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Article

Cultural Heritage Service Design and Experience Innovation: A Case Study of Taiwan

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ABSTRACT

This paper delves into the evolving landscape of community engagement, exploring innovative methods to enhance the involvement and awareness of young individuals. Employing a comprehensive content analysis through a multiple case study approach, this research investigates cultural heritage initiatives in Taiwan, emphasizing the pivotal role of technology and digital platforms in engaging young audiences. The study utilizes theoretical sampling and triangulation methods, incorporating semi-structured interviews, secondary sources, and participant observation. The findings underscore the significance of digital experiences as supplements to physical presence, offering a gateway to cultural heritage. The practical implications advocate for heritage sites to leverage digital platforms, collaborating with external partners to enrich visitor experiences. The paper furnishes valuable recommendations for enhancing customer engagement and communication with the younger demographic, contributing to the field of cultural heritage in Asia. This research marks a transition from physical to online service design, harnessing technology to inspire and engage, ultimately attracting diverse generations and retaining the interest of existing visitors.

1. Introduction

The utilization of digital tools in the preservation of cultural heritage has garnered significant attention [1]. Effectively integrating diverse technologies in cultural heritage environments adds substantial value for both cultural heritage organizations and visitors, enhancing their experiences before, during, and after their visits [2]. Fakin's [3] study reveals that many young people fail to recognize the potential of cultural heritage, lacking interest and failing to associate it with personal values. Raising awareness among today's generation necessitates scientific research conducted by professionals [4]. While studies on cultural heritage management predominantly focus on visitor satisfaction and heritage protection [5], the significance of engaging residents and visitors has often been overlooked [6].

Cultural heritage organizations worldwide face challenges due to workforce and financial constraints, leading to closures, postponements, or cancellations of services. To sustain their functions and expand access to cultural heritage, institutions are increasingly turning to digital platforms [7]. Moreover, digital solutions are gradually permeating everyday organizational practices and management, although research in this area remains limited [8]. Researchers mentioned that future research is expected to focus on utilizing digital technology for heritage and education, exploring innovative methods and technologies [9].

In light of these gaps in existing research, this study aims to explore changes in community engagement to discover new ways of connecting that can facilitate young people's participation and awareness. The research questions guiding this study are as follows: (1) How can

digital technologies, such as social media, enhance the participation of younger generations? (2) How can service (experience) design tools or technologies be utilized to enhance the digital experience of cultural heritage visitors? (3) How does digital technology influence innovation in visitors' experiences?

2. Theoretical background

2.1. Service Design for engaging in cultural activities

The revitalization of cultural heritage is often linked to cultural activities and involves exploring ways to enhance the engagement of young people through service design. The service-oriented logic, as introduced by Vargo [10], suggests that services extend beyond the product itself, encompassing the entire process from pre-purchase to post-purchase. This approach emphasizes the significance of visitor involvement, shifting the focus from production to highlighting the collaborative creation of value. Building on this concept, Grönroos [11] proposes that companies are responsible for delivering service processes, including design, development, manufacturing, delivery, back office, and front office processes, while also producing resources and processes within the provider domain for visitor use. Service design, as defined by [12], involves the integration of tangible and intangible elements to design systems and processes, ultimately providing a holistic and integrated service experience for customers.

The concept of service design is gaining traction in the field of tourism literature. In tourist destinations, products are essentially service products, typically encompassing various service touchpoints that customers encounter before, during, and after their vacations [13]. Organizations can create and deliver experiences within these touchpoints. The importance of design in the experience they present to the participants, who are at the heart of the service innovation process [14]. Incorporating local art and culture into service design can create unique value and experiences for visitors [15]. Social platform pages have the potential to engage with visitors and directly generate income in the online market. As a result, it is imperative for management to grasp the intricacies of designing a valuable interactive experience within this emerging digital space. [16].

2.2 Thriving on Digital Platforms for Youth Engagement

Human-Computer Interaction strives to enhance cultural heritage experiences through innovative designs, with a focus on engaging young technology users [17]. In the context of epidemics, digital technology becomes a versatile tool, providing an alternative to physical interactions and fostering greater community involvement in cultural heritage, particularly among the younger generation [18]. As digital technology becomes

more prevalent, it is expected to gain popularity among visitors to heritage sites, especially among tech-savvy youth [19].

Physical experiences within cultural heritage allow young visitors to engage in a meaningful dialogue with history, using collective memory as a means of interaction [20]. Digital technology plays a crucial role in crafting narratives and offering unique spaces for younger audiences to interact with brands, creating valuable experiences [21]. Moreover, it enables cultural heritage sites to establish innovative channels for engagement, even for those not physically present but eager to support the institution [22]. The application of service-dominant (S-D) logic by Rather and Islam [23] sheds light on the factors influencing engagement among tourists in India, highlighting the importance of understanding how digital platforms contribute to increased engagement, particularly among the tech-savvy youth.

2.3. Experience innovation

Tourism in Asia is developing rapidly, and cultural heritage faces the challenge of sustainable development. Tailoring suitable services for tourists can motivate them to learn, enjoy, and participate [24]. Hwang and Seo [25] propose that the emotional attitude resulting from a customer experience can be significantly influenced by the consumption experience, potentially evolving over time. The tourist experience is closely related to tourists' perceptions of emotional and physical events and environments. Visitors will have an individual's immediate or ongoing subjective and personal responsibility. Social media is a way for them to share memorable experiences with others [26]. Heritage provides unique opportunities for tourists to experience pleasure and feel psychological well-being. However, the perception of tourists needs to be improved. The operators of cultural heritage can focus on this from the perspective of objectives and activity design [27]. Communicating with the community is the biggest motivation for organizations to develop new tools or apply new technologies. Social media, such as Facebook and Instagram, is a new two-way communication channel between them and the younger generation [9].

Previous research has confirmed the increasing interest in promoting cultural tourism on social media and utilizing digital platforms for heritage during the COVID-19 pandemic [28, 29]. As suggested by Ng et al. [30], future research could explore methods to engage visitors with intangible cultural aspects beyond heritage and architecture through interactive experiences. This study will specifically examine how cultural heritage interacts with younger generations, fostering the continuity of cultural traditions.

3. Methodology

3.1. Case Studies

This study employs a qualitative research approach, specifically utilizing the case study method. The case study method involves researchers conducting an in-depth investigation and observation of phenomena related to the subject organization. It allows for a thorough examination of the phenomenon at the time and facilitates investigations in a real-world environment. By extensively collecting data, the researcher can explore, analyze, and extract theories, thereby presenting the complexity of future research as a research value.

The utilization of multiple case studies enables researchers to explore differences within and between cases [31]. Currently, the application of digital technology, especially the aspect of promoting visitor engagement through online interaction, is a novel issue. Therefore, it necessitates the observation of new phenomena to establish conceptual theories [32].

3.2. Case Selection

The four case we have selected are historic buildings that have been used for a variety of purposes such as department stores, officials' dormitories, etc. (Figure 1). They have all been recognised and restored by the government and then handed over to the cultural creative and management team for reuse. All of them have cultural and creative departments that have been operating continuously under the epidemic, with the hope that the introduction of arts and cultural activities and cultural and creative industries will play a role in revitalising the buildings and transmitting arts and culture to the community. All four cultural heritages are known to a certain degree; they are popular with domestic and foreign tourists and have experienced operation difficulties when foreign tourists are unable to visit. In the case study, the researcher can collect and conclude from the survey data to understand the phenomenon in the study[33].



1. HAYASHI

2. Jin Jin Ding



3. The Red House

4. Kishuan forest of literature

Figure 1. Views of the four case study heritages in in Taiwan,

3.3 Data collection and analysis

This study draws upon both primary and secondary sources. The interviews conducted encompassed heritage operation status, innovative experience activities, digital platform establishment, and the impact of the epidemic. Triangulation was employed, combining semi-structured interviews with consumers and management, secondary sources, and participant observation. Secondary sources comprised interviews from newspapers and magazines, company websites, press releases, and financial records. The research methodology adopted in this study follows the principles of theoretical sampling as advocated by Eisenhardt [34]. The selection of cases was driven by the overarching objectives of both theory testing and expansion. Specifically, the process of choosing interviewees employed the technique of 'purposive sampling,' a widely utilized approach in qualitative research. This method entails the deliberate selection of individuals with pertinent knowledge or experience to contribute information aligning with the study's purpose and goals [35]. Altogether 8 primary stakeholders, including the six cultural heritage management teams and three young individual visitors who have visited at least twice and interested in cultural tourism, were selected through purposive sampling and interviewed in two semi-structured interviews that lasted 50 minutes on average between June and November 2021 (Table 1).

Table 1. Data source

Data type	Resources
Interviews	1 Director and 1 merchant (The Red House) 2 Section Heads (Hayashi) 2 Full-Time Staff (Jin Jin Ding) 3 visitors
Direct observations	Store Visit Use of online store and social platforms
Archival records	Company web site, Company annual reports, Press releases – developer news and announcements from company and Taiwan centers for disease control, Cultural Affairs Bureau annual reports
Documents	Photos/videos of Scenarios, Guidelines/Directives, Post on fan page (promotions and advertising)

Our study employs thematic analysis, and we have collected comparable data to categorize and encode them based on foundational theories. The researcher approached data with an open mind, carefully considering potential meanings and examining raw data. Conceptualization occurred after this examination, forming concepts through encoding. A continuous comparative analysis was then used to interconnect these concepts, creating different levels of categories and subcategories [36]. Using this data, we extract concepts

and scopes, connecting them to form a methodology [37], as outlined in Table 2.

Table 2. Material category

Category code	Second-order code	open code
Service design	Servicescape	Old and New Connections
	Product & event	Culture, Creativity, Youth
	People	Service staff, young people
	aspiration	Cultural Transmission and Communication
Digital technology application	Social media	Information Exchange and Interaction
	Tools	Information Access and Value Creation
	Member	Consumer Preferences
Experience innovation	Events emotionally	Fun and novelty Digital Experience

Sources: compiled by this research

4. Research findings

4.1 Social platforms help cultural heritage to maintain visitor's relationship

Service design encompasses the entire process from pre-purchase to post-purchase, and digital technology applications can be used as innovative tools to enhance the entire process for visitors.

Social media platforms, especially Facebook, Twitter, and Instagram, have become the primary means to spread the museum culture during the COVID-19 shutdown and have even updated more frequently ever since.

For the cultural heritages that utilize social media to promote and communicate with users, the users are becoming stakeholders to participate in the events held by the cultural institutions, and their behavior and expectations change [38].

Social platforms can help visitors to gain an understanding of and interest in cultural heritage before they visit, and ongoing interaction afterwards can help them to develop an interest in returning. Social platforms are an everyday part of young people's lives, and simple communicative interaction is no longer enough to meet their needs. Digital technology has helped these cultural institutions open again, and their online activities have increased significantly [39].

In this study, Hayashi and Kishuan are innovating the way they interact with each other. Hayashi uses a live broadcast format to let visitors know about cultural goods, and the real-time interaction improves the sense of distance created by the virtual environment. Below are the relevant quotes from the interviewees.

"After the shutdown, HAYASHI turns to have more interaction online. We also have live streaming for visitors who cannot visit to purchase limited products online."

Live streaming also facilitates the realization of the traditional mission of cultural heritage. Kishuan has invited professors of Chinese studies from the University of Taiwan to co-host a live literary lecture programme, which will allow the general public to experience the educational programmes of Taiwan's top universities and enhance their understanding of the cultural heritage. Live streaming marketing can help companies to main business or even growth during the epidemic of COVID-19 [40].

Although live streaming is currently emerging as a cultural heritage, it also has a very promising future. The visitors we interviewed have never used the online store, saying that online purchase is not in line with the physical heritage. This is why the live-streaming experience of cultural heritage needs to be further research. Both Hayashi Department Store and Jin Jin Ding are actively cultivating their presence on Line. They both recognize this as an excellent means of interaction, particularly for acquiring member information and conducting promotional broadcasts.

Hong & Wu [41] prove that increased interactivity leads to inspiration and engagement, which is beneficial for increasing interest in new knowledge, which can attract young generations and potential visitors.

4.2 From physical to Online in Cultural Heritage

Jin Jin Ding staff explained that online shopping has significantly benefited them by boosting sales, especially during the Mid-Autumn Festival. They effectively promoted and explained the online ordering process to visitors. The introduction of an improved website has expanded their sales channels and increased operational flexibility. This shift to online shopping caters to diverse consumer demands for convenience and variety, making it the preferred alternative shopping method [42]. Online shopping is favored for its convenience, simplicity, and

broader product selection compared to traditional stores [43].

The HAYASHI online shopping network expanded its offerings to include brands and products like fragrances, accessories, and refined daily wear that were previously exclusive to physical stores. Precautions such as forehead temperature checks, hand disinfection, and code identification are required before entry.

4.3 The design of the event is key to attracting a young people

Online interactive and cross-disciplinary arts and cultural activities can promote the participation of the public and improve stereotypes about cultural heritage, traditional and old-fashioned, such as Kishuan inviting the writers to launch private kitchen activities and Inviting artworks by young local artists. In addition to enhancing emotional interaction in the face of the epidemic, it will be known to more young people through the popularity of the partners. It also helps young people to build their careers.

Kishuan had difficulty developing new visitors because of its literary sign. Through the online community fan group pushing Kishuan, connect with more people who were not previously connected to literature, and brought together different age groups. Regularly literary competitions in middle school, make more young people interested in literature and history through publicity and rewards.

The findings above respond to the positive influence brought by experience innovation [5, 44]. The following is the relevant quotation of the interview response.

"After the outbreak of the epidemic, HAYASHI actively promoted events, brands, and HAYASHI history on social media, as well as promoting different physical activities such as music, literature, art, etc."

4.4 Community collaboration contributes to the heritage mission of cultural heritage

Taiwan's cultural and creative industries are divided into 15 industries, including direct-to-consumer (B to C) visual arts, music and performing arts, cultural asset applications and cultural performance facilities, crafts, film, radio and television, pop music and culture Content, publishing, design brand fashion, creative life, digital content, as well as advertising, product design, visual communication design, architectural design mainly for the service industry (B to B). Taiwan has a complete industrial chain of cultural and creative industries from creativity to display, which provides favourable resources and a stable source of consumers for the activation of cultural heritage. Online interaction enables consumers to continue to connect with cultural heritage, and service design includes satisfying emotional needs such as art activities [45].

Most of Taiwan heritage has become cultural creative clusters and cultural and creative restaurants after their revitalization, connected with cultural and creative industries, and the cultural uniqueness of their products can gain market advantages.

The cultural heritage of Taiwan has created irreplaceableness that belongs only to this heritage in the brand and products. In the early stage of operation, HAYASHI invited manufacturers to enter the market just like general department stores. But later found out that this could not show the uniqueness of this building's history and culture. Hence, they instead cooperate with local shops, which have a deep history and local culture like the heritage. Products that combine heritage with local culture have received a good response, Visitors will want to buy them as a souvenir, and our respondents cited heritage-inspired items as their top purchases.

The revitalised heritage site re-adjusts its relationship with social interaction and establishes a new relationship through culture and the arts [46]. When the community is actively engaged, these partnerships create a cultural environment that encourages behavioural change among residents and visitors [47]. Consider the importance of local traditions and culture in service development to increase profits while maintaining local cultural values [48]. In order to heritage overcome the impact of the epidemic, the government has continued to roll out relief policies, several administrative relaxations and rent reduction and exemption programs, and collaboratively promote new forms of digital streaming, urban or online community participation and interaction.

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4.5 Service Design and Experience Innovation Embeddedness within the Digital technology interaction framework

This study proposes a conceptual model presented in this research (Figure 2) underscores how cultural heritages build the relationship with the society. This interplay between culture and business forms a cyclical process. The combination of culture and business forms a

cycle through this circuit. Management or information imbued with cultural significance are transmitted to the digital platforms younger generation through digital technology interactions, resulting in a more impactful experience and the cultivation of stronger relationships [49]. Such interactions give them the opportunity to learn about the cultural heritage, and through the impact they leave behind, create opportunities for them to visit on purpose or by chance in the future.

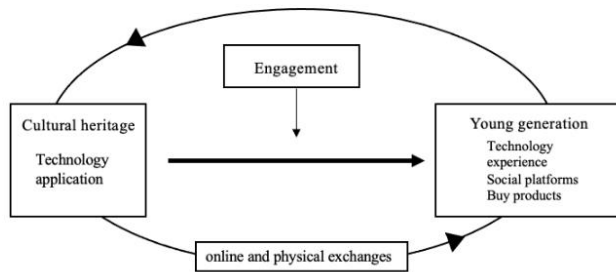


Figure 2. Conceptual model for online interaction,

5. Discussions

We connect virtual and real visitor experiences via service design, which promotes heritage cultural innovation practice. Cultural communication and exchange aid in the promotion of tourists' awareness of local culture and the creation of a desire to visit cultural sites, particularly among young people who view heritage sites just as a historical monument [30].

Zhang [50] highlights the essential elements that digital media needs to emphasize when engaging young people in cultural heritage tourism attractions. These elements include authenticity, perspective, motivation, identity, attitude, landscape behavior, area, and sustainable tourism. The effects of these elements were also observed in the present study.

The creative department seems to be able to tie these elements together. when there is a creative department, there are more easily to connected young people. and local artists and craftsmen have the opportunity to supply, which can bring the power of stabilizing the local community. Consider the importance of local traditions and culture related to tourism services and creative industries in service development to increase profits while maintaining local cultural values [48]. Elena [51] points out the necessity of community participation and how cultural heritage can promote the practice of participation and the development of local culture. Respondents believe that the characteristics of cultural heritage come from the quality of time and local and community attachment, and the significance of groups and communities represented by cultural heritage has not been paid attention to.

Taiwan's cultural heritage have been reused in various ways to meet modern society's needs, such as the

Hayashi developing new products with long-established local shops and co-branding with hello kitty and others to tap into the young people market. During the epidemic, social media platforms and family activities were used to create more access to the heritage. Cultural heritage is not just embedded in old objects and practices but is a living history that is embedded in a continuous and changing social process [52].

Taiwan is currently experiencing excellent growth in the integration of heritage and local cultural and creative products, with low barriers to entry and weekend cultural and creative markets that give young people a platform to start building their businesses.

All four cultural heritage sites have expressed a desire to support young people and new brands, but how to make them viable in the long term needs more research. According to our research, operating costs are a problem for young people creating brands, and although they have new ideas and digital social and shopping platforms, they need help from cultural heritage and the surrounding district. Interviewees from the management of this cultural heritage site revealed that there is a correlation between the cultural heritage site and the flow of people around it and that common prosperity is conducive to recovery after the epidemic.

Connecting neighboring communities through the heritage to promote community building, and connecting with local culture, can also promote local youth to participate in cultural industries. Promoting local arts and cultural activities will help people get close to and recognize the cultural heritage. local communities are their industry partners in the region and need to pay more attention to the community [53]. Based on this, we have two propositions:

Proposition 1-1: Cultural heritage and community partnerships will boost the local economy.

Proposition 1-2: If the cultural heritage has a sustainable competitive advantage, it will be beneficial for local young people to start their own business.

Some of the cultural heritage sites in this study revealed that the original visitors were more inclined towards physical interaction, and with the epidemic of leisure not being physically possible, the question of how to get existing visitors to go online and how to attract new ones is one that the cultural heritage sites need to face, and they have made some attempts that have been effective, such as improving the efficiency of their websites and physical promotions and offers. Heritages have social responsibility in their missions (e.g. education and cultural dissemination), however, their management approaches are still old-fashioned [54]. Managers need to rethink the position of the heritage and what visitors want, and innovation needs to be integrated with the internal environment in order to improve visitor satisfaction as service delivery methods change.

Accordingly, this study proposes the following proposition:

Proposition 2-1: The combination of the above and below the line facilitates the use of cultural heritage by visitors.

Proposition 2-2: The design of services for digital experiences is conducive to the achievement of cultural heritage objectives.

The importance of experience innovation and technology application in cultural heritage has begun to be valued, and cultural heritage urgently need to establish a channel for communication with the public to improve participation and satisfaction. The epidemic has promoted the further introduction of scientific and technological applications in cultural heritage, live is a new way of interaction. Currently, heritages are still in the initial stage of development. They are mainly popular in Asia, especially China. Live steaming provides a new channel of contact with audience. Investing in live streaming helps improve the plight of cultural heritage. Live streaming can build a closer relationship with the audience, and interacting with the audience through live streaming can enhance the experience, using different ways of interaction and content to facilitate the audience's potential visitation experience [55]. New technology will quickly respond to young people, they can easily adapt to new digital technologies enhancing their experience [56]. Accordingly, this study proposes the following proposition:

Proposition 3-1: The effect of experience innovation is influenced by visitor's engagement and where they make contact.

Proposition 3-2: The live-streaming platform triggers new experiences for visitors.

6. Conclusion and Suggestions

6.1 Conclusion

This study effectively addresses the research questions posed: First, how can digital technologies, such as social media, enhance the participation of younger generations? We observed that digital technologies, especially social media, played a crucial role in enhancing the involvement of younger generations in cultural heritage. Through social media platforms, we successfully established an interactive and participatory online community, engaging in dialogue with and attracting a younger audience. This demonstrates the significant potential of digital technologies in fostering interest and participation among the younger generation in cultural heritage. Second, how can service (experience) design tools or technologies be utilized to enhance the digital experience of cultural heritage visitors? We found that service design tools and technologies played a vital role in enhancing the digital experience of cultural heritage visitors. By integrating tangible and intangible

media, we successfully provided a comprehensive and unified service experience. This validates the effective application of service design tools, enabling visitors to immerse themselves more deeply in the digital interactive experience of cultural heritage. Third, how does digital technology influence innovation in visitors' experiences? We found that digital technology has a profound impact on innovation in visitors' experiences. Through digital technology, we were able to create narratives that allow consumers, especially the younger audience, to interact with brands in novel and unconventional spaces, thereby creating unique experiential value. This highlights the importance of digital technology in inspiring visitors' interest in new knowledge, attracting the younger generation, and potential visitors.

This paper extensively explores cultural heritage initiatives and strategies in Taiwan, centering on the pivotal role of technology and digital platforms in fostering heightened engagement, particularly among the younger demographic. The adoption of digital technology is advocated as a means to effectively communicate cultural heritage narratives, especially in the context of the ongoing epidemic, with the goal of augmenting public understanding and appreciation. The practical application of digital technology at cultural heritage in Taiwan is examined, specifically focusing on its applicability in promoting active public participation.

6.2 Theoretical contribution

This study emphasizes the utilization of digital platforms to enhance the engagement of young individuals in cultural heritage. The conceptual framework explores the role of service design, experience innovation, and digital platforms, with a specific focus on leveraging these elements to foster active participation among the younger demographic. The research sheds light on the dynamic interplay between service design, digital platforms, and the involvement of young people, offering valuable insights for cultural heritage initiatives aiming to connect with the younger generation, especially in approaching young people through the use of new technologies. Designing appropriate services utilizing digital technology will bring a better experience to suit their pursuit of experience. Their needs have changed and innovative use of technology networks and people will bring better quality of service. This study provides insights from a service design perspective on how cultural heritage can integrate digital solutions into everyday organization and management [8]. Our research found that service design is made up of a unique set of interrelated resources that include participants, information and technology. This is in accord with what Spohrer [57] study suggests. Service Design for cultural heritage is providing a complete experience before, during and after the visit [10,11,12]. It provides practical examples of new and creative Interaction approaches for the application of cultural heritage and education [15, 30].

The emergence of smart environments will redefine how visitors conduct their experience, requiring managers to think about how they should use technology, and engage and redesign their services to remain competitive [58]. Live streaming is conducive to the improvement of service quality, resulting in the improvement of satisfaction and the expansion of consumer groups. Designing activities suitable for users of different digital platforms will encourage visitors to participate more actively and create experiences together. It has the effect of raising awareness of cultural heritage [4]. Through the potential for synergy between creative and digital approaches, young people can be enabled to participate meaningfully in cultural heritage [59]. The addition of the social platform provides a channel for visitors to share their own experiences and will connect with more users.

Cooperation with the government, creative companies, and communities will bring cultural heritage advantages in addition to their cultural history and infrastructure. The value of cultural products comes from the meaning and the uniqueness of cultural heritage can be highlighted through the combination of tangible products and culture. Partners can participate in strengthening heritage conservation and enhancing the competitiveness of cultural heritage. Collaboration between public agencies, creative companies, nonprofits and citizens is a key success factor [60]. The management of the experience is very important for young visitors, especially in terms of service process design [61]. Active cultural participation has a positive effect on young people's personal development. Cultural heritage can increase inspiration and engagement through interaction, contributing to an increased interest in new knowledge and attracting younger generations and potential customers [62].

6.3 Practical implications

This study unveils innovative strategies for the cultural heritage industry amid the epidemic, focusing on online operations. Private businesses play a vital role by managing cultural heritage sites efficiently, meeting diverse public needs, and engaging communities. Collaborative efforts revitalize heritage sites, preserving their cultural significance and creating jobs. A community-centered approach requires increased participation, with the younger generation driving future developments.

The study also explores new ways of engaging visitors, addressing a gap in research. It offers practical insights for marketing cultural heritage, especially through digital platforms applications. Future research can explore how to connect with young people through applications. Cultural heritage must find creative ways to integrate into daily life, ensuring continuous visitor interaction. This paper provides valuable references for industries seeking to maintain strong consumer connections.

Author Contributions

Conceptualization, W.-K.N. and C.-L.C.; Data curation, W.-K.N., Y.-S.S. and C.-L.C.; Methodology, W.-K.N. and C.-L.C.; Project administration, W.-K.N., J.-L.J., Y.-S.S.; Writing review and editing, W.-K.N., Y.-S.S.; Writing—original draft, W.-K.N.; Investigation and Supervision, W.-K.N., and J.-L.J. and Formal analysis, W.-K.N. and C.-L.C. All authors have read and agreed to the published version of the manuscript.

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