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## **DIGITAL-MARKETING METHODS WITH CONSIDERATION FOR THE PROPERTIES OF OPEN-AIR MUSEUMS: A FEASIBILITY STUDY IN JAPAN**

### **Abstract:**

In recent years, the business conditions of open-air museums in Japan have grown increasingly severe due to decreasing numbers of visitors and budgetary constraints on the local governments that operate them, in addition to the costs of maintenance and management of their vast sites and buildings. For this reason, a movement has been reported nationwide toward increasing numbers of visitors through making these facilities more attractive as tourism resources, by focusing on accessibility and hospitality, as well as strengthening ties to local communities. While enhancement of museum marketing activities can be considered to be one important method for overcoming these challenges faced by open-air museums, discussions have not yet reached the level of marketing as broadly defined, through creation of value based on the distinctive properties of open-air museums. This study describes feasibility studies of two open-air museums in Japan, with the aim of developing digital-marketing methods reflecting the distinguishing features of open-air museums. It was conducted through action research approach intended to learn about problem-solving in the field while researchers take part in field activities. Efforts were made to apply two digital technologies based on the two touchpoints of collecting information before visitors come to the museum and touring the site, reflecting the distinctive properties of open-air museums' vast sites and large numbers of visitors. For the former, we adopted a chatbot in promotional activities to respond to inquiries. For the latter, we developed a tour support application software with consideration for the physical burden on visitors, using wearable devices. While it was unable to integrate both of these systems together in a single system, through implementing each of these we were able to elucidate the effects expected of these as digital marketing tools at actual open-air museums and both technical and operational challenges in utilizing them.

### **Keywords:**

Open-air Museum, Museum Marketing, ICT Service, Action Research

## Introduction

In recent years, the business conditions of open-air museums in Japan have grown increasingly severe due to decreasing numbers of visitors and budgetary constraints on the local governments that operate them, in addition to the costs of maintenance and management of their vast sites and buildings. For this reason, a movement has been reported nationwide to increase numbers of visitors through making these facilities more attractive as tourism resources, by focusing on accessibility and hospitality, as well as strengthening ties to local communities (Abe, 2016) (Abe, 2017). While enhancement of museum marketing activities can be considered one important method for breaking through these challenges faced by open-air museums, it is a fact that most museums have little leeway to spare for marketing effects in light of budgetary and staffing constraints.

Museum marketing activities refer not only to publicity and promotional activities (marketing as narrowly defined) but also to activities to maximize satisfaction among museum visitors and strengthen relations of trust with visitors, so that they will continue to use the museum over the long term (marketing as broadly defined). The definition of marketing has changed with the times, and today it refers to value creation and relationship building vis-a-vis related parties, for both profit-seeking and nonprofit enterprises. Against this background, marketing activities also have come to be recognized as important for museums as well. Related discussions began during the 1980s in the West, and in the latter half of the 1990s *Museum Marketing*, by Kotler (1998), a leading authority on marketing, was published, providing further enlightenment on the subject. In Japan as well, the Japan Museum Management Academy was established around the same time, and since then studies have continued in this area, as one related domain of research. Together with the spread of the digital technologies of smartphones and social media, it has become easier for open-air museums too to engage in marketing initiatives, as narrowly defined, but discussion of marketing as broadly defined, through value creation based on the distinctive properties of open-air museums, has not advanced sufficiently.

The objective of this study is to develop digital-marketing methods based on the distinctive properties of open-air museums, in order to enhance marketing activities for open-air museums. As a feasibility study for this purpose, we carried out action research (Lewin, 1946) in which the researchers interact in field activities to gain knowledge on problem solving in the field, at two open-air museums in Japan. Specifically, we attempted to employ a chatbot and wearable devices in the two touchpoints of collecting information before visitors come to the museum and touring the site, in light of the distinctive properties of open-air museums' vast sites and their wide ranges of visitors.

## Research Framework

### Distinctive Properties of Open-air Museums

In general, open-air museums refer to museums located on vast sites, where materials such as architectural heritage or historical structures have been collected (relocated)

and made available for viewing by the public. However, the subjects of open-air museums and the forms of their installations vary widely. Based on previous studies in Japan and around the world that touched on the concept of open-air museums, Ochiai (2009) identified the following four distinctive properties of open-air museums:

1. Rather than referring directly to a museum located out of doors, an open-air museum must have an outdoor exhibition space that involves relocation or reproduction of environmental features.
2. An open-air museum must combine both nature and the humanities, and furthermore it must represent a sublimation of a general museum.
3. At the same time it features an outdoor exhibition space, an open-air museum also must have a core museum.
4. The interior exhibitions of the core museum and the exterior exhibitions must be linked, and the interior exhibitions must be a distillation of the outdoor exhibitions.

Looking at the diverse installation forms of open-air museums, Ochiai also proposes the following three categories: those preserving the original terrain, those involving relocation and collection of the items on exhibition, and those involving restoration and construction. 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. The distinctive properties and categories of open-air museums in this study will be based on the above definitions.

Open-air museums are situated on vast, hilly sites. For this reason, not only are tours difficult for the elderly and visitors with young children, in addition to persons with disabilities, but it also must be recognized that the physical burden is heavy for many other visitors as well. In light of their roles of protecting historical structures, sites, and topography, it is difficult for open-air museums to realize barrier-free status to the same extent as indoor museums, due to their physical conditions. However, since expectations for use of open-air museums in tourism are rising in response to the cultural and economic strategy proposed by the Japanese government in 2017, the museums are expected to realize accessible environments together with their marketing activities.

## **Research Methodology**

This study is oriented strongly toward practical research to contribute to solving problems in the field, it takes the form of action research to gather knowledge on solutions to problems faced in the field through the researchers intervening in activities on site. First, we chose as the subject fields two open-air museums in Iwate Prefecture that we have partnered with in previous studies and with which we have track records

in joint development and use of tour support systems: the World Heritage Site in the town of Hiraizumi (local preservation type) and an open-air art museum in the town of Iwate (restored/constructed type). Since open-air museums are not only educational and cultural facilities but also tourism sites, at the stage of this feasibility study we focused first of all on their aspects as tourism sites, based on social demands for museum tourism activities. Tourism activities are best understood divided into the pre-visit, on-site, and post-visit phases.

To better understand the visitors to open-air museums, which have vast sites and diverse ranges of visitors, we attempted to apply two digital technologies, based on the two touchpoints of collection of information prior to visits and on-site tours. For the former, we adopted a chatbot for responding to inquiries and promotional activities. For the latter, we developed a tour support application software (“app” hereinafter) using wearable devices, reflecting consideration for the physical burden on visitors. Utilizing big data collected through these efforts, we employed both spatial methods using geographic information systems (GIS) and linguistic methods using text mining to verify the possibilities of creating new museum value suited to visitors' needs and activities. In evaluating and improving these digital methods, we also advanced qualitative approaches through observing the participation of visitors and interviewing them, in cooperation with the curators. Through the above efforts, we proceeded through spiral cycles of “analysis, planning, implementation, and evaluation” of action research.

### **Applied Digital Technologies**

A chatbot is a generic term for a conversational technological interface applying artificial intelligence (AI). Business and local governments have begun utilizing chatbots in areas such as responding to inquiries, and these also can be said to be useful for digital marketing applications to investigate matter such as customer needs and interests through analysis of data collected. Three options are available for adoption of chatbots, depending on the needs of each individual facility: a) Use of the APIs published by the main social media platforms, b) Programming using development tools that feature software components for chatbots, and c) Use of specialized tools that make it possible to create simple bots merely through defining sample dialogues.

The wearable devices employed were wristbands that visitors were asked to wear, in order to collect and accumulate heartbeats and other physical information. Physical information collected from wearable devices was collected on the server every five seconds, together with location information, via the smartphones used to view the Bluetooth-connected tour app. The physical information was analyzed in order on the server side, and content such as good times to take breaks and more easily walkable detours was distributed to the smartphones (Kudo et al., 2016). This system used Epson's Pulsense wearable devices and Android smartphones. Data from wearable devices was collected via the WebAPI Consortium's GotAPI (Device WebAPI Consortium, 2015).

## Feasibility Study

### The World Heritage Site in Hiraizumi (Case 1)

At “Hiraizumi – Temples, Gardens and Archaeological Sites Representing the Buddhist Pure Land,” added to the World Heritage List in 2011, efforts to create an accessible tourism site began even before the addition to the World Heritage List. Five properties make up the World Heritage Site. The central property, Chusonji Temple, is located atop a hill with an elevation of 130 m, after a steep approach about 1 km long. The site includes numerous temples and treasure houses, and it would take about two hours to view all of them. An issue involved at this site was how to provide barrier-free information including that concerning tours of nearby World Heritage Sites (Abe, 2013).

Beginning in 2015, we have employed a guide app that uses wearable devices not only to explain cultural properties but also to encourage visitors to take breaks and hydrate, and to provide barrier-free information (such as locations of and routes to nearby barrier-free restrooms and break areas), in a timely manner (Abe, 2018). We have had these information services tested by more than 50 visitors, and user assessment and improvements continue. In addition, in 2018 we used the API of LINE, a major social media platform in Japan, in an attempt to offer a chatbot that would provide visitors with model tour plans among multiple World Heritage Sites based on their needs (Yamauchi et al., 2018).

### Open-air Art Museum in Iwate (Case 2)

The open-air art museum in the town of Iwate includes indoor exhibitions as well as exhibitions on its 16-hectare site, centered on 17 sculptures. It also has an attractive floral garden, with seasonal flowers planted on its exterior grounds. Since in 2015 the exterior exhibitions, along with other areas in the town, were named a *Forest Therapy® Site*, as an area whose relaxation effects were recognized by experts from the field of forestry science (certifying agency: Forest Therapy Society (2008)), it is seeing increasing use by visitors across a wide range of ages, for purposes such as health improvement and recreation in addition to art appreciation, and there are growing expectations for informational support on subjects other than explanation of the works of sculpture as well.

We started by implementing a guide app to provide information to support walking tours of the woods (for example, by making physical exertion visible, displaying information on break areas and sites with pleasant views reflecting physical information, and describing seasonal vegetation), instead of merely describing the sculptures. Then, beginning in 2016, we held numerous workshops for local residents and facility managers to verify the results of these informational services (Chiba et al., 2018) (Abe, 2018). In addition, in 2019 we began a trial implementation of Microsoft's Bot framework to respond to prospective visitors' inquiries. This made it possible not only to respond to inquiries but also to promote upcoming events at the facility (Banya et al., 2020)

## **Results and Considerations**

### **Utilization of the Chatbot**

In Case 1, we adopted a chatbot in the development of tour plans for five constituent cultural properties and nearby sightseeing spots. The spots that visitors chose, and the routes that they used, compared to their tour plans and times on site, can serve as basic data for considering how to attract visitors by class and by season. In Case 2, we tentatively added a chatbot for responding to inquiries and promoting events. This proved effective for ascertaining points on which facilities had not given sufficient consideration to visitors and potential tour needs. About 10% of total inquiries could not be addressed using the FAQ offered by the museum, and these included many questions about exterior exhibitions and tour routes. It is thought that there are needs to enhance FAQs and communicate information proactively from chatbots in light of the spatial structures specific to open-air museums, with their external exhibitions.

While in both cases the chatbots were used to collect information from visitors before they arrived, in addition, it should be considered for on-site uses. Cases also have been reported of use of chatbots for art appreciation in indoor art museums (Schaffer et al., 2018). It is conceivable that future efforts should not only use chat to respond to inquiries from perspective future visitors but also handle site-specific inquiries, such as those thought to be specific to open-air museums, in particular, due to their large sites (e.g., "where is the nearest restroom," or "where is the work I want to see?") while visitors are on site, taking advantage of the GPS information available from smartphones.

### **Utilization of Wearable Devices**

If the wearing of wearable devices were to become commonplace, then it would be possible to collect various types of physical information in everyday activities, making it possible to provide not only explanatory information but also information reflecting greater consideration for individual physical differences. However, at present it would seem to be too early to adopt such devices for use in visitor services. Still, it is thought that they can contribute fully at this stage to environmental improvements at open-air museums, through usage linked to workshops in which experts and various other related parties take part. For example, with regard to their utilization in tourism it is anticipated that the needs will increase in the future for test tours and workshops on barrier-free access at open-air museums as well. In such activities, it can be expected that use of data on records in the vicinity, in addition to qualitative information on subjects such as participants' awareness and needs, could enable more effective and efficient workshops in terms of ascertaining the issues and building consensus.

Visitor movement log data, including personal information collected, would enable analysis such as the following, which would be difficult using spatial (location) information alone. For example, in Case 1, it should be possible to lessen the burden of a tour on visitors by setting up benches and detours through identifying locations such as those at where heartbeats exceed base values or visitors frequently take breaks. However, it is conceivable that use of data on acceleration, not just heartbeat, would help to improve the precision of barrier identification. In Case 2, it should be possible to identify, and inform visitors of, locations and routes where they can relax, through using

changes in heartbeat to surmise emotional changes such as relaxation and stress. In addition, since open-air museums often include interior facilities that summarize and provide overviews of the exterior exhibitions, it also would be preferable to use not only GPS but also beacons and other technologies to enable seamless access to location information, both indoors and outdoors.

## Conclusion

This study has described two feasibility studies in Japan intended to develop digital-marketing methods based on the distinctive properties of open-air museums. In light of the distinctive properties of open-air museums in that they involve vast sites, it attempted use of a chatbot and wearable devices, focusing on the touchpoints of collecting information prior to visits and touring the site. While it was unable to link systematically, initiatives in both of these areas, through putting each into practice it was able to elucidate both the expected results of use as a digital marketing in actual open-air museums and the resulting technical, and operational challenges. It is likely that the series of tasks from providing visitors with a chatbot and a tour app through utilizing data on the records of tours and inquiries obtained therefrom to improve the site environment and plan new events, on a continual basis, would correspond to museum marketing as broadly defined—that is, maximizing the satisfaction of museum visitors and enhancing interaction among visitors, to encourage continual and long-term use of the museum.

Future plans call for close examination of uses of digital technologies through analysis of the series of behavior from when a visitor first arrives through his or her remembrance, and sharing, of the experience. After that, we will aim to learn related knowledge through the marketing process of understanding customer needs, designing a customer-driven marketing strategy, constructing an integrated marketing plan, building customer relationships, and capturing customer value (Kotler, 2012).

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