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CASE STUDY ON VISIT CHARACTERISTICS OF OPEN-AIR MUSEUM INFORMATION SERVICE USERS

Abstract:

The purpose of this research was to gather knowledge on the behavior characteristics of visitors when they use information services, to clarify kinds of effective information services for fostering understanding of and relationships with open-air museums, and to contribute to sustainable museum management. Here, "open-air museum" does not just refer to traditional museums where items are preserved and displayed by a specialist such as a curator. It also refers to new formats, such as the ecomuseums created in France where the region's residents actively participate in maintenance and management. The scope of this research encompasses a consideration of various configurations of open-air museums (local preservation, relocating collection, restorative construction). Three cultural institutions/regions of Japan (the Hiraizumi World Heritage Site, Kitakami City's park for traditional houses, and an open-air art museum in Iwate) were chosen. These facilities were already using a guide system for smartphones developed using the results of our previous research. In order to analyze the behavior characteristics of the visitors, we gathered quantitative data, with the cooperation of the facility managers, from the aforementioned guide system's GPS excursion logs and information browsing logs, then attempted analysis visualization using our own original GIS-based tools. By combining this quantitative method with qualitative ones, such as field observations and interviews, we were able to acquire knowledge on behavior characteristics specific to visitors of open-air museums, which unlike mere tourist facilities have a multifaceted role in cultural dissemination, tourism promotion, and regional development. Hereafter, we will implement information service design for other open-air museums in urgent need of development (facilities to preserve/pass on relics of the Great East Japan Earthquake etc.), i.e. we will apply and verify knowledge through action research while systematizing the methodology of information service design.

Keywords:

ICT Service Design, Museum Management, Tourist Behavior

Introduction

In recent years, between dwindling number of museum visitors to and shrinking operation budgets of the municipalities that operate them, Japanese museums face an increasingly harsh business environment. The same is true for open-air museums that have exhibits outside. These incur additional business pressures in the form of maintenance/management costs for their extensive grounds and buildings. As a result, one can find reports of these museums' attempts to increase the number of visitors by emphasizing hospitality and enhancing their attractiveness as tourism resources nationwide. Also, in contrast to traditional open-air museums staffed by curators, new efforts are being actively pursued to reexamine unique regional history, culture, and natural surroundings. Entire geographical regions are being chosen to become open-air museums, as with the ecomuseums created in France, where the region's residents actively participate in maintenance and management. However, as no structure for systematic and sustained business development has been established, more than a few have been just temporary fads.

One possibly effective approach to breaking free of the problems surrounding open-air museums would be to upgrade information services that foster understanding and relationships with the stakeholders, but up until now, research on ICT-based support has mainly been conducted in research offices and consisted of theoretical research and technical development related to decision-making assistance for tourism/spectating activities. There is little interdisciplinary or proven/practical research aimed at solving real problems encountered onsite at open-air museums.

The purpose of this research was to gather knowledge on the behavioral characteristics of visitors when they use information services, to clarify kinds of effective information services for fostering understanding for and relationships with open-air museums, and to contribute to sustainable museum management. The first section will discuss categories of open-air museum. Next, three open-air museums in Iwate Prefecture (Japan) will be analyzed as case studies and the characteristics of the museums and the systems implemented there will be explained. Finally, based on analysis of the case studies, this article will examine the behavioral characteristics of visitors who use information services at open-air museums.

Categories of Open-air Museum

The expression "open-air museum" refers to a museum in which architecture and exhibited items are gathered, preserved, and utilized outdoors. The objects of exhibition can consist of cultural assets, natural assets, or both. In this article, "open-air museum" does not refer only to traditional museums where items are preserved and displayed by a specialist such as a curator. It also refers to new formats, such as the ecomuseums created in France, where the region's residents actively participate in maintenance and

management. Open-air museums are rarely located only outdoors and are generally accompanied by a central indoor exhibition facility that houses informational functions critical to understanding the exhibits.

Due to the variety of their configurations, Ochiai (2009) has proposed dividing open-air museums into three types: local preservation, relocation/collection, and restored/constructed. The local preservation type refers to those composed of cultural assets such as monuments, historic sites, and early-modern monuments, in addition to natural assets, such as cultural scenery, natural World Heritage Sites, and geoparks, that are managed on location. The relocation/collection type refers to museums built around a specific theme. Items are moved from their original location to another location to exhibit them. The Skansen Museum in Sweden, which relocated architecture, such as traditional homes, to preserve and show it to the public, is representative of this type. Unlike the above two examples, the restored/constructed type refers to museums having outdoor exhibits that are composed mainly of restored or newly constructed items.

Case Studies of Information Services in Open-air Museums

Analysis Scheme

Mixed methods (quantitative and qualitative) were used to analyze behavioral characteristics of visitor groups having differing objectives and age ranges when using information services for a number of open-air museums in Iwate prefecture. For the quantitative survey, GPS excursion logs and information browsing logs were gathered from smartphone guide systems with the cooperation of the facility managers. Using original GIS-based tools, kernel density analysis was performed on the excursion logs. Visualization, via open data overlays (for locations of various facilities, such as rest areas, informational signs, etc.), was also performed on the excursion logs. For the qualitative data, verbal data collected through semi-structured interviews was modeled using the affinity diagram (STICKDOM and SCHNEIDER, 2012), and an attempt was made at data analysis based on behavioral observations in the field.

In consideration of the various configurations of open-air museums, three museums in Iwate Prefecture were chosen as the object of the case study (local preservation: Hiraizumi World Heritage Site, relocation/collection: Kitakami Michinoku Folklore Village, and restored/constructed: Ishigami-no-oka Museum of Art). These facilities already used a guide system for smartphones developed using the results of our previous research. Problems with museum management, and characteristics of the guide systems implemented to solve them, will be explained for all three case studies.

Case Study 1: Hiraizumi World Heritage Site

The revised International Cultural Tourism Charter of 1999 by ICOMOS (an advisory agency to the UNESCO World Heritage Committee) clearly points out that heritage preservation and tourism development are not mutually exclusive, and describes how a

sustainable relationship between preservation and cultural tourism can be realized by promoting tourism programs offering opportunities to understand heritage, return benefits to the local region, and receive the participation of local residents (ICOMOS, 1999). Since then, cultural tourism utilizing World Heritage Sites has gained momentum around Japan, but it must be noted that essentially there are still aspects of conflict on both sides of the issue. Meanwhile, the Universal Design (UD hereafter) and Tourism For All philosophies are placing emphasis on consideration for elderly, disabled, and foreign tourists. Reasons for this include the fact that travel has come to be recognized as a human right domestically and abroad, the aging of society, the diversification of tourists and small-group tourism, and efforts to attract foreign tourists.

In 2011, the Hiraizumi cultural heritage site was registered on the UNESCO World Heritage List as "Hiraizumi – Temples, Gardens and Archaeological Sites Representing the Buddhist Pure Land." Given the aforementioned context surrounding World Heritage Sites and tourism development, Hiraizumi has proceeded with the construction of sightseeing areas with UD in mind. One of the main problems in dealing with the increase in tourists from Japan and abroad was that in terms of preserving the scenery and cost, UD was difficult to implement with just onsite signs, facilities, and guide staff. There was also concern that distributing printed leaflets would lead to a littering problem. Hope was pinned on supplementary UD in the form of providing information using the tourists' own mobile phones. A tour guide system implementing UD (hereafter, "UD guide system") was developed in cooperation with Iwate Prefectural University. Implementation proceeded through participatory design using a human-centric design process and spiral repetition of community testing (ABE, 2013).

A distinctive feature of the UD guide system is that as it must account for individual differences in tourism needs (pace of tour and method of information acquisition, differences in needed information), a single mobile phone supports a variety of users. Information on sightseeing spots is transmitted via both push and pull methods. For context it uses the user's physical attributes and location. Physical attributes are selected from the screen, and location information is handled with GPS, QR codes, and RFID. Its functions include explanations, route assistance, quizzes, etc. By controlling these with UD support features, such as providing audio-only guidance to those with impaired vision, information can be provided in a way that suits the user's attributes. Audio guidance uses a voice synthesizer, and on the smartphone version the user can change the type of voice and speed. Information is provided on 26 spots located around the entire area .

Case Study 2: Ishigami-no-oka Museum of Art

The Ishigami-no-oka Museum of Art is located next to a government-designated roadside rest area (michi no eki). The museum's main attractions are open-air exhibits. The museum is a center of regional artistic and cultural activities, and strives to be an open place where anyone, from children to seniors, can freely visit and feel close to art. Museum visitors typically come by way of the rest area. Works are on display indoors,

and there is a permanent installation composed mainly of 17 sculptures on the 16-hectare grounds. As the number of visitors has been declining every year, the main issue for the management was to expand their range by appealing not only to the middle-age-and-up demographic that comprises their primary visitor base, but also to a younger demographic and families.

They collaborated with our laboratory to develop a smartphone guide system in order to lead visitors from the rest area to the museum, and encourage their interest with gamification. In implementing the system, a prototype reflecting the needs of tourists and learners, determined with the persona method (RIGHT and JAMES, 2007) was designed using a human-centric design process. Its effectiveness was then increased through iterative prototyping and evaluation (SATO et al., 2014).

Case Study 3: Kitakami Michinoku Folklore Village

The Michinoku Folklore Village grounds consist of roughly 7 hectares in a gorge in Kitakami City. It is a comprehensive open-air museum, featuring 29 examples of historical architecture, such as traditional homes, that were moved/restored there and 39 varieties of plant indigenous to the Kitakami area. This facility was difficult for elderly and disabled persons to use, as it is located in a hilly area and has many steep paths and stairs. Also, as the exhibits are numerous and span both the cultural and the natural, they were effectively explained to the visitors. Moreover, its management was strained by the expense of periodically replacing the thatch on the thatch-roofed buildings and other maintenance/administration costs for the historical architecture. As a result, the main issue for the management was to enhance its attractiveness as a tourism resource by emphasizing hospitality, thus increasing the number of visitors.

To solve these problems, a smartphone guide system was implemented, and the environment was improved to enable visitors other than those who came to study the traditional houses and plants, such as sightseers and local residents, to freely enjoy themselves. Visitors can now more effectively tour the facility by selecting a tour course that matches their own interests and time constraints. Additionally, easily walkable routes, restroom guides, and audio information were improved for elderly and disabled visitors (NAKAMURA et al., 2012).

Results and Discussion

The major insights gained from the three case studies are as follows. Open-air museums have wide, outdoor spaces around which the visitors circulate. Therefore, it is necessary to provide not only explanations of the attractions, but also information on routes leading to them, methods of transportation, and a further layer of comprehensive information that provides an overview of the museum as a whole. As such information is difficult to understand when it comes from onsite guide systems only, it is necessary to provide information on websites so that it can be studied by visitors in advance. This is especially

an issue for open-air museums composed of assets scattered over a wide area, such as the Hiraizumi World Heritage Site in the first case study. For open-air museums located in hilly areas, the ability to check tour routes and rest area locations in advance is useful from the perspective of UD.

Open-air museums are expected to play many roles in order to increase visitors, but their primary role is to be venues for education. As a result, their marketing and promotion efforts appear weak when viewed as tourism facilities. Post-visit customer relationship management (CRM) via SNS would probably be invaluable. At open-air museums that are bases for regional cultural activities, as in the second and third case studies, CRM aimed at the local residents actively participating in management is also important in gaining their understanding for the museum's activities.

Smartphone guide systems are well-suited to individual usage, but visits by groups such as families and friends are more common. Therefore it is important to actively adopt visual and interactive content that can be enjoyed in the context of sightseeing by groups and group learning, such as gamification and augmented reality. However, a hands-on approach to balancing these is needed to prevent visitors from focusing only on their screens, thus neglecting the scenery and outdoor exhibits that are the fundamental attractions of open-air museums. Furthermore, using smartphones outdoors makes it necessary to provide audio information simultaneously, or alternatively, as bright weather conditions can make screens difficult to see.

As seen in the second case study, in order to enable visitors to easily drop in from nearby tourism facilities and enjoy themselves during the gaps in their sightseeing schedules, open-air museums must provide explanations and guidance on their wide and varied sightseeing spaces in a way that matches the visitors' own interests and time constraints.

Visitor excursion logs are useful in developing areas surrounding open-air museums. For example, in the first case study, logs of visitors that toured the assets constituting the World Heritage Site were used to reexamine the environment and ascertain places with insufficient restrooms, benches, signs, and shops.

Conclusion

By performing behavioral analysis of information service users in the three case studies, this research obtained specialized knowledge of open-air museums, which play a multifaceted role in education, tourism promotion, and regional development. However, in terms of interested parties that support the management of open-air museums, this analysis was limited to visitors. The problem of information services for local residents remains.

The author wishes to address two large topics in the future. First will be the implementation of information service design for open-air museums to preserve/pass on relics of the Great East Japan Earthquake; i.e. the knowledge obtained in this research

will be utilized/verified through action research. As this disaster was a traumatic experience, opinions are divided regarding the utilization of sites related to it. Therefore, cautious analysis of the stakeholders will be conducted to clarify the form of information services needed, not only for visitors but also for regional residents and governments. Second, the knowledge acquired through the author's previous case studies and future action research will be systematized into a methodology for open-air museum information service design. The work done up to this point has confirmed that service design processes using human-centric design are effective for creating new services that incorporate a diversity of concerned parties. This will be the basis for future methodological research.

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