

Article

Constructing Technological Assistance (TA) on Rural Tourism in Nishikawa, Yamagata, Japan- From the Destination Management Organization (DMO) Approaches

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Abstract: Applying technological assistance (TA) to rural tourism development has become important since 2000. In the TA process, the destination management organization (DMO) was defined as the leader who takes responsibility. The purpose of this study was to discuss the issues and challenges of constructing TA on rural tourism from DMO approaches. The study site was Nishikawa, Yamagata, Japan. We applied literature analysis and semi-structured interviews for data collection. The DMO used mobile games as an interface to integrate the tourist experience and local tourism resources. Tourists followed the instructions to enjoy the game and locals also improved the IT readiness in the rural area.

Keywords: Technological assistance, Rural tourism, Destination management organization, e-Tourism

1. Introduction

When the destination management organization (DMO) is applied to technological assistance (TA) in the development of rural tourism, controversial issues are observed. Since 2000, tourists have visited the rural area with popular Apps, such as Geocaching and Pokémon GO. These Apps combine the local characteristics and the fun of the game, increasing visits to rural areas and impacting local communities environmentally and in terms of welfare (Rauschnabel et al., 2017). Previous studies also pointed out that game-oriented or technological activities affected the environment and the promotion of rural tourism. Although tourists spend time in rural communities, the experience of the game-setting or technological experience is important in travel (Dorward et al., 2017). During the COVID-19 epidemic, the public had the opportunity to understand and experience the technological applications integrated into daily life because of the COVID-19 prevention and control policies through online working, shopping, and entertainment (Schnitzer et al. 2020). Therefore, the TA on travel planning assistance become popular and highly accepted (Backhaus et al., 2023). The DMO was defined as the leader responsible for strategic planning, management, and organization of destination resources, while also working closely with different levels of government agencies, local authorities, tourism businesses, and other destination stakeholders to promote rural tourism development (Middleton et al., 2009). In constructing TA, it is necessary to consider natural settings, social interactions, technological structure, and interfacial channels. The natural setting is defined as how DMO applies TA to introduce local natural resources to the tourists. The social interactions are applied TA to build up the relationships among the local community, tourists, and tourist sectors. In the technological structure, the technology, the assistance dominations, perception, and information format are chosen. The interfacial channels are used to define how TA approaches the tourists to establish empirical configuration or stimulate awareness (Demir et al., 2023; Huang et al., 2022). The purpose of this study is to discuss the process of the DMO in constructing technological assistance and the DMO approaches to rural tourism development.

2. Methods

We analyzed the DMO of Nishikawa town (Nishikawa), which was the tourism department of the Nishikawa government. Nishikawa town is located in Yamagata Prefecture and is a famous tourist spot with Gassan Mountain. The population was about 5200 in the 2020s. It is known for snow and skiing in summer and has highly valued local history and religions about Mt. Gassan. However, due to the reduced number of skiers, they need to find a new way to increase the number of tourists. The ultimate goal of Nishikawa is to increase the number of tourists from 490,000 to 1 million within three years and the number of migrants from 2 to 37

within three years. We applied document analysis and semi-instructed interviews in data collection. The document analysis was conducted to describe the processes of DOM on rural tourism in Nishikawa town. The interviews were carried out to discuss the current issues in constructing technological assistance on rural tourism by DMO.

We collected relevant literature, official SNS, government publications, related projects, journal articles, newspapers, and pamphlets for constructing a database. The interviewees included the mayor of Nishikawa town, government employee A of the tourism department, and Managers B and C of the tourism association. We collected data from interviewing DMOs, the information on the media, and the public report. The automatic technical analysis tool, “Key Term Extraction”¹ was used for the analysis in three steps: thesaurus comparison, grammar analysis, and statistical analysis. For the database, a dictionary comparison was used by establishing lists of words to compare the input files. In the grammar analysis, the grammar program of natural language processing technology was used to analyze the noun phrases in the document and determine criteria to filter out inappropriate words. In the statistical analysis, the phrases whose statistical parameters met certain conditions were extracted after analyzing the files and accumulating enough statistical parameters. The number of the simplest statistical parameters was counted to investigate the frequency occurrences of words versus the relationship between words (Tseng, 1998).

3. Results and Discussions

3.1. Using the Technological Assistance TA on Rural Tourism Development

The major keywords in the concept included online, food, town, walks, introductions, and goals. The concept was discussed on the major purpose of TA in Nishikawa Town online. DMOs believed that TA provided the local interpretation instantly and costs of holding special events or hiring interpreters were reduced to promote local tourism. On the other hand, the online interpretation also guided the tourist walking trail to visit local tourist spots or interests. The DMO believed that TA guidance helped tourists to understand the content easily (Fig. 1). The main keywords in Fig. 2 included Games, Puzzles, Sightseeing, Technology, Shops, Exchanges, Travel, and Festivals. Creating online puzzle games promoted rural tourism and attracted gamers or technological fans to Nishikawa Town. The gamers interacted with local stores to understand local history and festivals to complete the game. Therefore, the DMO believed that the TA development for gamers was a new market to keep the population growing. On the other hand, during the trip, TA also interested gamers for festivals, nature, and local foods.

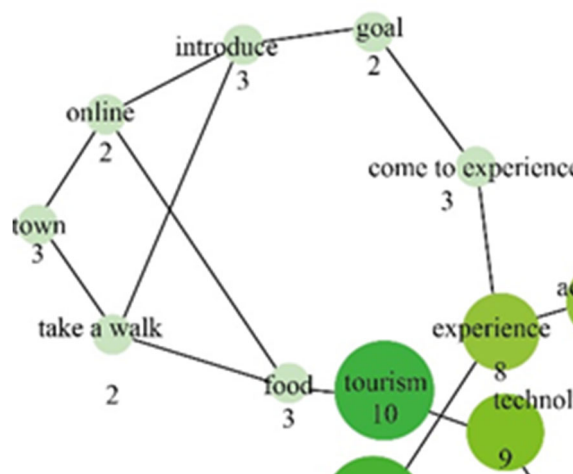


Fig. 1. The purpose of applying technology assistance.

¹ http://rsp.itc.ntnu.edu.tw/SAMtool/SegWord_CGI.html (accessed on July 28, 2023)



Fig. 2. The context of technology assistance on rural tourism.

3.2. Opportunities for Technology-Assisted Rural Tourism

The major keywords in this concept included Town mayor, change, network, plan, Dewa Sanzan, Sugamo, and Nishikawa meeting (Fig. 3). The mayor proposed to apply the TA to develop rural tourism because the tourism development in Nishikawa needed to change. Therefore, in Sugamo, Nishikawa, they developed a puzzle game combining local history, beliefs, and food. Based on TA, the theme of the puzzle game was decided by the local community through town meetings.

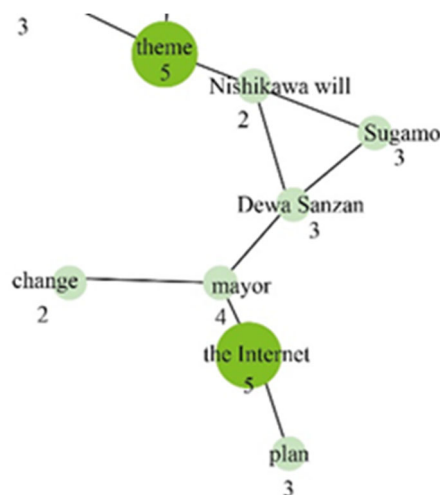


Fig. 3. Opportunities for technology-assisted rural tourism.

3.3. Process of DMO Using TA

3.3.1. Natural Setting and Social Interactions

To develop tourism, the DMOs of Nishikawa developed mobile games as puzzles considering Mt. Gassan named the Gassan escape game. The Gassan investigation team was formed to find the stories and secrets in the ancient documents of Gassan and Nishikawa town. Users log in to the official SNS to find tips about tourism spots in Nishikawa town to complete the mission. The event started on April 23 2023 and is held daily from 9:00–17:00. The different themes are provided for the four seasons. The puzzle game matches the background of the story with videos in which the performers are residents. The DMO of the Gassan escape game was the tourism department of the Nishikawa town government. They planned to attract puzzle gamers who are in their 20s to 30s who can visit rural areas through the Gassan escape game.

3.3.2. Technological Structure and Interfacial Channels

The game was designed by Creator’s NEXT, Inc. (Tokyo, Japan). The local stores and tourist attractions provide signal coverage. Participants use a smartphone to scan the QR code on the event posters at local stores, Meisuiikan, or the city hall, enjoy the explanatory video and play the game. When each puzzle is solved, they try the next level and find relevant tips. After all the puzzles are successfully solved, the local specialty exchange voucher is provided in the LINE software. The whole journey takes about two hours by car. The Construction of TA is shown in Table 1.

Table 1. Construction of TA.

Natural Setting	Social Interactions	Technological Structure	Interfacial Channels
Gassan beliefs, Natural resource, local stores.	Gamification, Setting target tourist, Increase the number of tourists	Creator’s NEXT, Inc. Wi-Fi environment, Signal coverage	Mobile Game via Smartphone

3.4. DMO’s Approach to Rural Tourism Development

We analyzed messages released by the DMO of media. We used AI and Nishikawa Town as keywords to search news from Yahoo JP and Google. Until July 2023, there were 45 news published on the Nishikawa Town news system on regional media such as Yamagata Shimbun and Tohoku IT News, local editions of national media such as NHK Tohoku, Asahi Shimbun, and Mainichi, local news outside Yamagata such as Minyu-net, and industry news such as Educational Network, INSIDE, and PR TIMES. The messages released by DMO are shown in Fig. 4.

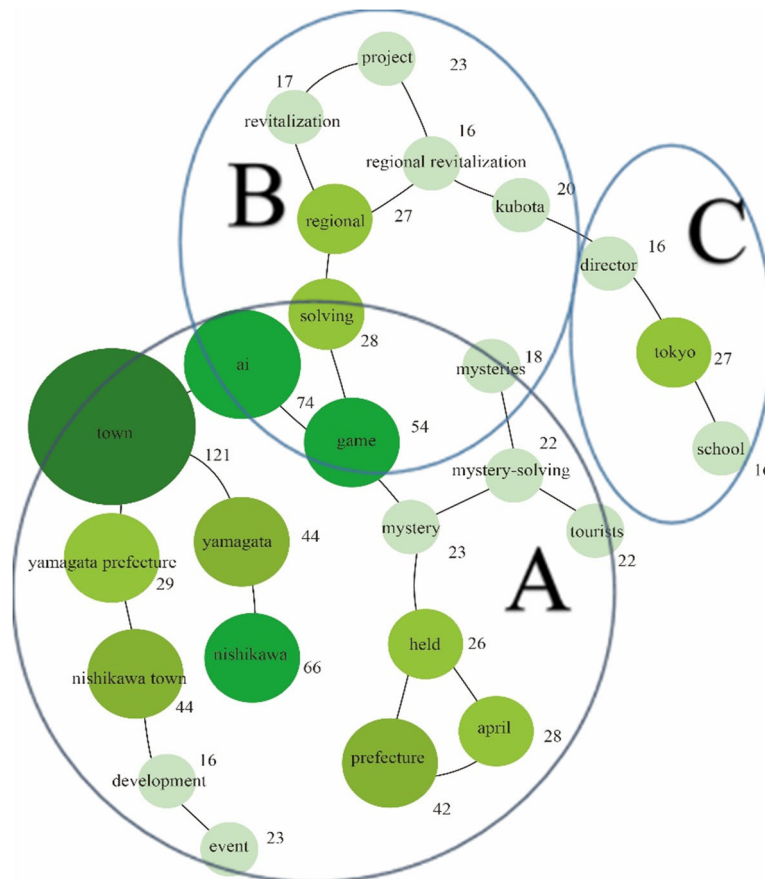


Fig. 4. The DMO approaches on rural tourism development.

The major issue around June 2022 was the Comprehensive Partnership Agreement between Nishikawa Town, Yamagata, and Creator's NEXT Inc. The DMO applied the AI project to realize "a digital garden city DIGIDEN," in Japan.² In April 2023, the news was focused on the press conference in which the AI game was introduced. The news also reported the AI game in the context of local tourism resources and landscapes in Nishikawa Town which were discussed in town meetings among 30 Nishikawa residents, including Mayor Kanno. "Gassan Ice Cream" and "Shizu Onsen Bathing Ticket" were offered to everyone who solved the puzzle. In this process, the DMO discussed with residents on how to interact with tourists through the TA project.³ This project was recognized by the residents as the first "puzzle-solving game using AI" and the promotion for increasing the number of non-resident tourists in the town.⁴ Based on this project, the town improved the qualities of technology infrastructure such as the coverage of WiFi, and renewed the facilities.⁵ This project was also listed on the corporation of the hometown tax donation platform. Therefore, national corporations supported rural tourism.⁶

In the news, DMOs indicated that the number of tourists in Nishikawa Town was around 780,000 in 2006, but declined sharply to 490,000 in 2021. The DMO believed the AI puzzle games were for a small group tour. The tourists used their smartphones and vehicles around the town. The AI game integrated the context of local history and characteristics so it guided tourists on trails to local and town stores. Based on game records, the DMO modified management policies.⁷

At the beginning of the project in June 2022, in the IT newsletter, the reporters discussed how the DMO selected the tourism resource for digital content. The role of the TA in Nishikawa was focused on entertainment or job sharing. The DMO defined the major mission of the TA as establishing a pattern of know-how to attract independent tourists and to rebrand Nishikawa Town.⁸ The developer of the AI game won the Prime Minister's Award for Value Design Contest, "Regional Revitalization Project by Solving Mysteries." The AI project was expected to have an economic effect on local communities as a new form of regional revitalization.⁹ Since May 2023, the newsletter from tourism, IT, game, and education started to publish the news about the AI puzzle game in Nishikawa Town, Yamagata. The planner of the AI puzzle game introduced how to integrate tourism resources into AI games at Nishikawa Junior High School.¹⁰ The mayor was also invited to an international forum to discuss how to conduct the TA on rural tourism development. In the educational-related newsletter, the news was discussed or shared on the AI games in Nishikawa on family or school field trips.¹¹

4. Conclusions

DMO applied the mobile games as an interface to integrate the tourist experience and local tourism resources. While playing puzzles, tourists were involved in the game setting and needed to visit local attractions to accomplish the mission. The reasons for choosing mobile games as the interface were the high smartphone use rate among tourists and the low cost of providing tourist service. The local stores and tourist attractions needed to improve the coverage of cell phone and Wi-Fi signals, and their technological capabilities. Additionally, TA was used as an opportunity to modify the technology infrastructure in the town. Tourists followed instructions to enjoy the game. Applying the TA to rural tourism development not only enriched the tourist experience but also improved the IT readiness in rural areas. On the other hand, because of the proliferation of smartphones, the maintenance fee

² Nishikawa Town and Creator's NEXT, Inc. have concluded a comprehensive collaboration agreement. Available online: <https://www.youtube.com/watch?v=qrb2zBo1Zds> (accessed on July 18 2003)

³ In Nishikawa Town, Yamagata Prefecture, the region's first "mystery-solving game using AI" will start on April 23rd (Sunday) with the aim of increasing the number of exchanges and consumption within the town. Available online: <https://www.jiji.com/jc/article?k=000000055.000038825&g=prt> (accessed on July 18 2003)

⁴ Tourism promotion AI is used to town tour with a puzzle-solving game "Experience unique nature and culture" Nishikawa Town/Yamagata. Available online: <https://mainichi.jp/articles/20230511/ddl/k06/040/021000c> (accessed on July 18 2003)

⁵ "Digital Garden City" Initiative. Available online: <https://www.chisou.go.jp/sousei/about/kouhukin/pdf/saitaku.pdf?fbclid=IwAR1jS1c66FjrjyhN0F2DbIRyM3XvbFImz-hNgPSHDIE1DIg8jGp5eU0JZU> (accessed on July 18 2003)

⁶ First in the region! Excursion-type tourism using AI: Regional revitalization project through puzzle-solving games. Available online: <https://furu-con.jp/projects/537/detail> (accessed on July 19 2003)

⁷ Nishikawa Town and Creator's NEXT, Inc. have concluded a comprehensive collaboration agreement. Available online: <https://www.town.nishikawa.yamagata.jp/chomin/2022-0614-1624-1.html> (accessed on July 22 2003)

⁸ Nishikawa Town and Creator's NEXT, Inc. have concluded a comprehensive collaboration agreement! Regional promotion through mystery-solving events using AI. Available online: <https://localbook.work/2022/06/23/nishikawa/> (accessed on July 6 2003)

⁹ "Regional Revitalization Project by Solving Mysteries" won the Prime Minister's Award at the 6th Value Design Contest. Available online: https://dx-with.jp/pr_times/54445/ (accessed on July 6 2003)

¹⁰ Special class on the theme of "How to live in the AI era" for students at Nishikawa Junior High School in Nishikawa Town, Yamagata Prefecture. Available online: <https://www.minyu-net.com/release/prtimes/000000056000038825.php> (accessed on July 6 2003)

¹¹ Nishikawa Town attracts tourists by touring tourist facilities with AI puzzle-solving game. Available online: <https://www3.nhk.or.jp/news/yamagata/20230516/6020017499.html> (accessed on July 10 2003)

of mobile games became affordable in rural tourism development. Future studies need to focus on the tourist experience and local community changes caused by TA in rural tourism development.

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