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Innovating Digital Tour Guiding Systems Within Technology-Driven Creative Tourism Packages at Planetarium Jakarta

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ABSTRACT

The rapid advancement of digital technology has transformed the landscape of tourism services, encouraging the development of innovative and immersive visitor experiences. This study explores the innovation of a digital tour guide system integrated into technology-based creative tourism packages at Planetarium Jakarta. The research aims to analyze how digital guiding tools—such as interactive applications, augmented visual content, and multimedia storytelling— can enhance visitor engagement, learning experience, and overall service quality in science-based tourism attractions. Using a qualitative descriptive approach complemented by user experience analysis, this study examines the design, implementation, and perceived value of digital tour guide innovation within the Planetarium context. Data were collected through observation, stakeholder interviews, and visitor feedback analysis to assess the effectiveness of digital integration in delivering astronomical education and entertainment. The findings indicate that digital tour guiding not only increases accessibility and interpretive depth but also strengthens creative tourism elements through interactive narratives and personalized exploration pathways. The innovation contributes to the transformation of conventional guiding models into adaptive, technology-driven service systems that align with contemporary tourist behavior and digital literacy trends. Furthermore, this study highlights the strategic role of digital tour guide innovation in supporting sustainable urban tourism development, particularly in educational and scientific attractions. The research offers practical implications for tourism managers, policymakers, and creative industry stakeholders in designing technology- enhanced tourism products that are both educational and experiential.

Keywords: *digital tour guide, creative tourism, technology-based tourism package, visitor experience, Planetarium Jakarta, tourism innovation*

1. INTRODUCTION

The rapid development of digital technology has significantly transformed the tourism industry, influencing not only how destinations are promoted but also how tourists experience attractions. Digitalization has reshaped tourism services by enabling interactive, personalized, and immersive travel experiences. This transformation is closely related to the emergence of smart tourism, where information and communication technologies become integral components in tourism management and visitor engagement [4]. Smart tourism environments enable destinations to provide real-time information, interactive interpretation systems, and enhanced visitor services.

In Indonesia, the tourism sector continues to adapt to technological transformation. With diverse natural and cultural attractions, Indonesia possesses strong potential to compete in the global tourism market. However, maintaining competitiveness requires continuous innovation in tourism services, particularly through the integration of digital technologies. Technological developments have allowed tourism providers to develop digital interpretation systems and interactive tourism experiences that enhance visitor engagement and destination competitiveness [3].

Along with these developments, the role of tour guides has also evolved. Traditionally, tour guides were responsible for providing verbal explanations and guiding tourists physically within destinations. However, in the digital era, tour guides are expected to adopt new

competencies, including the ability to utilize digital media, multimedia storytelling, and interactive technologies to enhance visitor experiences. Digital tour guiding integrates human interpretation with technological tools such as mobile applications, augmented reality, and multimedia displays to create more engaging learning environments [12].

This transformation is particularly relevant for educational tourism destinations, where the combination of knowledge dissemination and interactive experience is essential. Educational attractions increasingly adopt digital technologies to improve visitor engagement, provide immersive learning opportunities, and deliver complex scientific information in an accessible format [6]. One destination that reflects this transformation is Planetarium Jakarta, located in the Taman Ismail Marzuki cultural complex.

Over time, technological development and changing visitor expectations have encouraged Planetarium Jakarta to innovate its educational tourism services. Visitors today, especially younger generations, are accustomed to digital media and interactive content. Consequently, tourism attractions must adapt by incorporating digital technology into visitor interpretation systems.

In response to this trend, Planetarium Jakarta has begun implementing digital tour guiding innovations that combine traditional guiding methods with technological tools. These innovations include multimedia storytelling, interactive visual simulations, and digital educational content that enhance visitor understanding of astronomical phenomena.

In addition, the development of technology-based creative tourism packages has become an important strategy to improve visitor engagement. Creative tourism focuses on active participation, experiential learning, and meaningful interaction between visitors and destinations. When supported by digital technology, such tourism experiences become more immersive, interactive, and educational [11].

Despite these developments, the effectiveness of digital tour guiding in enhancing visitor experience remains an important issue for investigation. Understanding how digital innovations contribute to visitor engagement, educational value, and overall tourism experiences is essential for improving tourism management strategies.

Therefore, this study aims to analyse the forms of digital tour guiding innovation, the role of digital tour guides, and their impact on visitor experiences at planetarium Jakarta.

However, despite the growing adoption of digital technologies in tourism, limited studies have specifically examined the integration of digital tour guiding systems within educational tourism attractions, particularly in the context of science-based destinations such as Planetarium Jakarta. Therefore, this study aims to fill this gap by exploring how digital tour guiding innovation contributes to visitor experience and creative tourism development.

2. LITERATURE REVIEW

Innovation in Tourism

Innovation is defined as the development or implementation of new ideas, products, or processes that create value and improve organizational performance. According to Schumpeter, innovation involves the creation of new combinations that transform economic structures and generate competitive advantages [1].

In the tourism sector, innovation plays a crucial role in enhancing destination competitiveness and sustainability. Tourism innovation may include new tourism products, improved services, technological integration, and creative visitor experiences. Hjalager explains that innovation in tourism enables destinations to adapt to changing market demands and visitor expectations while strengthening long-term sustainability [2].

Digital technology has become a major driver of tourism innovation. The rapid development of information technology has significantly transformed tourism management and service delivery. Technologies such as mobile applications, augmented reality (AR), and virtual reality (VR) enable tourism providers to create interactive experiences and personalized services for visitors [3]. These technological innovations contribute to the development of more immersive tourism experiences that enhance visitor satisfaction and engagement.

Digital Tour Guides

Tour guides play an important role in tourism by connecting visitors with destinations through interpretation, information delivery, and cultural mediation. Traditionally, tour guides provided information verbally and guided visitors physically during tours. However, the development of digital technologies has transformed the guiding process.

Digital tour guiding refers to the integration of technological tools with traditional guiding practices to enhance information delivery and visitor engagement. Digital technologies enable tourism providers to create more interactive and immersive interpretation experiences that improve visitor understanding of tourism attractions [3].

The integration of technology in guiding activities creates a hybrid guiding model where human guides collaborate with digital systems. This model enhances interpretation quality while maintaining personal interaction between guides and tourists. According to Weiler and Black, tour guides continue to play a critical role in tourism interpretation as facilitators of visitor experiences and mediators between destinations and tourists [12].

Digital tour guides can utilize various technologies, including mobile applications, multimedia storytelling platforms, augmented reality visualization, and interactive digital displays. These technologies allow tourists to explore information independently while still receiving interpretative support from human guides. Research indicates that digital technologies significantly

improve visitor interaction and interpretation effectiveness in tourism experiences [5].

Technology-Based Creative Tourism Packages

Creative tourism is a form of tourism that emphasizes active participation, learning experiences, and creative engagement between tourists and destinations. Unlike conventional tourism, which focuses primarily on sightseeing, creative tourism encourages visitors to become active participants in the tourism experience.

Richards and Raymond define creative tourism as tourism that offers visitors the opportunity to develop their creative potential through active participation in learning experiences that are characteristic of the destination [10]. This concept highlights the importance of experiential learning and meaningful engagement in tourism activities.

Technology plays an important role in developing creative tourism experiences. Digital technologies enable tourism providers to design interactive activities, immersive storytelling environments, and personalized visitor experiences. According to Neuhofer et al., technology-enhanced tourism experiences allow visitors to interact with tourism content in more dynamic and participatory ways [5].

Technology-based creative tourism packages combine tourism services with digital innovations to create engaging educational experiences. These packages often integrate interactive technologies such as virtual simulations, multimedia presentations, and digital learning platforms. Such technological integration enhances visitor participation and strengthens the experiential dimension of tourism.

Based on the reviewed literature, this study assumes that digital tour guide innovation can strengthen creative tourism packages by enhancing interpretation quality, interactivity, and visitor engagement.

3. METHOD

This research uses a qualitative descriptive approach to explore the innovation of digital tour guiding systems in technology-based creative tourism packages at Planetarium Jakarta.

Qualitative research was chosen because it allows researchers to understand experiences, perceptions, and interactions in depth. The approach is suitable for examining how digital innovations influence tourism experiences and guiding practices.

Research Location

The research was conducted at Planetarium Jakarta, located in Taman Ismail Marzuki, Jakarta, Indonesia. The location was selected because it represents an educational tourism attraction that integrates digital technology with scientific learning experiences.

Data Collection Techniques

Data were collected using several qualitative methods:

1. In-depth interviews with tour guides and staff members of Planetarium Jakarta to understand the implementation of digital guiding innovations.
2. Participant observation during guided tours and visitor activities to observe how digital technologies are used in practice.
3. Documentation analysis, including institutional reports, digital platforms, and visitor feedback related to tourism experiences at the planetarium.

Informants

Key informants in this research include:

- Planetarium tour guides
- Educational staff or management personnel
- Visitors as supporting informants

The study involved 5 key informants consisting of 2 tour guides, 1 management staff member, and 2 visitor. And the informants were selected using purposive sampling, based on their knowledge and involvement in digital tourism activities at Planetarium Jakarta.

Table 1. Research informants

Informant	Role	Purpose
Informant 1	Tour Guide	Understanding digital guiding implementation.
Informant 2	Staff	Understanding management perspective.
Informant 3	Visitor	Visitor experience.

Table 2. Forms of Digital Innovation at Planetarium Jakarta

Innovation	Function	Visitor Benefit
Multimedia simulation	Visual explanation	Better understanding
Digital display	Information support	Easier learing
Interactive storytelling	Visitor engagement	More immersive experience

Data Analysis

Data analysis was conducted using the Miles and Huberman interactive model, which includes:

1. Data reduction – selecting and focusing relevant information.
2. Data display – presenting data in descriptive narratives and thematic categories.
3. Conclusion drawing and verification – interpreting findings and validating patterns identified in the data.

This analytical process enables the researcher to understand how digital tour guiding innovations contribute to tourism experiences in educational destinations.

4. FINDINGS AND DISCUSSION

4.1 Digital Tour Guide Innovation at Planetarium Jakarta

The study found that Planetarium Jakarta has implemented several digital innovations to enhance visitor experiences. These innovations focus on integrating technology into educational tourism activities while maintaining the interpretative role of tour guides.

One key innovation is the use of multimedia visual simulations during star theatre shows. These simulations allow visitors to observe astronomical phenomena such as planetary motion, constellations, and celestial events in an immersive environment. The use of digital visualization technologies supports knowledge interpretation and improves visitor engagement in science-based tourism attractions [6].

Digital displays and interactive media are used to support explanations provided by tour guides. These tools help simplify complex scientific concepts and make them easier for visitors to understand. The integration of digital media into tourism interpretation reflects the broader transformation of tourism experiences toward technology-enhanced services [5].

In addition, the implementation of digital technology is supported by direct interaction between tour guides and visitors. Based on interviews, a tour guide stated: "Digital simulations really help us explain complex astronomical concepts. Visitors usually understand faster when they see the visualization directly rather than only listening to explanations."

This statement indicates that digital tools function not only as supporting media but also as an essential component in improving the effectiveness of interpretation delivery. During observation, visitors were seen focusing their attention on the simulation screen and responding more actively when visual content was displayed. This suggests that the integration of multimedia elements enhances both engagement and comprehension.

The implementation of digital tour guiding systems at Planetarium Jakarta can be visually observed through multimedia simulations and interactive displays, as shown in the figures below :



Figure 1. Digital simulation of astronomical phenomena at Planetarium Jakarta



Figure 2. Tour guide explaining digital content to visitors Source: Detik.com (2024)



Figure 3. Visitor interaction with multimedia display during guided session

The implementation of digital tour guiding systems can be visually observed through multimedia simulations and interactive displays, as shown in Figure 1–3.

Figure 1 illustrates the use of digital simulation in presenting astronomical phenomena, providing immersive visualization for visitors. Figure 2 shows how tour guides facilitate the use of digital content, while Figure 3 demonstrates visitor interaction with multimedia displays, indicating active engagement during the guided session.

4.2 Role of Digital Tour Guides in Creative Tourism Packages

Digital tour guides at Planetarium Jakarta play multiple roles beyond traditional guiding activities. They function as technology facilitators, storytellers, and educators who guide visitors through interactive learning experiences.

Tour guides help visitors interact with digital technologies such as simulation systems and multimedia displays, ensuring that visitors can fully utilize the available technological facilities. This role reflects the evolving competencies required for tour guides in the digital tourism era [12].

Furthermore, tour guides act as storytellers who transform scientific information into engaging narratives. Storytelling approaches enhance visitor engagement and improve knowledge retention during tourism experiences. By combining human interaction with digital media, the guiding system creates a more dynamic learning environment where visitors become active participants in the educational tourism experience.

From the management perspective, digital innovation is also considered a strategic step in

improving service quality. A staff member explained: "We are trying to adapt to the needs of modern visitors who are more familiar with digital technology. The integration of digital tools is expected to make the experience more interactive and attractive."

This highlights that digital tour guiding is not only an operational change but also part of a broader strategy in tourism development. Tour guides are required to develop new competencies, including the ability to operate digital systems and engage visitors through interactive storytelling.

During observation, tour guides were seen actively guiding visitors in understanding the simulation, explaining key points, and encouraging questions. This shows that the role of human guides remains crucial in ensuring that digital technology is used effectively.

4.3 Impact on Visitor Experience

The integration of digital tools appears to positively influence visitor experience, particularly in terms of engagement, learning, and entertainment value. Visitor seemed more attentive during the presentation and were more actively involved in observing the visual simulations.

First, digital technologies increase visitor engagement by providing interactive visualizations and immersive learning environments. Such technologies encourage visitors to actively explore tourism content rather than passively receiving information [13].

Second, digital simulations improve the educational value of tourism experiences by simplifying complex astronomical concepts. Visual simulations enable visitors to better understand scientific phenomena that may otherwise be difficult to interpret through verbal explanations alone [9].

Third, the integration of digital technologies enhances visitor satisfaction by creating tourism experiences that are modern, informative, and entertaining. Technology-enhanced tourism experiences often generate higher levels of visitor satisfaction due to their interactive and immersive characteristics [5].

The result supports falk and dierking [9], who argue that museum and educational attraction experiences become more meaningful when visitors are actively engaged in the learning process. Similarly, Tussyadiah et al. [13] suggest that immersive technologies can improve user attention and experiential quality in tourism settings.

The integration of digital tools appears to positively influence visitor experience in particulary in terms of engagement, learning, and entertainment value. Visitors appeared more attentive during the presentation, as observed through their active participation and focus on visual simulations. This observation indicates that digital visualization encourages active engagement and improves visitor focus during the learning process.

One visitor stated: "The visual simulation makes it easier to understand how space works. It feels more interesting than just listening to explanations."Another visitor mentioned: "I feel more engaged because I can see the movement of planets directly. It makes the experience more memorable."These responses indicate that digital technology enhances not only cognitive understanding but also emotional engagement. Visitors are not only receiving information but also experiencing the content in a more immersive way.

Furthermore, digital tools contribute to higher satisfaction levels, as visitors perceive the experience as modern, interactive, and educational. This finding confirms that technology-based tourism experiences can create added value in educational tourism settings.

These findings are consistent with previous studies that highlight the role of technology in enhancing tourism experiences. Neuhofer et al. [5] emphasize that technology enables more interactive and immersive experiences, while Tussyadiah et al. [13] argue that digital environments can increase user engagement and satisfaction.

In the context of this study, the integration of digital tour guiding systems demonstrates how educational tourism attractions can adapt to technological advancements and changing visitor expectations.

5. CONCLUSIONS

This study demonstrates that digital tour guiding innovation plays an important role in enhancing technology-driven creative tourism experiences at Planetarium Jakarta. The findings show that the integration of digital technologies with traditional guiding practices creates a hybrid interpretation model that combines human storytelling with interactive digital media. Using multimedia simulations, digital displays, and technology-assisted interpretation, Planetarium Jakarta has successfully transformed its educational tourism services into more immersive and engaging visitor experiences.

The results indicate that digital tour guiding systems significantly improve visitor engagement, support educational learning processes, and enrich the overall tourism experience. The presence of digital technologies allows complex astronomical concepts to be presented in a more accessible and visually engaging format, thereby enhancing visitor understanding and interest in space science. At the same time, tour guides continue to play a crucial role as interpreters and facilitators who guide visitors in interacting with digital content and contextualizing scientific information through storytelling and explanation.

Furthermore, the development of technology-based creative tourism packages contributes to the transformation of educational tourism destinations into interactive learning environments. By integrating multimedia simulations, digital storytelling, and guided interpretation, Planetarium Jakarta demonstrates how educational tourism attractions can adapt to the expectations of contemporary tourists who seek interactive, technology-enhanced, and experiential tourism experiences. This integration of education, technology, and creativity reflects the growing

importance of digital innovation in modern tourism development.

From a theoretical perspective, this study contributes to the growing literature on digital tourism innovation and creative tourism development by highlighting the role of hybrid digital–human interpretation systems in educational tourism destinations. The findings suggest that digital tour guiding should not be viewed as a replacement for human guides but rather as a complementary system that enhances interpretation quality and visitor engagement.

From a practical perspective, the results provide insights for tourism managers, policymakers, and creative industry stakeholders in developing innovative tourism services that integrate technology, education, and visitor engagement. Tourism destinations, particularly those with educational or scientific themes, can adopt similar digital interpretation strategies to enhance visitor learning experiences while maintaining meaningful human interaction.

However, this study has several limitations. The research focuses on a single case study at Planetarium Jakarta, which may limit the generalizability of the findings to other tourism contexts. Future research could expand the scope of investigation by examining digital tour guiding innovations in different types of educational tourism destinations, such as science museums, heritage attractions, or cultural centers. Additionally, further studies may explore visitor perceptions and behavioral responses toward digital tour guiding systems using quantitative approaches to better understand their impact on visitor satisfaction and learning outcomes.

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