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Management of Water-Based Tourism Attractions: A Case Study of Umbul Ponggok, Klaten Regency, Special Region of Yogyakarta

G Jagat Raya R An¹, Nurul Asri Rahayu², Nurul Hashilah³, Tiara Sukma⁴

Magister Kajian Pariwisata, Universitas Gadjah Mada, D.I. Yogyakarta, Indonesia^{1,2,3,4}

*Corresponding Author Email : jagatran776@gmail.com

Abstract

This study aims to examine and analyze water resource management and monitoring systems in the development of the Umbul Ponggok tourist destination in Klaten Regency, Central Java. Using rapid assessment and brief assessment methods through observation and in-depth interviews with the managers of BUMDes Tirta Mandiri, this study evaluates nine key indicators, divided into two aspects: water management and monitoring systems. The results of the study indicate that Umbul Ponggok has a very high level of importance (score 4) across all indicators, while the quality of implementation varies. Some indicators, such as water sanitation, clean water distribution, pH balance, and community empowerment, received very good quality scores. However, aspects such as tourist safety, rice field irrigation, management of culinary SMEs, and facility maintenance still require improvement. This study points out the importance of sustainable and participatory water resource management in supporting community-based tourism development.

Keywords: Umbul ponggok, water tourism, water management, sustainable tourism, BUMDes, community empowerment.

Abstrak

Penelitian ini bertujuan untuk mengkaji dan menganalisis pengelolaan sumber daya air serta sistem pengawasan dalam pengembangan destinasi wisata Umbul Ponggok di Kabupaten Klaten, Jawa Tengah. Dengan menggunakan metode penilaian cepat dan asesmen singkat melalui observasi dan wawancara mendalam bersama pengelola BUMDes Tirta Mandiri, penelitian ini mengevaluasi sembilan indikator utama, yang terbagi dalam dua aspek: pengelolaan air dan sistem pengawasan. Hasil penelitian menunjukkan bahwa Umbul Ponggok memiliki tingkat kepentingan yang sangat tinggi (skor 4) pada seluruh indikator, sementara kualitas penerapannya bervariasi. Beberapa indikator seperti sanitasi air, distribusi air bersih, keseimbangan pH, dan pemberdayaan masyarakat memperoleh skor kualitas sangat baik. Namun, aspek seperti keamanan wisatawan, irigasi sawah, pengelolaan UMKM kuliner, dan pemeliharaan fasilitas masih memerlukan peningkatan. Penelitian ini menegaskan pentingnya pengelolaan sumber daya air secara berkelanjutan dan partisipatif dalam mendukung pengembangan pariwisata berbasis masyarakat.

Kata kunci: umbul ponggok, wisata tirta, pengelolaan air, pariwisata berkelanjutan, BUMDes, pemberdayaan masyarakat.

1. INTRODUCTION

Klaten is one of the regencies that significantly contributes to local original income (PAD) through its tourism sector. Currently, Klaten's tourism sector is a highlight for its community. As a region that has recognized the potential of the tourism sector, Klaten Regency is considered successful in driving the community's economy through tourism. Competent human resources, tourism destination management, and good collaboration between stakeholders are the keys to the success of tourism development in Klaten Regency. The success of Klaten's tourism development can be seen by the emergence of tourist attractions that draw many visitors to the area. Based on data,

the number of tourist visits to Klaten Regency has continued to experience a significant increase over the past few years, as shown in Table 1

Table 1. Number of Tourist Visits to Klaten Regency

Tourist Category	Tourist Total			
	2020	2021	2022	2023
Domestic Tourists	1399167	1632085	4777338	6309870
Foreign Tourists	22199	463	60461	163882
Total	1421366	1632548	4837799	6473752

Source: Badan Pusat Statistik 2025

Tourism development in Klaten adopts the theme of water tourism (*wisata tirta*), which prioritizes water-based activities for tourists. Klaten Regency is blessed with abundant natural water resources, which serves as the primary potential for tourism development in the area. Klaten tourism is currently undergoing significant growth, evidenced by two tourist attractions in Klaten winning awards at the 2022 Anugerah Pesona Indonesia (API) Awards. These attractions are leading destinations in Klaten Regency. Umbul Ponggok has become one of the most popular water tourism attractions in Klaten Regency. Carrying the water tourism theme, Umbul Ponggok earns an annual turnover of 6 to 9 billion IDR and contributes 40% of its profit to village original income. Besides the successful management of Umbul Ponggok, Ponggok Village has also been named a green tourism concept village by the Ministry of Tourism and Creative Economy. As a highly awarded attraction, Umbul Ponggok is a concrete example of good destination management. Everything from competent human resources to abundant natural resources is managed well, resulting in an economic impact for the community. However, this success requires further attention to minimize future negative impacts on the environment. Therefore, in this study, the researchers aim to examine and analyze the water management programs and monitoring systems at the Umbul Ponggok tourist attraction.

2. RESEARCH METHODOLOGY

This study employs a qualitative research approach utilizing rapid and brief assessment methods through a combination of direct observation and in-depth interviews. Field observations were conducted at Umbul Ponggok to obtain firsthand information regarding existing conditions, tourism activities, and the overall management practices of the destination. Based on these observations, the research team was able to formulate an analysis in the form of assessment results interpreted from several key perspectives, including tourism potential, attractiveness, supporting facilities, and management performance. In addition to observation, semi-structured interviews were carried out to gain deeper insights into institutional and operational aspects. The interviews were conducted with one of the main managers of BUMDes Tirta Mandiri, Mr. Sri Mulyono, who is also a long-time resident of Ponggok Village. This approach allowed the researchers to capture both technical and contextual information, ensuring a more comprehensive understanding of the development and sustainability of Umbul Ponggok as a community-based tourism destination.

2.1. Research Approach and Design

This study aims to design a website that functions as an information and promotional medium for the Leang-Leang Archaeological Park in Maros Regency, South Sulawesi. The website is expected to enhance public awareness of the site's significance and to provide useful information for

tourists interested in visiting the destination. To achieve these objectives, the study adopts a qualitative research approach using a Research and Development (R&D) design. This approach is selected because the primary focus of the research is the development of a practical product, namely a website, that can be directly implemented in the field. The R&D approach emphasizes systematic product development based on user needs and real-world conditions. In this context, the website is designed to support both tourism promotion and educational objectives related to archaeological heritage conservation.

2.2. Research Procedures

The research was conducted through a series of structured development stages that prioritize user needs, particularly those of tourists and site managers at the Leang-Leang Archaeological Park. The research process began with a needs analysis, followed by website design, development, and evaluation stages. The needs analysis stage focused on identifying information gaps and usability issues faced by both visitors and park management. Based on the findings from this stage, the website was designed to provide relevant, accessible, and engaging content. The development stage involved implementing the designed features using appropriate web technologies, while the evaluation stage assessed the functionality, usability, and effectiveness of the website in delivering information and enhancing user experience.

2.3. Data Sources and Collection Techniques

To obtain comprehensive insights into user needs and information management practices, data were collected using several qualitative data collection techniques, including interviews, observations, and documentation analysis. Interviews were conducted with the management of the Leang-Leang Archaeological Park to gain an in-depth understanding of site management practices, particularly the challenges faced in delivering accurate and engaging information to visitors. These interviews aimed to identify the types of information that should be included on the website and the features required to ensure ease of access and user convenience. The results indicated that visitors require detailed information on the site's history, location, available activities, and the importance of heritage conservation. Field observations were carried out through direct visits to the archaeological park to examine the physical condition of the site and observe interactions between visitors and site managers. This process helped identify existing information delivery methods, limitations in on-site information access, and the availability of visitor facilities. Observations also provided insights into how visitors currently obtain information while on-site. Documentation analysis involved reviewing existing promotional materials, such as brochures, banners, and other printed media used to disseminate information about the park. This analysis helped identify strengths and weaknesses in current information presentation. In addition, historical and cultural documentation related to the archaeological site was collected and used as core content for the website development.

2.4. Data Analysis

After data collection, the information was analyzed qualitatively to support the website design and development process. The analysis focused on identifying user needs, information priorities, and functional requirements for the website. Findings from interviews, observations, and documentation were synthesized to determine essential content elements and interactive features. The website design emphasized **user experience (UX)** and high functionality, ensuring ease of navigation, accessibility, and responsiveness across multiple devices, including desktops and smartphones. Features such as interactive maps, photo galleries, search functions, and discussion forums were incorporated to enhance user engagement. Following development, the website underwent usability testing involving potential users. This evaluation assessed ease of use, effectiveness of information delivery, and overall user satisfaction. Feedback obtained from users was analyzed to identify areas for improvement, leading to refinements aimed at optimizing website performance and service quality. The methodology applied in this study adheres to the principles of Research and Development, which focus on creating and refining products that can be directly applied in real-world contexts.

(Sukmadinata, 2005). The resulting website is expected to contribute to tourism management and cultural heritage preservation while serving as a reference model for other archaeological sites seeking to utilize digital technology for promotion and visitor engagement.

3. FINDINGS AND DISCUSSION

3.1 Water Sanitation

The water sanitation management program for the pool is crucial, considering that the main attraction of Umbul Ponggok is underwater photography. To maintain the clarity and cleanliness of the water, the management routinely performs sanitation once a year during the month of Ramadan. This cleaning schedule is chosen because Umbul Ponggok has fewer visitors during Ramadan, allowing the management to clean the pool by suctioning mud and removing plastic waste. This is necessary because water contaminated by plastic waste can interfere with underwater photography and reduce the aesthetic visual quality of the photos produced. The readiness of BUMDes Tirta Mandiri in conducting this sanitation program demonstrates very good quality; thus, the research team assigned a score of 4 to the water sanitation aspect of Umbul Ponggok.

3.2 pH Balance Measurement and Monitoring Management

To maintain the pH balance of the water at Umbul Ponggok, which has a temperature of up to 18°C, the management places several types of fish in the pool. Besides maintaining the pH balance, the fish also help keep the pool clean. Some of the fish placed in the pool, such as koi, tilapia (*nila*), grass carp (*braskap*), and pomfret (*bawal*), consume moss and algae. The pH level is measured periodically by the management. Based on these efforts, the research team agreed to give a score of 4 to the quality of the pH balance measurement and monitoring management aspect.



Figure 1. Condition of the Umbul Ponggok Pool)

3.3 Rice Field Irrigation Channels

Besides its economic utilization, water management at the Umbul Ponggok tourist attraction is also used for agricultural or agro-purposes, where gardens and rice fields are irrigated using water from the attraction. This aligns with survey results showing that the importance of implementation in this irrigation aspect has a score of 4 (very good); however, its practical application is not yet seen as optimal, receiving a score of 3 (good). This is supported by interview results where the manager stated that while the water provides added economic value for the company, it is also utilized in the agricultural sector.

3.4 Water Distribution to the Community

Water distribution to the community is carried out using underground connection pipes connected directly to residents' homes. The clean water system and supply from the underground Clean Water Treatment Plant and Umbul Ponggok springs use "down-feed" and "up-feed" distribution systems. According to Sari et al. (2018), the up-feed system distributes clean water using pumps from a ground tank to each user. Meanwhile, the down-feed system pumps water from a ground tank to an upper tank, where it is then distributed to users via gravity. Distributing clean water using pumps involves high costs; therefore, the management took the initiative to drill deeper to find a self-flowing spring. After drilling to a depth of 50 meters, the spring was finally found.

3.5 Tourist Safety

Tourist safety is vital in water tourism management. In the case of Umbul Ponggok, the management has deployed 4 certified Search and Rescue (SAR) personnel and 4 certified security personnel. Efforts to maintain tourist safety also include installing information boards regarding recommendations and prohibitions while in the water. For example, swimming is prohibited during rain because water is a high-risk medium for lightning.



Figure 2. Tourist Safety Warning

During the research period, an incident occurred where a tourist began to drown while swimming at Umbul Ponggok. The tourist experienced leg cramps while trying to help their child who was struggling to swim; both tourists panicked and called for help. Based on direct observation, there were no specific personnel stationed immediately around the pool. However, several workers who saw the incident shouted and rushed to throw a lifebuoy tied to a rope. Seconds later, the SAR team dove into the pool to provide assistance and brought both tourists to the edge. The lack of promptness and alertness from the SAR team indicates that capacity building in this area is needed.

3.6 Monitoring Community Development and Empowerment

The management empowers and develops the community by distributing information to all Ponggok village residents regarding the procedures for tourism activities to satisfy tourist needs. This is a step taken for community members who have not yet been absorbed into the workforce at the attraction. Besides local residents, the management also recruits workers from outside Ponggok due to a lack of local specialists deemed capable of facilitating certain technical fields. Additionally, empowerment is done by opening various job opportunities for locals, such as providing kiosks for food and beverage sales or other tourism services. Furthermore, parking management has been returned to the local RT/RW (neighborhood/hamlet) level, with continued coordination with the community regarding the operation of parking areas. This parking arrangement is managed well among the management, the community, and the RT/RW. Beyond well-managed fund allocation, there is also structured management for information dissemination so that every community member can serve as a key informant due to the equal information received regarding the tourist attraction.

3.7 Monitoring Culinary SMEs

Monitoring culinary SMEs around Umbul Ponggok is done by classifying the types of food sold at each tenant. The manager coordinates with all tenant owners to ensure they sell different foods from one another. This is done with the hope that tourists can choose from a diverse menu according to their tastes. However, in practice, the manager feels that tenant owners are unable to provide a diverse menu. Most provide similar foods, such as chicken dishes, rice dishes, and noodle dishes.



Figure 3. Culinary SME Area

3.8 Asset, Facility, and Inventory Monitoring

Monitoring of assets, facilities, and inventory has been carried out maximally, where 30% of the total income from Umbul Ponggok is budgeted for the Village Budget (APBDes). These funds are used for the management of the Umbul Ponggok attraction itself. Examples include the renovation of the pool—which previously used natural stones for its edges—the construction of tenants along the poolside, and the building of *joglo* (traditional pavilions). This monitoring and renovation are done so visitors can enjoy the tour safely and comfortably. However, during the researcher's assessment, some facilities appeared poorly maintained, such as gazebos and chairs and tables that looked worn out.

3.9 Ecosystem Balance Monitoring

To maintain cleanliness and pH balance, the management releases several types of fish into the pool. Large fish are chosen for release to avoid cannibalism of smaller fish. The rapid growth of "black fish" has become a challenge for the management in monitoring the fish population. Black fish are often considered less attractive as props for underwater photography. Therefore, one way the management reduces the black fish population is by allowing internal parties to freely take certain types of black fish, such as catfish, black tilapia, and black *combro*.

4. CONCLUSION

Based on the assessment conducted at Umbul Ponggok, it was found that the attraction has a very high level of importance across all indicators, both in the water management program and the monitoring system. The assessment indicators for water management include pool sanitation (such as waste removal), pH balance measurement management, soil irrigation channels, and clean water distribution to the community. The monitoring system indicators include tourist safety, monitoring of local community development and empowerment, SME monitoring, asset/facility/inventory monitoring, and ecosystem balance monitoring. The quality of implementation for each indicator varies. Indicators such as clean water sanitation, pH balance monitoring, water distribution,

ecosystem balance monitoring, and community empowerment showed high-quality results because they have been implemented effectively. Meanwhile, indicators such as rice field irrigation channels, culinary SME monitoring, asset/facility monitoring, and tourist safety (including mitigation and rescue team readiness) still require improvement.

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