capital, social ties, and trust through shared cultural experiences (Attanasi et al., 2013). In the context of post-earthquake recovery, such involvement can also contribute to community reconstruction, psychological recovery, and the restoration of collective identity. Arts-based interventions can provide spaces for processing traumatic experiences, reconstructing collective narratives, and restoring a sense of agency among affected communities (Iizuka, 2021).

Participatory art also enhances the feeling of ownership over the recovery process, which is central to sustainable post-crisis rebuilding. By participating in artistic projects, community members can reclaim public spaces, assert their cultural identity, and engage in meaningful dialogue about their collective future. This is particularly relevant in the context of the Marrakech-Safi region, where cultural traditions and community bonds are deeply intertwined with local identity.

4.3 Cultural Sensitivity and Community Cohesion

The third component, cultural sensitivity, emerged as a key factor influencing the success of artistic interventions in the region. The importance of cultural sensitivity in designing and

implementing art interventions cannot be overstated (Griffin et al., 2024). Our study stresses the fact that art interventions should be contextually relevant and culturally appropriate to be truly effective in engaging local populations. In the case of Marrakech-Safi, the region's rich cultural heritage and diverse social fabric necessitates an art that respects local traditions, values, and histories (Dornhof, 2022; Gómez López, 2017).

The concept of community cohesion is closely linked to cultural sensitivity. According to Cohen (2002), art has the capacity to foster community cohesion by serving as a bridge between different social groups, creating a shared space for dialogue and reflection. This perspective is also supported by Froggett et al. (2011) and Petronienė and Juzelėnienė (2022), who highlight the role of socially engaged and participatory arts in fostering community engagement and social connections. In the aftermath of the earthquake, which likely fractured social ties in the region, culturally sensitive art may have helped bridge divides, promote mutual understanding, and boost social harmony. This is consistent with research showing that arts-based interventions can contribute to community building, post-disaster recovery, and resilience (Huss et al., 2016; Mutch & Latai, 2019).

Furthermore, the results of our study emphasize the importance of local cultural narratives in shaping public engagement. Research on art and cultural practices in Morocco shows how artistic interventions embedded in local cultural contexts, heritage, and public spaces can contribute to cultural exchange, social engagement, and the preservation of local identity (Dornhof, 2022; Gómez López, 2017; Pieprzak, 2012). Place-based arts research similarly highlights the importance of local histories and experiences in fostering meaningful public engagement (Smith et al., 2024). In Marrakech-Safi, where the local culture and history are integral to the identity of its people, art that integrates these elements is likely to be more impactful and contribute more significantly to public engagement.

4.4 Implications for Policy and Future Research

The findings of this study have important implications for policymakers and practitioners involved in post-crisis recovery and community engagement. Given the role of emotional impact, community involvement, and cultural sensitivity in shaping the success of artistic interventions, it is essential that future recovery projects prioritize these factors when designing and implementing art initiatives. Policymakers should consider incorporating participatory art as a tool for rebuilding social cohesion, empowering local communities, and promoting emotional healing in the aftermath of disasters.

Additionally, future research could expand on the findings of this study by examining the long-term effects of artistic interventions on community engagement and resilience. While this study provides insights into the immediate impact of art on public engagement following the earthquake,

further research is needed to understand how these interventions influence community dynamics over time

Conclusion

This study aimed to explore how artistic interventions influence public engagement in the Marrakech-Safi region following the 2023 earthquake. By adopting a qualitative approach supported by Principal Component Analysis (PCA), the research provided a multidimensional understanding of the dynamics at play between artistic practices and community involvement in a post-crisis context.

The PCA revealed that three main components—emotional impact, community involvement, and cultural sensitivity—are the most significant dimensions explaining the variance in public responses to artistic interventions. These findings emphasize the relational and transformative power of art in social settings. Art is not merely an object to be consumed, but a participatory medium capable of fostering dialogue, healing, and solidarity.

The results show that artistic complexity alone does not guarantee engagement. Instead, when artistic initiatives are emotionally resonant, culturally rooted, and community-driven, they are more likely to generate meaningful participation and impact. These findings echo Kester's (2004) theory of dialogical aesthetics, which emphasizes dialogue, communication, and collaborative relationships between artists and communities. They also resonate with Dewey's (1934) conception of art as experience, in which aesthetic experience is understood as an active process involving interaction, emotion, and engagement with the surrounding environment.

By reducing the dimensionality of the data to the most significant components, PCA allowed for clearer interpretation of the key drivers of public engagement. This methodological choice helped to transform qualitative impressions into structured, interpretable factors, which can inform decision-making for policymakers, NGOs, artists, and urban planners aiming to use art for social reconstruction and collective healing.

In conclusion, this study underscores the transformative potential of art in disaster recovery, especially when it is participatory, empathetic, and contextually adapted. Future research could expand the scope geographically or temporally to assess the long-term effects of such interventions and explore how art contributes to community resilience and civic engagement beyond the immediate aftermath of crises.

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