

DESIGNING EFFECTIVE SIGNAGE SYSTEMS FOR TIBET'S POTALA PALACE: A MIXED-METHOD APPROACH TO ENHANCING TOURIST EXPERIENCE

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Abstract: Every year, the Potala Palace in Tibet is visited by millions of tourists due to its status as a landmark that is recognized all over the world. Nevertheless, the current signage system is not sufficient in guiding tourists, which results in confusion and a decrease in the level of satisfaction experienced by visitors. When it comes to directing visitors to culturally and historically significant areas, having a signage system that is both effective and adequate is absolutely necessary. This study's primary purpose is to evaluate the efficiency of the present signage system, as well as the preferences of tourists and cultural researchers on the improvement of signage, and to determine the level of satisfaction that these individuals have with the signage that is currently in place at Potala Palace. The purpose of this study is to examine the preferences of tourists and their levels of satisfaction regarding the effectiveness of signs by using a mixed-method approach that is based on both qualitative and quantitative data gathering. The findings of the study suggest that the current signage program is severely lacking in terms of meeting the requirements of tourists, particularly with regard to considerations such as clarity, visibility, and cultural sensitivity. This is the conclusion that can be drawn from the findings of the study. At Potala Palace, there were several guests who expressed their desire for more understandable and more contextualized signs. The outcomes of the study indicate that the multimodal signals should receive the utmost attention, particularly when translating into several languages and making use of pictograms that are sensitive to cultural norms. The study suggests that the directions should be designed appropriately, that signs should be used that are easily understood by everyone, and that information should be combined in a number of different languages in order to increase the customers' ability to comprehend what they are seeing at the Potala Palace.

Keywords: effective signage systems, Tibet's Potala Palace, mixed-method analysis, cultural researchers, perceptions, tourist experience

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INTRODUCTION

The Lhasa Potala Palace, an emblem of Tibetan culture, populace, and history, is renowned globally. The Fifth Dalai Lama constructed this site in 1635 as his abode. The winter palace served as the residence for successive Dalai Lamas and the administrative center until 1959. Potala Palace is a cultural and historical landmark due to its architecture, which integrates traditional Tibetan construction techniques with exquisite murals and antiques (Britannica, 2024).

The Potala Palace, a Tibetan Buddhist landmark, was designated a UNESCO World Heritage site in 1994. The palace, featuring more than 1,000 chambers, chapels, and halls, showcases centuries-old traditions alongside Tibetan art and culture (National Geographic, 2023). By 2024, the World History Journal indicates that it continues to serve as a potent emblem of Tibetan spirituality and a revered site that every Tibetan Buddhist aspires to visit.

Potala Palace is a prominent tourist destination that attracts thousands of visitors. The splendid architecture, panoramic views of Lhasa, and regional terrain attract visitors (Tibet Travel, 2024). Preserving building integrity and fulfilling daily tourist quotas exemplify challenges in cultural heritage management within tourism (National Geographic, 2023).

The palace embodies Tibetan culture beyond mere ornamentation and design. This underscores its significance as a Tibetan and global cultural and spiritual heritage that must be conserved as a historical monument (Britannica, 2024; World History Journal, 2024). Signage systems enhance travelers' experiences and safeguard both tangible and intangible cultural heritage. Effective indoor signage aids visitors in understanding the cultural context of heritage sites while offering direction.

Recent studies indicate that tourism signage necessitates meticulous design. Deri et al., 2023 contend that methodologies and practices regarding the cultural importance of the visited site are essential for enduring educational experiences derived from excursions. They emphasized the necessity of investigating and implementing innovative signage solutions that enhance community-based tourism, as well as social, economic, and environmental sustainability, including the use of QR codes for tourist engagement. Liu (2020) asserts that digital technologies in cultural heritage management transform heritage presentation from singular and one-dimensional to pluralistic, participatory, and immersive. This modification facilitates greater interaction between historical interpreters and visitors, enhancing the whole experience.

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Universal design in tourism signage is increasingly prevalent. Wan (2022a) examines visitor signage and experiences at heritage sites, promoting designs that cater to a broader audience, including individuals with disabilities. These signage systems enable all visitors to engage with cultural heritage, enhancing the inclusivity and diversity of the tourist experience.

Contemporary literature epitomizes modernity and becomes an essential component of tourism. With the progression of navigation, cultural knowledge, and technology, effective signage is crucial for the theater experience and cultural tourism.

Tourists often experience disorientation, language barriers, and unfamiliarity with local customs, which can negatively affect their vacation experience. When traveling to distant locations, they encounter numerous challenges. Although Japan's transit system is well-organized and efficient, the extensive range of transportation options can be overwhelming for non-Japanese speakers, leading to navigational difficulties (Visit Inside Japan, 2024b).

A significant challenge in tourism is overcoming linguistic barriers. While many Japanese businesses offer bilingual services, most restaurants, particularly in rural areas, lack English communication options (Visit Inside Japan, 2024b). Furthermore, reliance on translation apps often results in misinterpretations, potentially leading to safety concerns. Cultural unfamiliarity also impacts tourists' experiences, sometimes causing social faux pas and reducing their overall attraction to the destination. Moreover, decision-making processes and communication styles in Japan present additional complexities. These cultural differences can hinder tourists from effectively following local norms and behaviors, making it difficult for them to navigate social and organizational settings (Visit Inside Japan, 2024a).

To address these challenges, strategic measures must be implemented, including improving signage, expanding multilingual support, and providing comprehensive cultural orientation to international visitors.

Research Objectives

The main research objective of the study is to enhance the experiences of Potala Palace tourists while preserving its cultural integrity through the installation of signage. The specific objectives of the study are:

1. To assess the effectiveness of the current signage system at Potala Palace.
2. To identify the signage improvement preferences of the tourists to influence signage effectiveness at Potala Palace.
3. To evaluate the satisfaction levels of tourists regarding the existing signage at Potala Palace.

Significance of the Study

This study examines signage at the UNESCO World Heritage Site Potala Palace, which influences tourism, culture, and visitor satisfaction. The subsequent three points illustrate the significance of the study.

Initially, effective signpost systems enhance travelers' mobility and accessibility. With appropriate signage, tourists can effortlessly traverse Potala Palace, a site of cultural significance with diverse cultural and linguistic origins. The research enhances the experiences of both domestic and foreign tourists by mitigating navigation and language barriers in the host nation. Enhanced external and interior signage can elevate visitors' impressions and stimulate the local economy by encouraging repeat visits. Secondly, Potala Palace both engages and informs tourists on Tibetan culture and religion. This project employs Tibetan arts, symbolic narratives, and several languages to denote locations as historical pilgrimage sites. This study advocates for Tibetan culture and presents its findings in an academic manner. The research recognizes that signage informs tourists about the palace's history prior to their departure. Third, each temporary World Heritage site prioritizes visitors. This study examines signage problems such as ambiguous directions, improper placement, and signs that fail to align with visitors' cultural norms, and provides a solution that enhances visitor experience. Improving signals and indications for clarity, precision, and engagement enhances utility, productivity, and enjoyment. Repeat clients provide favorable evaluations and advocate for the site, enhancing its credibility and sustainability.

This study's findings enhance the literature on factors that enhance tourist experiences, preserve cultural heritage, and elevate visitor satisfaction, which is crucial for the management of historic sites and sustainable tourism.

LITERATURE REVIEW

Appropriate signage facilitates movement to and from locations in tourist zones. This may be observed in Jeju Olle Trail in South Korea uses different colors and markers to guarantee hikers are well directed on the best routes to travel (Jeju Olle Foundation, 2023). The design of signage is a critical element of accessibility within the design profession. Universal design criteria were employed by Wan (2022b) tourism signs at heritage sites where features ought to respond to the needs of the seriously physically disabled tourists. This method ensures equitable possibilities for visitors and improves their overall experience. The public's use of tourist sites enriches their informative value through diverse narratives. In House of Signs (2024) the author claims that good signs offer important information about historical and tourist places and convert trips into enlightening experiences. Consequently, such signage signifies an enhanced comprehension of the cultural significance and traditions of a specific region or city. Therefore, the current research the particular value of signs in boosting the directions, the access, and the teachiness at the tourist attractions. These results imply that the effective design and placement of signage systems can improve the visitor experience and cultural appreciation.

Key issues in cultural heritage design include the necessity for culturally sensitive designs. Numerous authors have commenced investigating potential methods for integrating cultural awareness into the establishment and continuous management of these locations. One way is to offer relatively tiny features that are assembled and operate as borders to existing monuments, thereby bringing a new lease on life to the location without aggravating the contextual problem. This technique assures that existing new interventions built strengthen the notion of the site without overpowering it to deny and disturb the assigned cultural narrative (Re-Thinking The Future, 2020). Designers can utilize local cultural architectural

elements and sustainability to convey a community's heritage. For instance, the building of Jean-Marie Tjibaou Cultural Centre in New Caledonia shows the traditional Kanak architecture to symbolize their culture (Scarano Architect, 2024).

Local communities engage in the process, so ensuring the preservation of the cultural values associated with these monuments. Engagement in design leads to an increased incorporation of perspectives and insights from indigenous cultures, thereby producing outcomes that are suitable for indigenous communities (Neoarchitects, 2024).

Decolonizing design methods reevaluate the role of 'third world' voices, ideas, and perspectives, particularly in the context of colonial histories. The Mixed Reality cultural Performances are characterized as techniques that facilitate a deeper comprehension of the historical context of cultural sites (Dima et al., 2024).

Therefore, culturally sustainable modifications to historic structures include non-obtrusive interventions, use of localized elements, public participation, use of ICT, and postcolonial approaches. They are all crucial in mitigating the loss of cultural objects and facilitating an accurate representation of the culture.

Effective signage in heritage and natural places presents several established challenges that must be addressed to enhance visitor experiences and site conservation. Current academic literature addresses the following issues: environmental constraints, aesthetics, cultural factors, and maintenance challenges.

The attributes of natural sites render them susceptible to issues that jeopardize their integrity, including exposure to environmental variables. Severe accidents may occur, and heightened winds, intense rainfall, or fluctuations in temperature contribute to the degradation of the surface and the amalgamation of the content. Naegele (2024) emphasizes the importance of material and design in maintaining the efficacy of signs against environmental challenges.

Heritage Park has a specific objective to preserve the appearance of historical centers. All signage and displays must be visually inconspicuous and should honor the site's architectural and cultural setting, thereby preserving the historic ambiance of the region. Building Conservation (2024) speaks about the issue of offering proper information and at the same time minimizing intrusiveness to the overall context of the site, and the writing points also to the notion that the signs have to be as small as possible to ensure that they fit into the environment.

Heritage investments necessitate that any signage provided must preserve the recognized cultural significance of the particular region. The absence of culturally appropriate signage may lead to misunderstandings, and the content of such signs can offend local sensibilities. American Society of Overseas Research (2024) emphasized the significance of cultural sensitivity in signage, which is intended to accurately communicate the historical context of the location.

Signage requires periodic upkeep to ensure it remains informative and legible. Many heritage and natural assets are hindered by insufficient resources, complicating the ongoing maintenance of their quality. According to American Whitewater, numerous river locations nationwide currently display fading and, thus, nearly illegible signs, while recent study confirms this as a prevalent issue regarding signpost maintenance, particularly in natural regions.

Addressing these challenges necessitates environmental solutions that encompass both internal and external integration, as well as the durability of aesthetics, cultural appropriateness, and sustainable maintenance, which enhance the tourist experience without compromising history and natural assets. Theoretical underpinnings of the study are from numerous studies, which includes framework for qualitative inquiry produced by Denzin & Lincoln (2011) offering participant-centred insights gathered in culturally sensitive areas such as heritage sites. Similarly, prior studies on heritage site management successfully integrated interviews to gather comprehensive feedback from participants. Jamal & Kim (2005) observed in their community-based heritage tourism study that surveys revealed culturally specific response needs that could not be deduced from the interview data. Authors Timothy and Boyd shown through interviews that this method can effectively uncover visitors' expectations and their appreciation for local culture at UNESCO sites.

The method of observation can be attributed to the ethnographic tradition articulated by Geertz (1973), which emphasizes the observer's active participation in cultural and spatial processes. Black et al. (2001) conducted observations of visitors in heritage places to assess the utility of interpretative signs. Likert scales were created based on psychometric principles established by Likert (1932) to assess objective perceptions of attitudes. The research on tourists' satisfaction particularly purchased interpretative signs (Moscardo, 1996; Tilden, 1957) employed online Likert scaled questionnaires to assess the variable such as clarity conformance and satisfaction. Choi & Sirakaya (2006) have proven that the Likert scales are beneficial in measuring the degrees of visitor satisfaction for numerous variables in the tourism experience. Segmentation analysis necessitates the discovery of client characteristics, particularly with visitor demographics, as proposed in Plog (1974) psychographic theory of tourism. Swarbrooke & Horner (2007) indicated that demographic variables, such as age and nationality, significantly influence visitors' expectations and satisfaction judgments. These publications include Kuo et al. (2005) on the linguistic accessibility in tourist environments that promotes the use of multilingual signages to assist movement and cross-cultural interaction. The interview and survey data reinforce this idea by emphasizing the utilization of motifs and narratives from Potala Palace of Tibet.

Tourist signage boosts navigation and accessibility and educational value for natural and heritage sites. The literature emphasizes using universal design principles together with cultural sensitivity and public engagement methods to create informative signage which meets universal needs. Non-intrusive interventions along with locally-designed elements and public participation approaches serve as critical factors for benefiting cultural representation and conservation initiatives according to scholarly literature. According to research investigative findings show sign materials must be made durable by both innovation and maintaining them sustainably because this ensures their continued legibility and effectiveness. Qualitative inquiry together with ethnographic observation and psychometric assessments and segmentation analysis provide an extensive knowledge about visitor experiences regarding signage. Research evidence shows multilingual

signs which are culturally attuned and easy to perceive enhance the satisfaction of tourists and increase their level of engagement and access. Different factors unite to prove that carefully crafted signage must maintain cultural heritage rights and environmental integrity, so it can develop positive tourism experiences.

DATA AND METHODOLOGY

This study employs both quantitative and qualitative research methodologies to effectively analyze the sign systems of Potala Palace. The current study aimed to enhance typical survey data by incorporating diverse opinions from tourists, design experts, and cultural analysts. The subsequent section delineates the methodologies employed in the study and the data collection process.

1. Research Methodology

A cross-sectional exploratory comparative study employed qualitative and quantitative data collection methods to examine the signage systems at Potala Palace. The qualitative component involved the collection of detailed comments and opinions, whilst the quantitative component aimed to identify overall trends and preferences. This architecture facilitated comprehensive analysis while also enhancing generalizability. An overview of the whole research design is evident from the Figure 1.

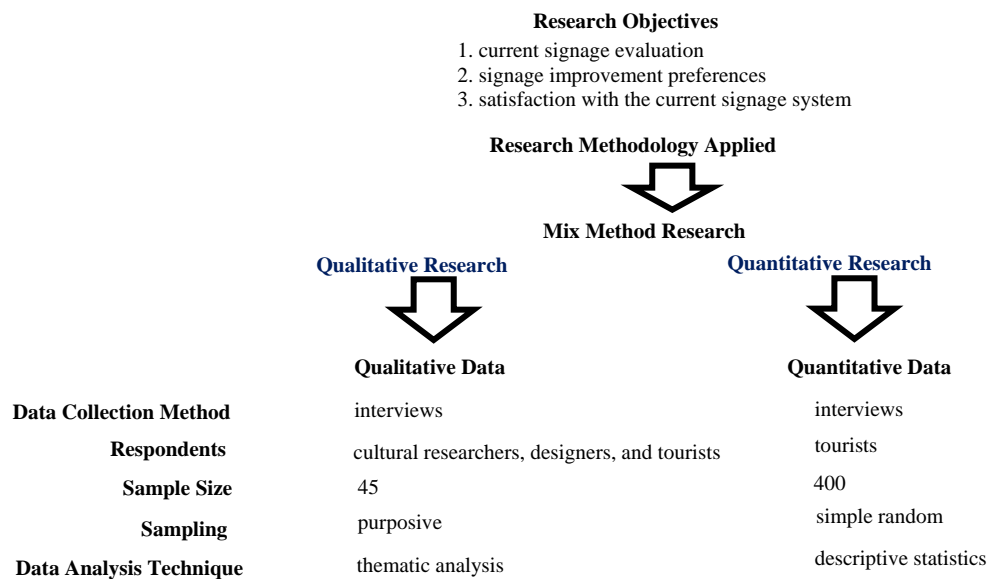


Figure 1. Research Design

2. Data Collection

For qualitative data, a purposive sample of 45 people was selected, comprising: Fifteen tourist participants from diverse ethnic and linguistic origins, fifteen designer participants with experience in signage or heritage site projects, and fifteen cultural participants knowledgeable about Tibetan culture and heritage. Semi-structured interviews and observational notes were utilized to gather qualitative data. Interpatch interviews inquired about participants' prior experiences with existing signage, while proposing concerns and solutions. Participants were selected by convenience sampling to fulfill the study's objectives concerning signage design and utilization. The participants were selected based on their expertise, cultural awareness, or personal experience with the Potala Palace. Also, on-site observations at Potala Palace were conducted to assess the placement, content, and visual appeal of current signage.

For the collection of quantitative data, a total of 400 respondents participated in a structured survey. This sample size was determined to achieve a 95% confidence level with a $\pm 5\%$ margin of error, considering an estimated population of 10,000 tourists visiting annually. A questionnaire was designed with Likert-scale items (1–5) to evaluate: clarity of current signage, cultural representation in signage, multilingual availability, ease of navigation, overall satisfaction with signage systems. The survey captured demographic details, including age, gender, and country of origin, to explore variations in perceptions across diverse groups. Random sampling was used to ensure diversity among survey respondents, with efforts made to include both domestic and international tourists.

3. Data Analysis

For qualitative data analysis, interviews were transcribed and subjected to thematic analysis. Emerging themes focused on navigation challenges, cultural representation, and aesthetic preferences. Field observation notes were analyzed to identify gaps in the current signage system and contextualize participant feedback. While for quantitative data analysis, survey responses were analyzed using descriptive statistics to determine trends and preferences.

4. Ethical Considerations

Ethical approval was obtained prior to data collection. All participants were briefed about the study's purpose and provided informed consent. Anonymity and confidentiality were maintained throughout the research process. For surveys and interviews, sensitive questions were avoided, and participants could withdraw at any point without explanation.

5. Limitations

While the mixed-method approach provides comprehensive insights, yet certain limitations exist. Firstly, the qualitative sample may not fully represent all tourist perspectives due to its smaller size. Secondly, seasonal variations in tourist demographics could influence the quantitative findings. Thirdly, budgetary and logistical constraints limited the scope of on-site observations.

RESULTS

1. Findings of Qualitative Analysis

1.1. Participants by their Role and Age

The Figure 2 provides descriptive statistics for participants' ages across three roles: cultural researcher, designer, and tourist. Each role comprises 15 participants. Cultural researchers range in age from 21 to 56 years, with a mean age of 38.27 years and a standard deviation of 10.787, indicating a moderately diverse age group with the central tendency slightly above the late 30s. Designers have an age range from 20 to 52 years, with a mean age of 37.00 years and a slightly higher standard deviation of 11.161, reflecting a similar central tendency but slightly greater variability compared to cultural researchers. Tourists exhibit the widest age range, from 21 to 60 years, with a mean age of 37.73 years and the highest standard deviation of 13.008, suggesting the greatest age diversity among this group. These statistics indicate that the participant groups are comparable in mean age, hovering around the late 30s, but differ in variability. Tourists represent the most age-diverse group, while designers and cultural researchers show relatively similar age distributions with slightly less variation. This diversity, particularly among tourists, may provide a broader perspective on signage preferences and usability across age groups.

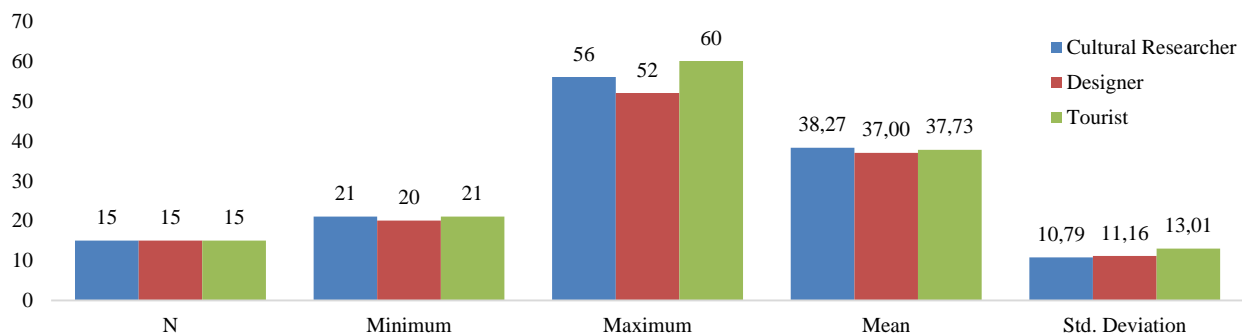


Figure 2. Participants by their Role and Age

1.2. Participants by their Role and Gender

The bivariate analysis (Figure 3) highlights the distribution of participants by role (cultural researcher, designer, tourist) and gender (female, male, other), with each role equally represented by 15 participants. Among the 45 participants, males slightly outnumber females (22 males versus 21 females), while individuals identifying as "other" are minimally represented, appearing only in the cultural researcher role (2 participants). Female representation is highest among tourists (8 participants) and lowest among cultural researchers (6 participants), while males are most represented among designers (8 participants) and least among tourists (7 participants). The cultural researcher role exhibits the highest gender diversity, encompassing all three gender categories, whereas designers and tourists lack representation from the "other" gender category. This distribution reflects near parity between male and female participants across roles but a significant underrepresentation of non-binary or other gender identities, which could influence the diversity of perspectives captured in the study. Future research should consider more inclusive sampling to better represent underrepresented gender identities, particularly in roles like designers and tourists.

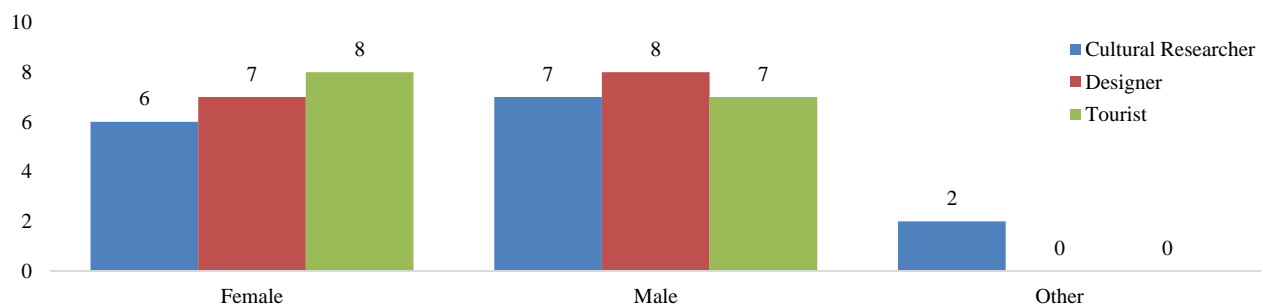


Figure 3. Participants by their Role and Gender

1.3. Participants by their Role and Feedback on Current Signage

The Figure 4 provides insights into participants' feedback on the current signage at Potala palace, categorized by their role (cultural researcher, designer, tourist) and grouped into three response categories: "average," "good," and "not clear." Overall, feedback skews positively, with 21 participants rating the signage as "good," compared to 9 rating it as "average" and 15 as "not clear." Among cultural researchers, opinions are evenly divided between negative (6 "not clear"), positive (6

"good"), and neutral (3 "average"), reflecting a mixed assessment of the signage. Designers provide the most favorable feedback, with 7 rating the signage as "good," though 6 also found it "not clear," and only 2 rated it as "average." Tourists exhibit the most positive view overall, with more than half (8 participants) rating the signage as "good," while 3 rated it as "not clear" and 4 as "average." The breakdown reveals that while the majority perceive the signage positively, a significant portion finds it unclear, particularly among cultural researchers and designers. Tourists appear more satisfied overall, indicating that the signage might cater better to visitors than to experts assessing cultural or technical aspects. These findings suggest that while the signage is functional for many users, there is room for improvement in clarity and cultural communication to address concerns raised by professionals and less favorable feedback.

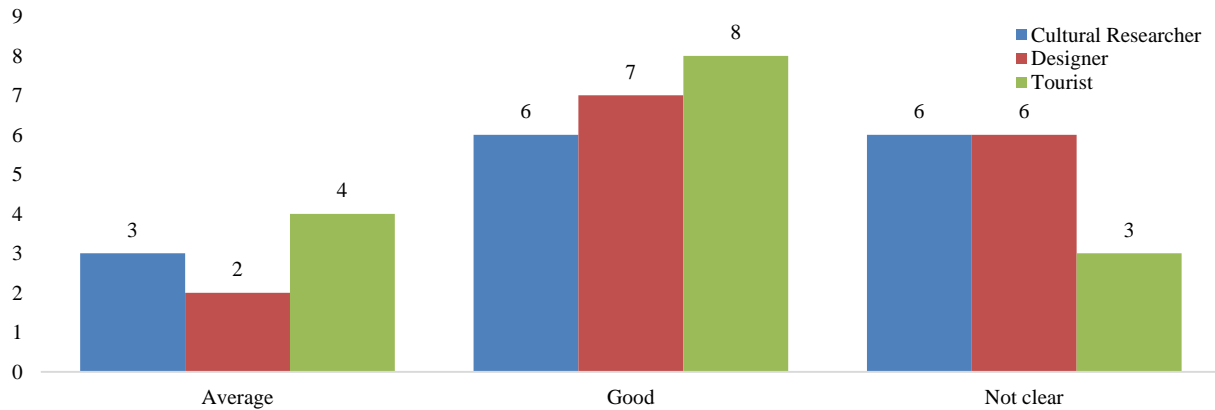


Figure 4. Participants by their Role and Feedback on Current Signage

1.4. Participants by their Role and Suggestions for Improvement

The Figure 5 shows participants' suggestions for improving the signage at Potala Palace, categorized by role and preferred focus area: add multilingual content, improve visuals, or use cultural symbols. Across all roles, the most common suggestion is to improve visuals, with 17 participants highlighting this as a priority. This is particularly emphasized by designers, with seven participants, and tourists, with six participants. Using cultural symbols is also a significant recommendation, with 15 participants suggesting it, especially cultural researchers and tourists, both with six participants each. Adding multilingual content is suggested by 13 participants, primarily cultural researchers and designers, with five participants each, reflecting the importance of language inclusivity among these groups. The results indicate that while there is agreement on the need to enhance signage, priorities differ across roles. Cultural researchers focus more on incorporating cultural elements and multilingual accessibility. Designers emphasize visual improvements, while tourists are equally concerned with cultural relevance and visual appeal. These findings suggest a balanced improvement strategy that incorporates multilingual content, visual enhancements, and cultural elements to address the diverse needs of stakeholders.

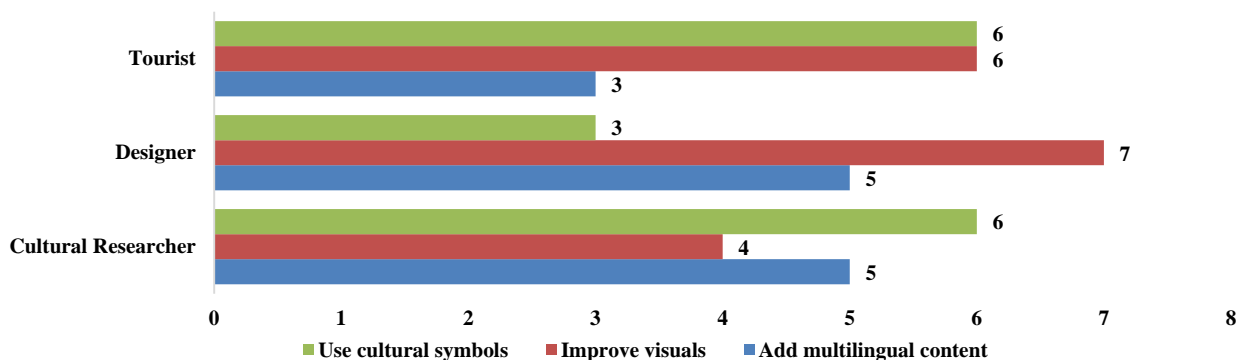


Figure 5. Participants by their Role and Suggestions for Improvement

1.5. Participants by their Role and Cultural Considerations

The Figure 6 illustrates participants' feedback on cultural considerations for improving signage at Potala Palace, categorized by role and preference for ensuring cultural sensitivity, focusing on traditional motifs, or including storytelling elements. Overall, the most common suggestion is to focus on traditional motifs, with 17 participants emphasizing this, especially cultural researchers, with 9 participants, reflecting their prioritization of preserving cultural authenticity. Ensuring cultural sensitivity is the second most emphasized consideration, suggested by 15 participants, with designers showing the strongest preference in this category, with 8 participants, highlighting their professional focus on avoiding cultural misrepresentation. Including storytelling elements is also significant, suggested by 13 participants, particularly tourists, with 6 participants, indicating an interest in engaging and informative signage. The qualitative investigation reveals various topics, notably the existing signage at Potala Palace, indicating disparities in priorities and preferences among different positions. Readers of cultural contexts value the symbolism inherent in traditional motifs and story elements of signage; nevertheless, they also note that numerous signs convey crude sentiments that may offend some

Tibetans owing to the designers' cultural insensitivity. Professionals are attentive to enhancements and culturally sensitive, since the design process emphasizes aesthetics and the accountability of designers.

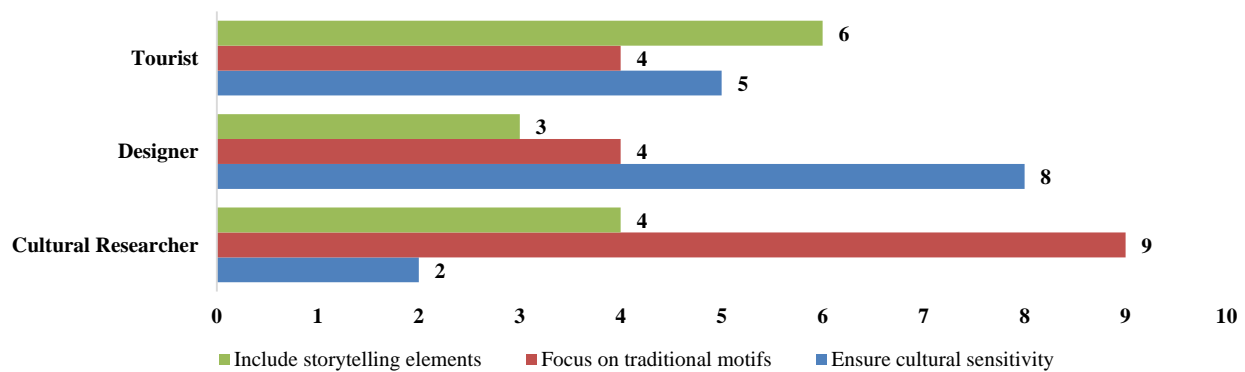


Figure 6. Participants by their Role and Cultural Considerations

Although the new signs offer information that tourists find appealing, respondents perceive the signs as generally inadequate and express a preference for more compelling narratives and enhanced graphics to elevate the sign experience. This analysis additionally incorporates the age of the participants, as the age distribution of visitors exceeds the median age of the participants, and varying age expectations may enhance the diversity of these findings. Collectively, these concepts suggest that signage from cultural, linguistic, aesthetic, and narrative viewpoints fulfills the many needs of stakeholders, hence enhancing the multicultural and significant nature of the visit.

2. Findings of Quantitative Analysis

2.1. Current Signage Evaluation

Figure 7 summarizes the participants' assessment of the intelligibility of signage at Potala Palace using a Likert scale ranging from 1 to 5. A considerable proportion of individuals expressed dissatisfaction, with 20 percent strongly opposing and 21.8 percent dissenting, indicating that 41.8 percent of the respondents encountered difficulties comprehending the displayed signals. Conversely, 37.8% held a favorable opinion of the clarity of the signs, while 16% expressed agreement and 21.8% strongly concurred, indicating that over one-third of the participants believe the institutions' signs are clear. The remaining 20.5% of participants provided a neutral response, neither agreeing nor disagreeing, which may indicate ambivalence or mixed experiences. These findings reveal a significant division in opinions about signage clarity, with dissatisfaction slightly outweighing satisfaction. The large proportion of neutral and negative responses underscores the need for improvements in clarity, ensuring that signage is more universally comprehensible and effective for diverse audiences. Addressing this issue could enhance navigation and user experience for a wider range of visitors.

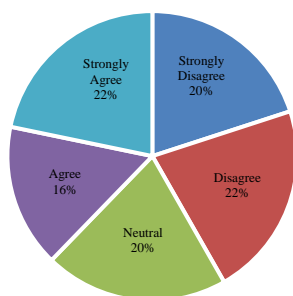


Figure 7. Participants' Perceptions of the Clarity of Signage at Potala Palace

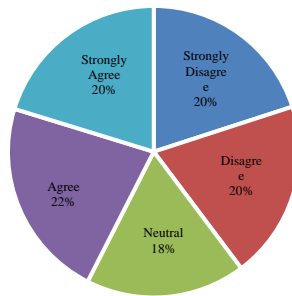


Figure 8. Participants' Perceptions of the Placement of Signage at Potala Palace

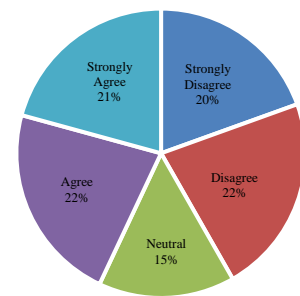


Figure 9. Participants' Perceptions of Signage at Potala Palace Reflecting Culture

The Figure 8 illustrates participants' perceptions of the placement of signage at Potala Palace, measured on a five-point Likert scale. Responses are relatively balanced, with 39.8% of participants expressing dissatisfaction (20% strongly disagree and 19.8% disagree) regarding signage placement. On the other hand, 42.6% of participants provided positive feedback (22.3% agree and 20.3% strongly agree), indicating that a slightly larger group finds the placement effective. Meanwhile, 17.8% of participants remained neutral, neither satisfied nor dissatisfied. These results reflect a divided opinion on the placement of signage. While a significant portion of participants sees room for improvement, a comparable group finds the current placement adequate. The neutrality observed suggests that some respondents may have mixed experiences or find the issue less critical. Improving signage placement could further enhance accessibility and usability for a broader audience, particularly addressing the concerns of those dissatisfied. The Figure 9 provides an overview of participants' perceptions of how well the signage at Potala Palace reflects Tibetan culture, rated on a five-point Likert scale. A substantial proportion of participants expressed dissatisfaction, with 19.5% strongly disagreeing and 22.3% disagreeing, meaning that 41.8% felt the signage does not adequately reflect Tibetan culture. Conversely, 43.1% provided positive feedback, with 22.3% agreeing and 20.8% strongly agreeing that the signage effectively reflects cultural aspects. A smaller group, 15.3%, remained neutral,

suggesting uncertainty or mixed opinions. These findings indicate a nearly even split in perceptions, with slightly more participants viewing the signage as culturally reflective. However, the significant proportion of dissatisfied respondents highlights the need to enhance cultural elements within the signage. Incorporating traditional motifs, storytelling, and other culturally significant features could address these concerns and create a more universally appreciated cultural reflection.

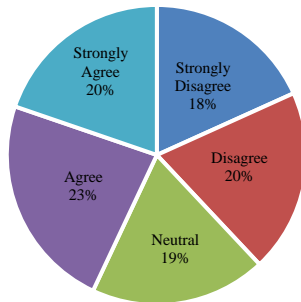


Figure 10. Participants' Perceptions of the Multilingual Accessibility of Signage at Potala Palace

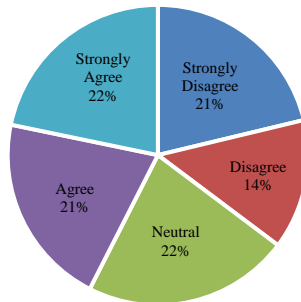


Figure 11. Participants' Perceptions of the Visual Appeal of Signage at Potala Palace

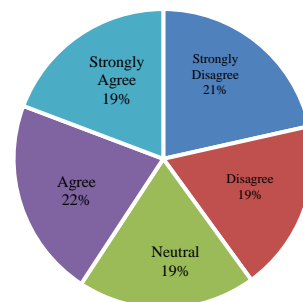


Figure 12. Participants' Perceptions of the Navigation Guidance Provided by the Signage at Potala Palace

The Table 9 outlines participants' perceptions of the multilingual accessibility of signage at Potala Palace, rated on a five-point Likert scale. A moderate level of dissatisfaction is observed, with 18.3% strongly disagreeing and 19.8% disagreeing, resulting in 38.1% of participants perceiving that the signage does not adequately cater to multilingual needs. On the positive side, 43.1% of participants expressed satisfaction, with 23.3% agreeing and 19.8% strongly agreeing that the signage effectively accommodates multiple languages. A notable 19% provided a neutral response, suggesting a level of indifference or uncertainty among some participants. These results reveal a slight majority perceiving the signage as multilingual-friendly, yet a significant proportion remains dissatisfied. The presence of neutral responses indicates variability in experiences, possibly due to the varying linguistic backgrounds of participants. Addressing the concerns of those dissatisfied by expanding language options or improving the clarity of multilingual signage could enhance inclusivity and accessibility for a wider audience. The Figure 11 presents participants' perceptions of the visual appeal of signage at Potala Palace, rated on a five-point Likert scale. Responses indicate a diverse range of opinions. A significant proportion expressed dissatisfaction, with 21.3% strongly disagreeing and 14.0% disagreeing, accounting for 35.3% of participants who found the signage visually unappealing. On the other hand, 42.6% expressed positive views, with 20.8% agreeing and 21.8% strongly agreeing that the signage is visually appealing. Meanwhile, 22.3% of participants remained neutral, suggesting a lack of strong opinion or mixed experiences with the visual design. These findings reveal a fairly even split between those satisfied and dissatisfied with the signage's visual appeal, with a notable portion remaining neutral.

The results suggest that while many participants appreciate the current visuals, a substantial group perceives room for improvement. Enhancing the aesthetics through culturally inspired designs or modern graphical elements could address the concerns of those dissatisfied and elevate the overall user experience. The Figure 12 outlines participants' perceptions of the navigation guidance provided by the signage at Potala Palace, rated on a five-point Likert scale. Responses are evenly divided, with 40% of participants expressing dissatisfaction (21.5% strongly disagreeing and 18.5% disagreeing) and an identical 40.8% expressing satisfaction (21.5% agreeing and 19.3% strongly agreeing). A further 19.3% of participants provided neutral responses, indicating uncertainty or mixed experiences with the navigation functionality of the signage. The results highlight a clear division in opinions, with equal proportions of participants finding the signage effective or ineffective in aiding navigation. This split suggests that while some users find the signage functional, a significant number experience difficulty. Enhancing navigation guidance through better placement, clearer directions, and interactive or digital tools could help address these challenges and improve the overall effectiveness of the signage system. The Figure 13 summarizes participants' perceptions of how well the signage at Potala Palace contributes to their cultural understanding, rated on a five-point Likert scale. A significant portion of participants expressed dissatisfaction, with 22.3% strongly disagreeing and 18.8% disagreeing, totaling 41.1% who feel the signage does not effectively enhance their cultural understanding.

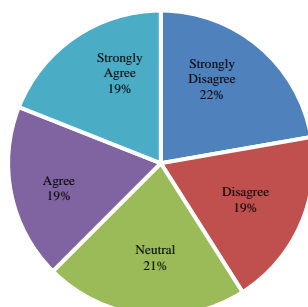


Figure 13. Participants' Perceptions of the Signage at Potala Palace Contributing to Cultural Understanding

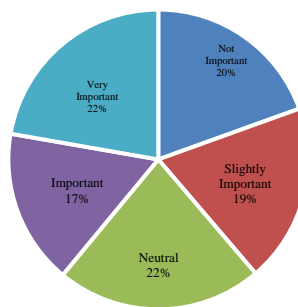


Figure 14. Participants' Perceptions of the Importance of Multilingual Content for the Signage at Potala Palace

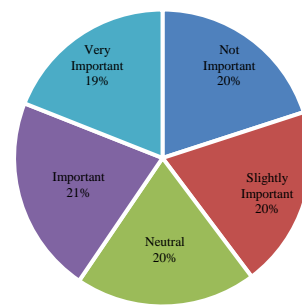


Figure 15. Participants' Perceptions of the Importance of Visual Enhancements for Signage at Potala Palace

In contrast, 37.5% of participants provided positive feedback, with 18.5% agreeing and 19.0% strongly agreeing that the signage aids their understanding of Tibetan culture. Meanwhile, 21.5% of participants remained neutral, indicating ambivalence or mixed experiences. These findings highlight a noteworthy gap in the signage's ability to effectively convey cultural information, as dissatisfaction outweighs satisfaction. The large proportion of neutral responses further suggests that many participants may find the cultural messaging insufficient or inconsistent.

Addressing this issue through the incorporation of storytelling elements, traditional motifs, and clearer explanations could improve the signage's ability to enhance cultural understanding for a broader audience.

2.2. Signage Improvement Preferences

The Figure 14 illustrates participants' perceptions of the importance of multilingual content for the signage at Potala Palace, rated on a five-point scale from not important to very important. Responses reveal a divided perspective. A combined 38.8% of participants rated multilingual content as "not important" (19.5%) or "slightly important" (19.3%), indicating that a significant portion of respondents does not prioritize multilingual signage. In contrast, an equal 39.1% of participants rated it as "important" (16.8%) or "very important" (22.3%), demonstrating a comparable emphasis on the need for language inclusivity. A substantial 22.3% of respondents selected a neutral stance, indicating ambivalence or a lack of strong opinion on this matter. These data demonstrate that there is no clear endorsement of multilingual signage as a crucial necessity, with the opinions marginally in favour and against this requirement. The remaining replies indicate that individuals may have exhibited preferences for survey questions that varied according to their language or previous experiences. To address these diverse attitudes, multilingual signs could be strategically implemented in key areas to ensure efficiency without causing overwhelm.

In the given below, Figure 15, there is information on participants' perceptions of the importance of visual enhancements for signage at Potala Palace. The responses indicate a relatively even distribution of opinions. A combined 39.8% of participants rated visual enhancements as either "not important" (20.0%) or "slightly important" (19.8%), reflecting a significant portion who do not see visual improvements as a priority. Conversely, 40.5% rated them as "important" (21.5%) or "very important" (19.0%), highlighting a similar proportion that emphasizes the need for improved visuals.

Additionally, 19.8% of participants remained neutral, indicating ambivalence or mixed feelings about the importance of visual enhancements. These results suggest a divided perspective on the role of visual appeal, with a slight tilt toward considering it important. The notable neutral responses may indicate that visual enhancements are not universally seen as a critical element of effective signage. To address the varied preferences, implementing balanced visual improvements, such as enhancing clarity and cultural motifs, could satisfy both advocates and those less concerned with aesthetics.

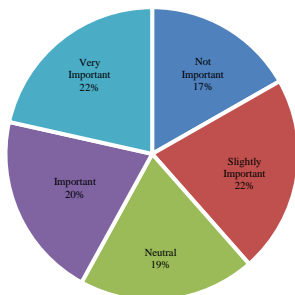


Figure 16. Perceptions of the Participants on the Importance of Incorporating Cultural Symbols into the Signage (at Potala Palace)

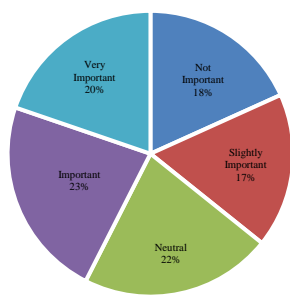


Figure 17. Participants' Perceptions of the Importance of Incorporating Storytelling Elements into the Signage at Potala Palace

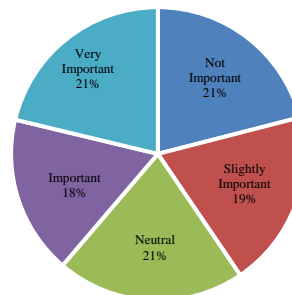


Figure 18. Participants' Perceptions of the Importance of Placement Visibility for Signage at Potala Palace

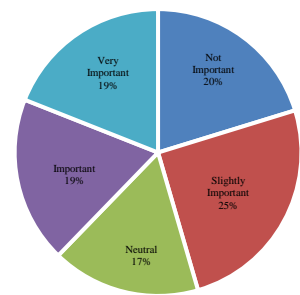


Figure 19. Participants' Perceptions of the Importance of Incorporating Interactive Signage at Potala Palace

The Figure 16 presents participants' perceptions of the importance of incorporating cultural symbols into the signage at Potala Palace, rated on a five-point scale. The responses are evenly distributed, with 38.6% of participants considering cultural symbols as either "not important" (16.8%) or "slightly important" (21.8%), indicating that a notable portion does not see cultural symbols as a high priority. On the other hand, 42.0% rated cultural symbols as "important" (20.5%) or "very important" (21.5%), suggesting a slightly larger group values their inclusion. Meanwhile, 19.5% of participants expressed a neutral stance, reflecting a level of ambivalence or lack of strong opinion on the matter.

These findings indicate a balance between participants who prioritize cultural symbols and those who view them as less critical, with a significant neutral group. The participants' assessment of the necessity for incorporating storytelling elements in the signage at Potala Palace is evaluated using a five-point scale, as illustrated in Figure 17.

Somewhat less, 42.6% of the aforementioned population, state that storytelling is vital; yet 22.8% consider it important just, and 19.8% very important. Conversely, 35.8% believe that storytelling is of lesser significance, with 18.3% categorizing it as 'not important' and 17.5% regarding it as 'somewhat important'.

Additionally, 21.8% of participants expressed neutrality concerning the utilization of narrative on signs, indicating uncertainty or ambivalence regarding its potential significance in signing. The results reveal a compelling distribution, indicating that while a considerable number of participants value narrative, a major portion does not regard it as crucial, and many participants perceive the concept as merely ordinary. This suggests that storytelling elements, while appreciated by some, may not be universally seen as essential. To address this, incorporating storytelling in a balanced and culturally relevant way could appeal to those who value engagement while not overwhelming those who see it as less important. The Figure 18 illustrates participants' perceptions of the importance of placement visibility for signage at

Potala Palace, rated on a five-point scale. Responses are evenly distributed across the spectrum, reflecting a division in opinions. While 38.5% of participants consider placement visibility less critical, with 21.0% rating it as "not important" and 19.5% as "slightly important," an almost equal 38.8% see it as significant, with 17.5% rating it as "important" and 21.3% as "very important." Additionally, 20.8% of participants expressed a neutral stance, indicating ambivalence or a lack of strong preference on the matter. These findings highlight a near-even split in perceptions, with no overwhelming consensus on the importance of placement visibility. While a substantial group values visible placement, another significant portion does not see it as a priority. This suggests that while improving placement visibility could enhance the experience for some, it might not be universally impactful. A strategic focus on critical areas where placement visibility is essential could cater to its proponents without overemphasizing it for those less concerned.

The figure 19 reflects participants' perceptions of the importance of incorporating interactive signage at Potala Palace, rated on a five-point scale. The responses indicate that a significant portion, 45.6%, views interactive signage as less critical, with 20.3% rating it as "not important" and 25.3% as "slightly important." On the other hand, 37.8% of participants consider interactive signage important, with 18.8% rating it as "important" and 19.0% as "very important." Additionally, 16.8% of participants expressed a neutral stance, indicating uncertainty or a lack of strong opinion on the matter. These findings suggest a notable division in preferences, with a slight majority viewing interactive signage as less essential. However, the substantial group advocating for its importance highlights its potential value for engaging a specific subset of visitors. A balanced approach, introducing interactive signage in key areas while maintaining traditional elements, could cater to diverse preferences and enhance the overall visitor experience without alienating those who prefer simpler formats.

2.3. Satisfaction with the Current Signage System

The figure 20 summarizes participants' overall satisfaction with the signage at Potala Palace, rated on a five-point scale from very dissatisfied to very satisfied. Responses reveal a relatively balanced distribution, with 41.8% of participants expressing dissatisfaction (19.3% very dissatisfied and 22.5% dissatisfied). In contrast, 43.1% reported satisfaction, with 21.3% satisfied and 21.8% very satisfied, indicating that a slightly larger proportion of participants view the signage positively. Additionally, 15.3% of respondents remained neutral, suggesting ambivalence or mixed experiences. These findings highlight a division in perceptions, with a near-even split between those satisfied and dissatisfied. While many participants appreciate the current signage, a significant portion finds it unsatisfactory, pointing to areas that need improvement. Enhancements in clarity, cultural representation, and functionality could address the concerns of those dissatisfied, further increasing overall satisfaction among visitors.

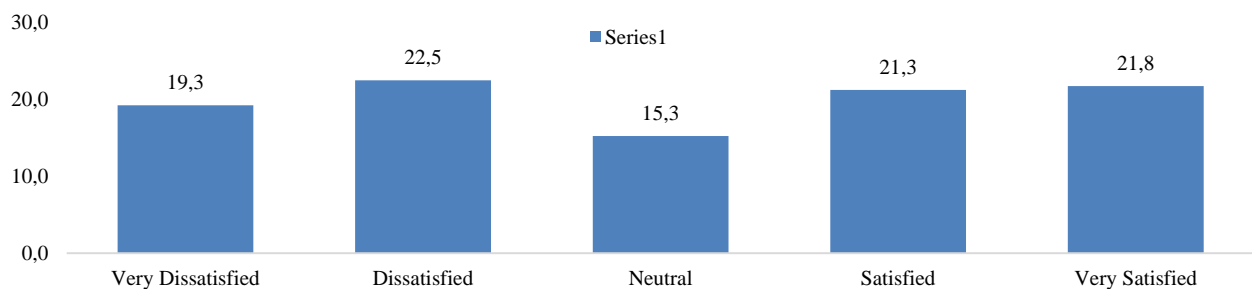


Figure 20. Participants' Overall Satisfaction with the Signage at Potala Palace

The figure 21 provides insights into participants' perceptions of how the signage at Potala Palace contributes to their overall experience, rated on a five-point scale from very dissatisfied to very satisfied. The results show that 39.8% of participants expressed dissatisfaction, with 17.5% being very dissatisfied and 22.3% dissatisfied. On the other hand, 39.5% of participants reported satisfaction, with 18.5% satisfied and 21.0% very satisfied, reflecting a nearly equal proportion to those dissatisfied. Additionally, 20.8% of participants selected a neutral stance, indicating mixed opinions or ambivalence regarding the signage's contribution to their experience. These findings indicate a balanced split between satisfaction and dissatisfaction, suggesting that while the signage contributes positively for some, there is considerable room for improvement. Addressing areas such as clarity, cultural relevance, and accessibility could enhance the signage's effectiveness and overall contribution to visitor experience, potentially reducing dissatisfaction and neutral responses.

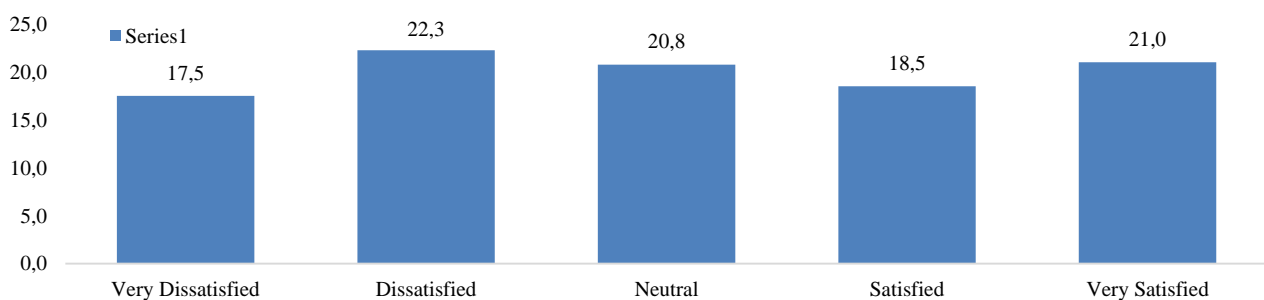


Figure 21. Perceptions of the Participants on the Signage as Contributing to their Overall Experience

DISCUSSION

The results of the present study are consistent with earlier research in demonstrating that well-integrated signage systems increase the experience, wayfinding, and appreciation of culture in tourists. The tourists faced several challenges, including ambiguous directions, inadequate sign placement, and restricted access to materials in languages other than Chinese. This aligns with the observations of Black et al. (2001) regarding interpretive signage placement, who emphasized the necessity of multilingual interpretive signage. The multilingual interpretive signage is gauged through the research objective 1 and objective 2 of this study. Cultural scholars and designers indicated the necessity for sensitive and aesthetically pleasing designs (objective 2 of this study; suggestions for improvement), along with findings from Timothy & Boyd (2003); Moscardo (1996) regarding the significance of aesthetics and cultural relevance in attracting attention. The inclusion of storytelling (objective 2 of this study; suggestions for improvement) in the present signage aligns with Tilden (1957) assertion that tales in signage improve the comprehension of cultural significance. The survey reiterated the significance of visual enhancements, multilingual information, and improved positioning (objective 2 of this study; suggestions for improvement) as suggested by Wan (2022b), emphasizing inclusive design, and by Liu (2020), concerning interactive and instructional signage. Therefore, future efforts should aim to achieve proportional improvements in both communicative function and cultural relevance within sign systems, thereby enhancing signage to offer enjoyable and instructive contributions to visitors' experiences at heritage sites.

CONCLUSION

This research utilizes significant information regarding the signage systems at Potala Palace currently and their influence on tourists' opinions. Positive aspects of the current signage system include its navigational assistance; yet, significant concerns persist, such as ambiguous sign directions, insufficient signpost placement, and limited language support, along with poor representation of cultural features. These factors impede the comprehension of the cultural connections between the landscape and the tourists, while also undermining their meaningful engagement with the cultural information inherent in the smaller location. Two significant concerns have arisen from stakeholder comments indicating that mass transportation signage systems must be aesthetically pleasing, culturally sensitive, and functional. The signage of Potala Palace can enhance visitor satisfaction, foster an inclusive attitude at the site, and safeguard its cultural and historical legacy.

Suggestions

The study concludes that signage can remain legible and current by enhancing its distinctiveness and positioning, optimizing multilingual features, incorporating pertinent cultural elements, prioritizing visual appeal, integrating interactive and digital components, and ensuring continuous maintenance and evaluation. Consequently, continuous assessments and visitor input must be incorporated to evaluate the effectiveness of the new signage system and implement any modifications. The subsequent recommendations aim to address the aforementioned deficiencies and enhance the visual requirements of all Potala Palace visitors: an aesthetically pleasing signage system that conveys messages contextually, thoughtfully, and creatively, serving as a means of cultural education and engagement.

Appendix: Questionnaire for Quantitative Data Collection

Section 1: Demographics	
Age:	Gender: Male / Female / Other
Country of Origin:	Have you visited Potala Palace before? Yes / No
Section 2: Current Signage Evaluation	Statement
Instructions: Please rate the following statements based on your experience with the signage at Potala Palace.	
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.	
The current signage is clear and easy to understand. (Clarity)	
The signage is well-placed and easy to locate. (Placement)	
The signage effectively reflects Tibetan culture and traditions. (Cultural Reflection)	
The signage is multilingual and accommodates diverse linguistic needs. (Multilingual Accessibility)	
The visuals and design of the signage are aesthetically pleasing. (Visual Appeal)	
The signage provides adequate guidance for navigating the palace. (Navigation Guidance)	
The signage enhances my understanding of the site's cultural significance. (Cultural Understanding)	
Section 3: Improvement Preferences	
Instructions: Please rate the following improvement suggestions based on how important you think they are. Use the scale:	
Scale: 1 = Not Important, 2 = Slightly Important, 3 = Neutral, 4 = Important, 5 = Very Important.	
Adding multilingual content to accommodate different languages. (Multilingual Content)	
Improving the visuals and design of the signage. (Visual Enhancements)	
Incorporating Tibetan cultural symbols and motifs. (Cultural Symbols)	
Including storytelling elements to provide engaging cultural narratives. (Storytelling)	
Enhancing the placement and visibility of the signage. (Placement Visibility)	
Using interactive or digital signage for tech-savvy users. (Interactive Signage)	
Section 4: Overall Satisfaction	
Instructions: Please rate the following based on your overall experience with the signage at Potala Palace. Use the scale:	
Scale: 1 = Very Dissatisfied, 2 = Dissatisfied, 3 = Neutral, 4 = Satisfied, 5 = Very Satisfied.	
My overall satisfaction with the current signage system.	
The signage's contribution to my overall experience at Potala Palace.	

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REFERENCES

- American Society of Overseas Research. (2024). Digitizing Cultural Heritage: Challenges, Opportunities and Best Practices. <https://www.asor.org/onetoday/2024/05/digitizing-cultural-heritage>
- Black, R., Ham, S., & Weiler, B. (2001). Ecotour guide training in less developed countries: Some preliminary research findings. *Journal of Sustainable Tourism*, 9(2), 147–156.
- Britannica. (2024). Potala Palace. Retrieved from <https://www.britannica.com/topic/Potala-Palace>
- Building Conservation. (2024). Signs and Signage. Retrieved from <https://www.buildingconservation.com/articles/signs/signs.htm>
- Choi, H. C., & Sirakaya, E. (2006). Sustainability indicators for managing community tourism. *Tourism Management*, 27(6), 1274–1289. <https://doi.org/10.1016/j.tourman.2005.05.018>
- Denzin, N. K., & Lincoln, Y. S. (2011). *The Sage handbook of qualitative research* (4th ed. ed.): Sage Publications.
- Deri, M. G., Chiti, L., & Ciuffoletti, A. (2023). A sustainable approach to tourist signage on heritage trails. *Sustainability*, 15(23), 16251. <https://doi.org/10.3390/su152316251>
- Dima, M., Daylamani-Zad, D., & Lympouridis, V. (2024). Mixed Reality Heritage Performance as a Decolonising Tool for Heritage Sites. *arXiv preprint*. <https://arxiv.org/abs/2404.07348>
- Geertz, C. (1973). *The interpretation of cultures: Selected essays*: Basic Books.
- House of Signs. (2024). The impact of signage on local tourism: Drawing visitors with unique signs. <https://houseofsignsco.com/2024/02/24/the-impact-of-signage-on-local-tourism-drawing-visitors-with-unique-signs/>
- Jamal, T., & Kim, H. (2005). Bridging the interdisciplinary divide: Towards an integrated framework for heritage tourism research. *Tourism Recreation Research*, 30(1), 3–12. <https://doi.org/10.1080/02508281.2005.11081470>
- Jeju Olle Foundation. (2023). Jeju Olle Trail. Retrieved from https://en.wikipedia.org/wiki/Jeju_Olle_Trail
- Kuo, I.L., Chen, H.-C., & Ye, T.F. (2005). The application of bilingual signage in tourism: Issues and perspectives %.
- Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, 22(140), 5–55.
- Liu, Y. (2020). Evaluating visitor experience of digital interpretation and presentation technologies at cultural heritage sites: A case study of the old town, Zuoying. *Built Heritage*, 4(14). <https://doi.org/10.1186/s43238-020-00016-4>
- Moscardo, G. (1996). Mindful visitors: Heritage and tourism. *Annals of Tourism Research*, 23(2), 376–397. [https://doi.org/10.1016/0160-7383\(95\)00068-2](https://doi.org/10.1016/0160-7383(95)00068-2)
- Naegele, E. (2024). Outdoor Signage: Overcoming Environmental Challenges. <https://blog.peerless-av.com/outdoor-signage-overcoming-environmental-challenges/>
- National Geographic. (2023). Potala Palace: A World Heritage Site in Tibet. <https://www.nationalgeographic.com/travel/article/tibet-autonomous-region-lhasa-potala-palace-world-heritage>
- Neoarchitects. (2024). The Importance of Cultural Sensitivity in Design. Retrieved from <https://www.neoarchitects.io/single-post/the-importance-of-cultural-sensitivity-in-design>
- Plog, S. C. (1974). Why destination areas rise and fall in popularity. *The Cornell Hotel and Restaurant Administration Quarterly*, 14(4), 55–58. <https://doi.org/10.1177/001088047401400409>
- Re-Thinking The Future. (2020). 10 Things to Remember When Designing in a Heritage Sensitive Precinct. <https://www.re-thinkingthefuture.com/designing-for-typologies/a2595-10-things-to-remember-when-designing-in-a-heritage-sensitive-precinct/>
- Scarano Architect. (2024). Cultural Sensitivity in Architectural Design. <https://scaranoarchitect.com/cultural-sensitivity-in-architectural-design/>
- Swarbrooke, J., & Horner, S. (2007). *Consumer behaviour in tourism* (2nd ed. ed.): Butterworth-Heinemann.
- Tibet Travel. (2024). Potala Palace Travel Guide. <https://www.tibettravel.org/tibet-travel-guide/potala-palace-travel-guide.html>
- Tilden, F. (1957). *Interpreting our heritage*: University of North Carolina Press.
- Timothy, D. J., & Boyd, S. W. (2003). *Heritage tourism*: Pearson Education.
- Wan, Y. K. P. (2022a). Accessibility of tourist signage at heritage sites: An application of the universal design principles. *Tourism Recreation Research*. <https://doi.org/10.1080/02508281.2022.2106099>
- Wan, Y. K. P. (2022b). Accessibility of tourist signage at heritage sites: An application of the universal design principles. *Journal of Tourism and Cultural Change*, 20(4), 456–472. <https://doi.org/10.1080/14766825.2021.1953603>
- World History Journal. (2024). *The Potala Palace: A Testament of Tibetan Architecture and Spirituality*. Retrieved from <https://worldhistoryjournal.com/2024/10/19/the-potala-palace-a-testament-of-tibetan-architecture-and-spirituality/>