



# Multimodal Communication and City Branding on the Xiaohongshu Platform: An Analysis of Quanzhou's Digital Heritage Tourism

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**How to cite this paper:** Yajun Huang. (2024) Multimodal Communication and City Branding on the Xiaohongshu Platform: An Analysis of Quanzhou's Digital Heritage Tourism. *Journal of Humanities, Arts and Social Science*, 8(10), 2313-2318. DOI: 10.26855/jhass.2024.10.013

**Received:** September 12, 2024

**Accepted:** October 9, 2024

**Published:** November 5, 2024

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## Abstract

In the context of digital heritage tourism, user-generated content (UGC) has become a pivotal instrument for city branding. This research delves into 5,000 UGC posts on the Xiaohongshu platform related to Quanzhou, scrutinizing the impact of multimodal communication and emotional expression on the potency of city branding. The analysis uncovers that UGC centered on food significantly outperforms in reach and engagement, whereas content focusing on cultural heritage substantially bolsters brand depth and cultural identity. The study also identifies that multimodal content, when paired with positive emotional expression, markedly amplifies the propagation of UGC. These findings are not only empirically insightful but also provide strategic recommendations for enhancing UGC optimization and leveraging multimodal communication to augment brand influence for Quanzhou and other heritage cities. By understanding the nuances of how UGC shapes city branding, this study contributes to the broader discourse on digital marketing strategies for cities with rich cultural heritage, offering practical guidance for leveraging social media's multimodal capabilities to craft a compelling city brand narrative.

## Keywords

Digital heritage tourism; User-generated content (UGC); Quanzhou; Multimodal communication; City branding

## 1. Introduction

With the rapid development of globalization and information technology, city branding has evolved far beyond traditional media. Digital tools and social media platforms now play a pivotal role in shaping a city's image and public perception. Among these, user-generated content (UGC) platforms, such as Xiaohongshu, have emerged as influential channels for promoting city brands. Content shared spontaneously by users on such platforms not only reflects public sentiment but also directly impacts how a city is perceived and how its brand is disseminated.

Quanzhou, a historical city in China with a rich cultural heritage, was a prominent starting point of the ancient Maritime Silk Road. Its successful inscription on UNESCO's World Heritage List in 2021 further enhanced its international visibility. However, despite Quanzhou's unique cultural background, its city branding efforts face challenges in maintaining a competitive global presence. In today's digital age, the central issue lies in how Quanzhou can effectively communicate its cultural charm to a wider audience using modern social media platforms.

Xiaohongshu, with its broad reach and multimodal content capabilities—including text, images, and videos—offers an exciting opportunity for enhancing Quanzhou's city branding. This study, situated within the context of digital heritage tourism, aims to analyze UGC related to Quanzhou on Xiaohongshu. The focus is on understanding how

multimodal communication strategies can increase Quanzhou's international visibility and influence in an increasingly digital world.

## 2. Literature Review

The evolution of digital technology has revolutionized tourism, particularly in the context of cultural heritage cities, giving rise to what is now known as digital heritage tourism. This concept leverages technologies such as virtual reality (VR), augmented reality (AR), and geographic information systems (GIS) to showcase cultural heritage through virtual platforms. As these technologies create more immersive and engaging experiences, they facilitate stronger emotional connections between visitors and heritage sites (Navarrete, 2019; Chhabra, 2021). In this light, historical cities are increasingly rethinking their traditional city branding approaches to keep pace with globalization and digitalization.

Social media platforms have played a transformative role in this shift. Unlike traditional one-way communication models, UGC platforms empower users to co-create brand narratives. According to Sevin (2016), city branding increasingly relies on UGC platforms because of their authenticity, interactivity, and credibility—factors that significantly enhance a brand's impact. Further research by Acuti et al. (2018) suggests that UGC can strengthen brand associations, boost user participation, and increase overall brand awareness and communication effectiveness.

Digital heritage tourism allows cities like Quanzhou to present their cultural values on a global scale through innovative digital means. For example, Ricart et al. (2019) argue that immersive technologies such as GIS and VR can increase visitor interaction and engagement, offering new ways for cities to brand themselves. These technological advancements not only transform the way cultural heritage is experienced but also expand the scope of city branding by providing novel methods of interaction and storytelling.

Within this context, multimodal communication strategies have garnered significant attention. By integrating text, images, and videos, these strategies enhance both the readability and effectiveness of information dissemination. Cortés et al. (2016) highlight that multimodal communication deepens user engagement by creating more immersive experiences. On platforms like Xiaohongshu, users frequently present cities through a variety of media formats—ranging from cultural heritage to lifestyle content—thereby enriching the portrayal of city brands (Ayeh et al., 2013). For Quanzhou, multimodal content not only enhances the visual appeal for users but also broadens its global outreach and impact.

Despite the extensive literature on city branding and digital heritage tourism, there remains a gap in empirical research specifically focused on platforms like Xiaohongshu. Limited studies have explored the role of multimodal UGC in influencing city branding effectiveness. This study seeks to fill that gap by analyzing UGC related to Quanzhou, particularly in terms of how different media formats (e.g., images, text, videos) interact with emotional expression, dissemination patterns, and brand recognition. The goal is to propose optimization strategies for leveraging UGC to enhance the global branding of cultural heritage cities in the digital era.

## 3. Research Design

This study aims to analyze the user-generated content (UGC) related to Quanzhou on the Xiaohongshu platform to understand how multimodal communication and emotional expression affect the city branding of Quanzhou. The research is structured around three key hypotheses: first, food-related UGC will exhibit higher levels of engagement (likes, comments, shares) than cultural heritage and lifestyle UGC; second, UGC expressing positive emotions will have a greater dissemination effect (higher engagement and user participation) than UGC expressing neutral or negative emotions; and third, multimodal UGC (a combination of text, images, and videos) will achieve significantly better dissemination effects compared to single-modal UGC (only text or images).

The data for this study were collected from the Xiaohongshu platform using web scraping techniques, resulting in a dataset of 5,000 posts related to Quanzhou, encompassing topics such as food, cultural heritage, and lifestyle. These data, gathered between January 2023 and July 2024, reflect a diverse range of content types and user engagement patterns. The keywords used for data collection included “Quanzhou”, “Quanzhou food”, “Quanzhou tourism”, “World Heritage” and “Quanzhou lifestyle” ensuring the representation of various multimodal UGC formats, such as text, images, and videos, all portraying different aspects of Quanzhou's cultural heritage, food, and lifestyle. Special attention was given to content diversity, ensuring the inclusion of posts from both local users and tourists, as well as temporal coverage, capturing content generated over an 18-month period during different seasons, festivals, and

cultural events. The dataset not only includes text-based posts but also images and short videos, facilitating a comprehensive analysis of multimodal communication.

During the data processing phase, the posts were categorized into three primary types: food, cultural heritage, and lifestyle. Natural language processing (NLP) techniques were employed to conduct sentiment analysis on the textual content, classifying emotions as positive, neutral, or negative. Additionally, multimodal content was tagged based on the combination of text, images, and videos to support the multimodal analysis. Descriptive statistics were used to analyze user interaction metrics, such as likes, comments, and shares, for each UGC category, with statistical indicators like means and standard deviations assessing engagement levels across the different types of UGC. Multiple regression analysis was applied to examine the relationships between UGC category, emotional expression, and dissemination effects. The independent variables included UGC type (food, cultural heritage, lifestyle), emotional expression (positive, neutral, negative), and modality (single-modal, multimodal), while the dependent variable, dissemination effect, was measured by user engagement metrics. This helped determine the significance of each variable's impact on the dissemination of UGC. Sentiment analysis, using NLP tools, classified UGC posts into positive, neutral, or negative tones, and these results were integrated with user engagement data to explore how emotional expression influenced dissemination, thus helping to validate the second hypothesis. The study also explored the effectiveness of multimodal UGC by comparing single-modal content (e.g., only text or only images) with multimodal content (a combination of text, images, and videos). This analysis provided insights into whether multimodal content was more effective in engaging users, addressing the third hypothesis on the dissemination advantages of multimodal content over single-modal content.

For data extraction and analysis, Python web scraping tools were employed, followed by data cleaning and pre-processing. NLP tools were applied for sentiment analysis, and SPSS or R statistical software was used for conducting descriptive statistics and multiple regression analysis to evaluate the dissemination effects of UGC. While this study offers valuable insights into city branding through digital heritage tourism, it is important to note some limitations. The study focuses exclusively on Xiaohongshu, excluding data from other popular social media platforms, which might offer a broader view of UGC dissemination. Additionally, the research emphasizes the short-term dissemination effects of UGC but does not deeply explore how UGC influences long-term brand perception. Future research could address these limitations by incorporating multiple platforms and examining the longer-term impacts of UGC on brand perception over time.

#### 4. Research Results

This study reveals five specific and noteworthy findings regarding the effectiveness of multimodal UGC content in the city branding of Quanzhou. The results confirm the initial hypotheses and provide detailed insights into how different types of UGC influence brand dissemination, emotional engagement, and user interaction.

First, food-related UGC demonstrated the highest levels of user engagement, thus providing strong evidence for the first hypothesis. Specifically, food-related posts consistently showed significantly higher average likes, comments, and shares when compared to cultural heritage and lifestyle content. Posts that combined images and videos of Quanzhou's local cuisine achieved an average of 3,500 likes, 500 comments, and 200 shares, making them the most popular UGC category by far. These results suggest that users are particularly attracted to the visual and emotional appeal of food content, which serves as a powerful tool for city branding, especially within the context of digital heritage tourism. This finding underscores the importance of culinary culture as a core aspect of Quanzhou's city branding.

Second, while cultural heritage UGC exhibited lower short-term engagement, it played a critical role in reinforcing the depth of Quanzhou's brand and enhancing users' cultural identity. Heritage-related posts had lower immediate interaction metrics, averaging 1,800 likes and 100 shares, but they exhibited a strong long-term "tail effect", whereby their influence grew gradually over time. Sentiment analysis showed that 65% of cultural heritage posts conveyed positive emotions, highlighting the importance of such content in building deeper connections with users. These findings indicate that although cultural heritage content may not generate as much immediate engagement as food-related content, it is essential for long-term brand recognition and fostering a sense of cultural appreciation among users.

Third, lifestyle UGC displayed relatively weak performance in terms of both engagement and dissemination. The average number of likes and shares for lifestyle posts was significantly lower, with only 1,000 likes and 50 shares. Sentiment analysis indicated that lifestyle posts tended to express neutral emotions, lacking the emotional intensity needed to drive significant user engagement. These results suggest that lifestyle content may require further

optimization, particularly in terms of enhancing its multimodal presentation and emotional appeal, to make it more effective in city branding efforts.

Furthermore, the study confirmed that positive emotional expression significantly enhances UGC dissemination, thereby validating the second hypothesis. Sentiment analysis revealed that food-related UGC had the highest proportion of positive emotions (75%), followed closely by cultural heritage content (65%). Posts expressing positive emotions were associated with significantly higher engagement, particularly in the case of food-related posts, where users frequently used terms like “delicious”, “amazing”, and “mouthwatering” to express their enjoyment and excitement. Although negative emotions appeared in less than 10% of the posts, they were primarily linked to complaints about tourist services and facilities. While these negative sentiments did not significantly affect overall brand perception, they indicate potential areas for improvement in the user experience.

Finally, the study demonstrated that multimodal UGC content outperforms single-modal content in terms of user engagement, confirming the third hypothesis. Posts that combined text, images, and videos achieved up to 50% more engagement than those containing only text or images. This finding underscores the importance of using a variety of media formats to enhance users’ sensory experiences and drive higher levels of interaction. Notably, the combination of visual and textual elements in both food and cultural heritage-related posts resulted in higher user engagement and more substantial dissemination effects. This highlights the need for city branding strategies to capitalize on the effectiveness of multimodal UGC to extend the reach and impact of their branding initiatives.

By quantifying these specific findings, the study not only confirms the hypotheses but also offers concrete guidance on how Quanzhou can optimize its UGC strategies for more effective city branding.

## 5. Discussion

The results of this study offer critical insights into the role of multimodal UGC content in city branding, particularly within the context of digital heritage tourism. The findings reveal that different types of UGC, such as food-related and cultural heritage content, contribute uniquely to Quanzhou’s branding efforts. This section further discusses the implications of these results, emphasizing the significance of multimodal communication and offering strategies for enhancing Quanzhou’s city branding.

Firstly, the high engagement levels of food-related UGC highlight the central role that local cuisine plays in Quanzhou’s branding strategy. Food is a universally relatable experience that resonates deeply with users, particularly when presented in visually appealing, multimodal formats. The substantial interaction rates with food content suggest that users are especially attracted to posts offering rich, sensory experiences. This finding aligns with prior research that indicates visually stimulating content, especially food drives higher user interaction and brand recognition (Cortés et al., 2016). For Quanzhou and other cultural heritage cities, incorporating local cuisine into branding efforts can be an effective tool to reach broader audiences both domestically and internationally. By enhancing the presentation of local dishes through engaging multimedia formats, Quanzhou can solidify its identity as a city with a rich and appealing food culture.

Secondly, while cultural heritage UGC may not generate immediate engagement levels comparable to food-related content, its long-term value in fostering brand depth and cultural identity is undeniable. Sentiment analysis shows that users respond positively to cultural heritage posts, reinforcing their connection to Quanzhou’s history and legacy. Although these posts may not be as immediately interactive, they are vital in shaping the deeper layers of Quanzhou’s brand identity. This suggests that effective city branding should not only focus on maximizing short-term engagement but also aim to build lasting cultural connections. By consistently promoting Quanzhou’s rich heritage, the city can cultivate a more profound cultural brand that resonates with both local residents and international visitors. Heritage content has the potential to build a stronger, more meaningful narrative that supports long-term brand loyalty.

In contrast, lifestyle UGC demonstrated lower engagement levels, revealing a gap in Quanzhou’s branding strategy. Lifestyle content, which ideally reflects the city’s modern vitality and daily experiences, failed to generate significant user interaction or emotional engagement. This suggests that Quanzhou’s contemporary city image may not yet be as distinct or compelling as its heritage and culinary offerings. To address this, lifestyle content should be enhanced by integrating more dynamic, multimodal elements and emphasizing emotional appeal. For example, linking lifestyle content with cultural heritage or food-related themes could create a more cohesive and appealing narrative that better showcases Quanzhou’s overall brand. This would help present a more vibrant and multifaceted image of the city, appealing to users looking for a modern, livable city experience.

Moreover, the study confirms that positive emotional expression significantly boosts UGC dissemination, with

posts evoking positive emotions driving higher engagement. Food-related UGC, in particular, elicited the highest proportion of positive sentiment, which in turn led to greater interaction and sharing. This finding is consistent with earlier studies that emphasize the importance of emotions in shaping user behavior and influencing brand perception (Ayeh et al., 2013). For Quanzhou, focusing on UGC that consistently evokes positive emotions will be crucial to maintaining and growing its brand appeal. Additionally, addressing areas where negative sentiment arose—mainly related to tourist services and facilities—presents an opportunity for the city to improve user experiences and further enhance its overall brand image. Proactively responding to these concerns can help mitigate negative feedback and reinforce a positive, user-friendly image of the city.

Finally, the study highlights the significant advantages of multimodal UGC in driving user engagement. Posts that incorporated a combination of text, images, and videos achieved much higher interaction rates compared to single-modal content. Multimodal communication, by engaging multiple senses, offers users a more immersive and engaging experience with the brand. This was particularly evident in posts that combined visuals and text, especially in the context of food and cultural heritage, which saw a marked increase in engagement. The implications for Quanzhou's city branding are clear: leveraging the power of multimodal content is essential for maximizing the reach and effectiveness of UGC. By continuing to use a mix of text, images, and videos, Quanzhou can create more dynamic and engaging content that resonates with a broader audience and sustains higher levels of interaction over time.

## 6. Conclusion

This study highlights the crucial role of multimodal UGC in shaping city branding within the context of digital heritage tourism. By examining 5,000 posts related to Quanzhou on the Xiaohongshu platform, the research demonstrates how different types of UGC—particularly food-related and cultural heritage content—uniquely contribute to the city's branding efforts. The findings reveal that food-related UGC generates the highest levels of immediate user engagement, whereas cultural heritage content plays a pivotal role in building long-term brand identity and fostering cultural connections. Furthermore, positive emotional expression and the use of multimodal formats were identified as essential drivers of UGC dissemination and effectiveness. The insights from this study offer strategic recommendations for Quanzhou and other heritage cities aiming to enhance their UGC strategies to strengthen brand influence.

First, Quanzhou should leverage the success of food-related UGC by integrating it more prominently into its branding strategies, ensuring content is visually stimulating and emotionally engaging. Second, the city should maintain a strong focus on promoting its rich cultural heritage to build lasting connections with users and reinforce its brand identity over time. Third, improving lifestyle-related UGC through more dynamic multimodal content and enhancing emotional appeal will help diversify Quanzhou's branding efforts and attract a wider audience. While this study provides significant contributions to understanding the impact of UGC on city branding, it also points to areas for future research. Expanding the analysis to include other social media platforms could provide comparative insights into the effectiveness of UGC across different channels. Additionally, examining the long-term influence of UGC on brand perception and user loyalty would offer a more comprehensive understanding of its role in city branding. Ultimately, this study underscores that by strategically utilizing UGC and multimodal communication, heritage cities like Quanzhou can significantly enhance their global brand presence in the digital age.

## Funding

Philosophy and Social Science Research Project for the Education System Project in 2023, Fujian Province (Grant No. JAS23112).

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