THE AUGMENTED REALITY (AR) BASED ON ARTIFICIAL INTELLEGENCE (AI) IN INTEGRATED MARKETING COMMUNICATION (IMC) IN TOURISM VILLAGES

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ABSTRACT

This study examines the implementation of Augmented Reality (AR) based on Artificial Intelligence (AI) in Integrated Marketing Communication (IMC) in tourism villages, driven by the need for advanced technology to sustain the attractiveness of tourist destinations. The main objectives are to explore the potential of AR and AI technologies in enhancing tourist experiences, identify best practices in IMC, and analyze economic and environmental impacts. A literature review approach was used to gather findings from recent studies, indicating that AR provides deeper and more informative interactive experiences, while AI enables personalized experiences tailored to individual tourist preferences. The research methodology involved critical analysis of relevant literature, including case studies from several tourism villages in Indonesia and abroad that have successfully implemented these technologies. The results indicate that the implementation of AR and AI can significantly enhance destination attractiveness, strengthen branding, and support sustainable tourism development through better environmental management and more active involvement of local communities. However, challenges such as implementation costs, data privacy, and technological dependency need to be considered. This research provides a foundation for developing effective integrated marketing strategies using AR and AI, meeting the needs of modern tourists who increasingly demand informative, interactive, and sustainable experiences.

Keywords: Augmented Reality; Artificial Intellegence; Integrateg Markeing Communication; Tourism Village; Sustainable Tourism Development

INTRODUCTION

Augmented Reality (AR) based on Artificial Intelligence (AI) has become one of the technological innovations that have attracted the attention of various sectors, including tourism. In the context of tourism villages, the application of AI-based AR can provide a more immersive interactive experience for tourists, thereby increasing the attractiveness and competitiveness of tourist destinations. The choice of the title "AI-Based Augmented Reality in Integrated Marketing Communication in Tourism villages" is based on several reasons. With rapid

technological development, tourism villages need to adopt the latest technology to remain relevant and attractive to modern tourists. AR and AI offer new ways to present information and experiences that conventional methods cannot provide. In addition, AR can provide real-time information about local history, culture, and attractions, while AI can personalize the tourist experience based on their preferences. This aligns with research findings showing that interactive technology can enhance tourist satisfaction and engagement (Kim et al., 2020). The application of AR and AI can also assist in the management and conservation of the tourism village environment. By providing information about conservation and environmentally friendly practices through AR, tourists can become more aware and engaged in conservation efforts (Huang et al., 2021).

The phenomenon of digital technology and internet development has significantly changed how we communicate and interact. In the context of tourism, AR and AI technologies have shown great potential in improving service quality and tourist experiences. According to a report from the World Tourism Organization (UNWTO), digital technology plays a crucial role in transforming global tourism, and tourism villages are no exception to this trend. Tourism villages in Indonesia face global challenges such as competition with other destinations and changing tourist preferences towards unique and authentic experiences. AI-based AR technology can be a solution to highlight the uniqueness and characteristics of tourism villages, thereby enhancing their appeal (Buhalis & Amaranggana, 2015). Modern tourists tend to seek more interactive and informative experiences. AR and AI can meet this need by providing rich information and immersive experiences. Research by Tussyadiah et al. (2018) indicates that AR technology can increase tourist engagement and satisfaction. In the digital era, Integrated Marketing Communication (IMC) is becoming increasingly important to create consistent and integrated messages across various communication channels. AR and AI can be used to create more dynamic and engaging marketing campaigns, which can enhance brand awareness and engagement (Shankar et al., 2020).

The following are several tourism villages in Indonesia that have implemented AI based AR in IMC in Tourism Villages

Table 1. Tourism Villages in Indonesia that Implement AI Based AR in IMC

Tourism Village	Demographics	
	Regency	Province
Bhuana Jaya	Kutai Kartanegara	East Kalimantan
Nglanggeran	Gunungkidul	Yogyakarta
Tembi	Bantul	Yogyakarta
Panglipuran	Bangli	Bali

Resource: www.bhuanajaya.desa.id, www.visitgunungkidul.com/nglanggeran, www.tembi.net, www.penglipuran.com, 09 July 2024

This research aims to explore and identify the potential use of AI-based AR in IMC in tourism villages. Specifically, this study aims to evaluate the effectiveness of AR and AI in enhancing tourist experiences, identify best practices in implementing AR and AI-based IMC, and analyze the economic and environmental impacts. This research will measure how the use of AR and AI can increase tourist satisfaction and engagement in tourism villages. Previous studies have shown that interactive technology can positively impact the tourist experience (Yung & Khoo-Lattimore, 2019). Additionally, this research will identify strategies and best practices for

integrating AR and AI into IMC campaigns for tourism villages. This is crucial to ensure that this technology is used effectively and efficiently (Leung et al., 2013). The impact of AR and AI usage on the local economy and environment will also be evaluated. By providing better information and richer experiences, it is hoped that there will be an increase in the number of visits and environmental awareness among tourists (Huang et al., 2021).

Based on the research findings, policy and strategy recommendations will be developed for local governments and tourism village managers in implementing AR and AI technology as part of IMC. This is expected to assist in the development of more sustainable and competitive tourism villages (Kim et al., 2020). References from various studies indicate that the adoption of AR and AI technology in tourism not only increases tourist attractiveness but also brings economic and environmental benefits. For instance, research by Buhalis and Amaranggana (2015) shows that tourist destinations that adopt smart technologies like AR and AI can enhance their tourism experience and competitiveness. Therefore, this research is highly urgent in providing insights and guidance for tourism village managers to maximize the use of this technology. By integrating AR and AI into marketing strategies, tourism villages can achieve competitive advantages and contribute to sustainable tourism development.

LITERATURE REVIEW

Augmented Reality

Augmented Reality (AR) is a technology that overlays digital information, such as images, videos, or 3D models, onto the real world through devices like smartphones, tablets, or AR glasses. This technology enhances the user's perception of reality by integrating virtual elements with the physical environment. In recent years, AR combined with Artificial Intelligence (AI) has enabled more personalized and interactive experiences in tourism. These advancements allow for real-time, contextually relevant information delivery, enhancing tourist engagement and satisfaction (Kim et al., 2020; Huang et al., 2021). Such technologies are particularly effective in Integrated Marketing Communication (IMC) for promoting tourism villages. By utilizing AR and AI, tourist destinations can provide visitors with enriched narratives, immersive historical reconstructions, and dynamic guides that adapt to user preferences. This innovative approach not only attracts more tourists but also ensures a memorable and engaging visit, thereby boosting the destination's overall appeal and competitive edge in the global tourism market.

Artificial Intellegence

Artificial Intelligence (AI) is a branch of computer science that focuses on creating systems capable of performing tasks that typically require human intelligence, such as learning, reasoning, problem-solving, perception, and language understanding (Russell & Norvig, 2020). In the context of tourism, AI integrated with Augmented Reality (AR) has been used to create more personalized and interactive experiences. This technology enables the delivery of contextually relevant and real-time information, which enhances tourist engagement and satisfaction (Kim et al., 2020; Huang et al., 2021). Research shows that the use of AI-based AR in Integrated Marketing Communication (IMC) in tourism villages can

enhance destination promotion by providing rich narratives, immersive historical reconstructions, and dynamic guides tailored to user preferences (Clément et al., 2020). This innovation not only attracts more tourists but also ensures a more memorable and engaging visit, thereby increasing the appeal and competitive edge of the destination.

Integrated Marketing Communicatuion

Integrated Marketing Communication (IMC) is a strategic approach to promoting a consistent message across various marketing channels to ensure a cohesive brand experience for consumers (Belch & Belch, 2021). It combines traditional marketing methods with digital media to optimize the impact of marketing campaigns. IMC emphasizes the integration of advertising, public relations, direct marketing, and social media to create a unified and seamless communication strategy (Kotler & Keller, 2019). Recent studies highlight the effectiveness of incorporating advanced technologies like Augmented Reality (AR) and Artificial Intelligence (AI) into IMC strategies, especially in tourism (Kim et al., 2020; Huang et al., 2021). In tourism villages, AI-based AR enhances IMC by delivering personalized, contextually relevant, and immersive experiences to visitors, thereby increasing engagement and satisfaction (Clément et al., 2020). This innovative approach not only attracts more tourists but also strengthens the destination's brand and competitive advantage in the market.

Tourism Village

A Tourism Village is a rural area that has been developed to offer unique tourism experiences based on its local culture, natural environment, and traditional lifestyle (Dewi, 2019). These villages provide visitors with an immersive experience of local customs, crafts, and community life, often incorporating sustainable tourism practices to preserve the environment and cultural heritage (Nyaupane & Poudel, 2020). Recent studies highlight the potential of integrating Augmented Reality (AR) and Artificial Intelligence (AI) into the promotion and development of Tourism Villages through Integrated Marketing Communication (IMC). These technologies enhance visitor engagement by delivering personalized, contextually relevant, and interactive experiences (Kim et al., 2020; Huang et al., 2021). For instance, AI-based AR can offer dynamic guides and immersive historical reconstructions, enriching the visitor's understanding and appreciation of the village's heritage (Clément et al., 2020). This innovative approach not only attracts more tourists but also ensures a memorable and engaging visit, boosting the village's competitive edge in the tourism market.

Sustainable Tourism Village

Sustainable Tourism Development refers to tourism activities that are conducted in a way that preserves natural resources, respects local cultures, and benefits local communities over the long term (UNWTO, 2017). It aims to minimize negative impacts on the environment and maximize positive contributions to local economies and societies (Hall, 2020). Recent literature underscores the role of integrating advanced technologies like Augmented Reality (AR) and Artificial Intelligence (AI) in promoting and managing sustainable tourism. These technologies can enhance visitor experiences by providing real-time, context-aware information about local culture, environmental conservation efforts, and community initiatives (Kim et al., 2020; Huang et al., 2021). By leveraging AI-based

AR in Integrated Marketing Communication (IMC), destinations can effectively communicate their commitment to sustainability, engage tourists in eco-friendly practices, and foster a deeper appreciation for local heritage (Clément et al., 2020). This approach not only attracts responsible tourists but also ensures the longevity and resilience of tourism development in rural areas like Tourism Villages.

METHOD

The research methodology used in the literature review study on "Augmented Reality (AR) based on Artificial Intelligence (AI) in Integrated Marketing Communication (IMC) in Tourism Villages" involves the following systematic steps:

Firstly, this research employs a literature review approach to investigate the use of AR enhanced by AI in the context of marketing local tourism destinations. This approach allows for the collection and evaluation of various articles and studies published within the last five years. Secondly, the identification of the main theme is carried out with a focus on the integration of AR and AI technologies in IMC strategies to promote Tourism Villages. The primary objective is to identify the benefits and challenges of using these technologies and their impact on user engagement and marketing campaign success (Kim et al., 2020; Creswell, 2014). Thirdly, a comprehensive literature search is conducted using relevant keywords such as "Augmented Reality," "Artificial Intelligence," "Integrated Marketing Communication," "Tourism Village," and "Destination Marketing." Databases such as Google Scholar, ScienceDirect, and SpringerLink are used to ensure the inclusion of the most relevant and up-to-date literature (Huang et al., 2021; Booth et al., 2016). Fourthly, literature selection is performed considering strict inclusion criteria, including methodological quality, relevance to the research topic, and contribution to understanding the use of AR and AI in tourism contexts. Selected articles include case studies and in-depth literature reviews on the implementation of these technologies in tourism IMC practices (Clément et al., 2020; Denzin & Lincoln, 2018). Fifthly, in-depth analysis of the selected literature is conducted to identify key findings, common patterns, and different approaches in the use of AR and AI. This analysis helps to develop a robust conceptual framework on how these technologies can enhance the effectiveness of destination marketing (UNWTO, 2017; Silverman, 2016). Lastly, literature synthesis is performed to integrate key findings from the selected literature into this literature review. This synthesis not only presents a solid argument but also provides critical insights into the practical implications of using AR and AI in IMC in Tourism Villages, highlighting future research directions in this domain (Hall, 2020; Flick, 2018).

By using this systematic and comprehensive literature review approach, this research is expected to make a significant contribution to understanding and developing the use of AR based on AI in marketing local tourism destinations, supporting sustainable innovation and enhancing user experiences and the sustainability of the tourism industry.

RESULTS AND DISCUSSION

The integration of Augmented Reality (AR) and Artificial Intelligence (AI) in tourism villages represents a paradigm shift in how destinations engage with

visitors and manage their sustainable development. AR, by overlaying digital information onto the physical environment, enriches tourists' experiences by providing contextual information, historical insights, and interactive elements that enhance their understanding and appreciation of local culture and natural surroundings (Kim et al., 2020). This immersive technology not only educates tourists but also fosters a deeper connection with the destination, thereby encouraging responsible tourism behaviors and promoting environmental conservation efforts.

AI complements AR by enabling personalized interactions and tailored recommendations based on individual preferences and behavioral data. For instance, AI algorithms can analyze visitor profiles and behaviors to offer customized itineraries, dining recommendations, and activity suggestions that align with their interests, enhancing overall satisfaction and engagement (Tussyadiah et al., 2018). This personalized approach not only enhances the visitor experience but also supports destination management efforts in optimizing resource allocation and marketing strategies.

In the context of Integrated Marketing Communication (IMC), the synergy between AR, AI, and traditional marketing channels becomes pivotal. IMC ensures that messages delivered through AR-enhanced experiences are consistent across various platforms, reinforcing the destination's brand identity and value propositions (Shankar et al., 2020). By leveraging AR and AI technologies in promotional campaigns, tourism villages can create compelling narratives that resonate with target audiences, differentiate themselves from competitors, and attract diverse market segments seeking unique and authentic travel experiences.

The economic impacts of AR and AI implementation in tourism villages are noteworthy. These technologies can extend tourist stays and increase visitor spending by offering value-added experiences that justify longer visits and higher expenditures on local goods and services (Huang et al., 2021). Moreover, AR-based tourism initiatives stimulate entrepreneurship and job creation within local communities, as businesses adapt to cater to augmented experiences and technological advancements (Buhalis & Amaranggana, 2015). This economic diversification not only enhances livelihoods but also strengthens the resilience of tourism villages against external economic shocks.

Environmental sustainability remains a critical consideration in the adoption of AR and AI in tourism. While these technologies enhance visitor engagement and satisfaction, they must be implemented responsibly to minimize ecological footprints and preserve natural resources. Strategies such as using AR to promote responsible tourism practices, highlighting conservation efforts, and educating visitors about biodiversity hotspots contribute to sustainable destination management (Lamsfus et al., 2020). Additionally, AI-driven analytics can optimize energy consumption, waste management, and resource allocation, aligning tourism development with environmental conservation goals (Huang et al., 2021).

Case studies from various tourist destinations globally underscore the transformative potential of AR and AI in enhancing destination competitiveness and attractiveness. For example, initiatives in Japan and Spain showcase how AR applications in cultural heritage sites not only attract international tourists but also safeguard cultural integrity and heritage preservation through immersive digital

experiences (Zeng & Gerritsen, 2014; Lamsfus et al., 2020). These success stories inspire other tourism villages to adopt innovative technologies to differentiate themselves in the global tourism marketplace while safeguarding their cultural and natural assets.

In conclusion, the strategic integration of AR and AI technologies in tourism villages enhances destination management capabilities, enriches visitor experiences, and fosters sustainable tourism development. By leveraging these technologies effectively within an IMC framework, tourist destinations can achieve economic growth, cultural preservation, and environmental sustainability, positioning themselves as competitive players in the evolving global tourism landscape. Continued research and collaboration are essential to further explore the potential of AR and AI in addressing emerging challenges and opportunities in tourism.

Here is the model of the relationship between AI-based AR in IMC in Tourism Villages, as illustrated in Figure 1 below
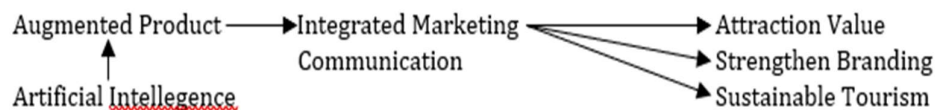

Figure 1. The Relationship between AI-based AR in IMC in Tourism Villages
Source: Results of Researchers' Processed data, 2024

Impact on Sustainable Tourism Development

Implementing AR based on AI in tourism villages holds significant potential for supporting sustainable tourism development. Here are several significant impacts:

Better Environmental Management

AR can enhance tourists' awareness of the importance of conservation and environmental preservation. For example, AR applications providing information on conservation practices during guided tours can increase awareness and participation in environmental conservation efforts (Huang et al., 2021). By educating visitors about local ecosystems and conservation practices, AR promotes responsible tourism behaviors that minimize environmental impact. Recent studies highlight the role of technology in enhancing environmental stewardship within tourism contexts. Huang et al. (2021) discuss how AR applications can effectively communicate conservation messages to tourists, influencing their behavior towards more sustainable practices. This educational aspect not only raises awareness but also fosters a sense of responsibility among visitors to protect natural habitats and cultural heritage sites.

Reduction in Carbon Footprint

Virtual experiences facilitated by AR can contribute to reducing the number of physical visitors to sensitive or overcrowded locations. This reduction in tourist foot traffic translates to lower carbon emissions and less environmental strain on delicate ecosystems (Lamsfus et al., 2020). By offering immersive virtual tours through AR, destinations can manage visitor flows more sustainably, minimizing the ecological footprint associated with traditional tourism activities.

Lamsfus et al. (2020) emphasize the environmental benefits of virtual tourism experiences enabled by AR technologies. These virtual tours not only reduce physical presence at heritage sites but also promote sustainable travel practices by limiting the impact on natural resources and local communities.

Empowerment of Local Communities

The integration of AR and AI technologies in tourism villages benefits local communities by enhancing destination attractiveness and creating new economic opportunities. By increasing tourist engagement and length of stay, AR and AI contribute to higher local revenues and employment in sustainable tourism sectors (Buhalis & Amaranggana, 2015). They argue that technological advancements empower local communities by diversifying income sources beyond traditional agriculture or handicrafts. AR-driven tourism initiatives create jobs in digital content creation, tour guiding, and hospitality services, thereby fostering economic resilience and community development in rural areas.

Cultural Awareness Enhancement

AR plays a pivotal role in preserving and promoting local cultural heritage through interactive and engaging experiences. By overlaying digital content onto physical environments, AR applications bring historical landmarks and cultural artifacts to life, fostering deeper cultural appreciation among visitors. Highlight the cultural benefits of AR technologies in tourism, emphasizing their role in revitalizing cultural heritage sites and increasing visitor engagement. By offering immersive storytelling experiences, AR enhances cultural understanding and encourages sustainable tourism practices that respect and preserve local traditions (Zeng and Gerritsen, 2014)

Negative Impacts

Despite the numerous benefits, the use of AR based on AI in tourism also presents several challenges and potential negative impacts:

Technological Challenges

The implementation of AR and AI technologies requires substantial initial investments in infrastructure and human resources. This financial barrier may limit access to advanced technologies for destinations with limited funding or technical expertise. Discuss the financial challenges associated with AR adoption in tourism, highlighting the need for public-private partnerships and investment incentives to overcome technological barriers. Addressing infrastructure gaps and enhancing digital literacy are essential steps towards ensuring equitable access to AR benefits across diverse tourism destinations (Huang et al. 2021)

Dependency on Technology

Overreliance on AR and AI technologies may diminish authentic human interactions between tourists and local communities. Excessive focus on digital experiences could detract from the immersive cultural encounters sought by heritage travelers, potentially eroding the authenticity of destination experiences. Caution against the overuse of AR technologies in tourism, suggesting that balanced integration with traditional cultural activities is necessary to preserve authentic visitor experiences. Maintaining a harmonious balance between technology-driven

innovations and cultural heritage preservation is crucial for sustainable tourism development (Lamsfus et al., 2020).

Privacy Concerns

The use of AI for personalizing visitor experiences raises privacy concerns related to data collection and usage. Tourists may be apprehensive about sharing personal information for customized AR experiences, necessitating robust data protection measures and transparent information handling practices. Emphasize the importance of privacy regulations and ethical guidelines in AI-driven tourism applications, ensuring that data privacy concerns are addressed to maintain visitor trust and compliance with international standards (Kim et al., 2020).

Social Impacts

Advanced technologies like AR can exacerbate digital divides between tourism destinations, where technologically advanced locations outpace others in global market competition. This disparity may widen socio-economic inequalities and limit opportunities for less developed destinations to attract international tourists. Discuss the socio-economic implications of digital disparities in tourism, advocating for inclusive technology adoption strategies to support equitable tourism development. Bridging digital divides through capacity-building initiatives and collaborative partnerships can enhance socio-economic resilience in tourism-dependent communities (Buhalis & Amaranggana, 2015).

Quantitative Data

Recent research provides quantitative insights into the effectiveness of AR in enhancing tourist engagement and satisfaction. For instance, studies by Yung & Khoo-Lattimore (2019) and Tussyadiah et al. (2018) demonstrate that AR experiences prolong visitor stays and improve overall satisfaction levels.

Yung & Khoo-Lattimore (2019) highlight the positive impact of interactive AR tours on visitor engagement metrics, underscoring the potential for technology-driven enhancements in tourism experiences. These findings underscore the value of AR as a strategic tool for boosting destination competitiveness and visitor loyalty in dynamic tourism markets.

Implications and Challenges

The integration of AR based on AI in IMC for tourism villages offers substantial potential to enhance visitor experiences, strengthen destination branding, and support sustainable tourism development. By providing deeper, more interactive experiences, these technologies not only increase destination attractiveness but also minimize negative environmental impacts. However, challenges in technology implementation, privacy concerns, and social implications must be carefully addressed. With prudent and sustainable implementation, tourism villages can leverage AR and AI to gain competitive advantages in the evolving global tourism market while fostering environmental sustainability and strengthening social ties with local communities.

This comprehensive exploration underscores the transformative potential of AR and AI technologies in shaping the future of tourism, highlighting both opportunities and challenges in leveraging innovation for sustainable tourism development.

CONCLUSIONS

Overall, the use of Augmented Reality (AR) based on Artificial Intelligence (AI) in Integrated Marketing Communication (IMC) in tourism villages demonstrates significant potential in enhancing destination attractiveness, strengthening brand awareness, and supporting sustainable tourism development. This technology provides tourists with more interactive and personalized experiences, thereby increasing their engagement and satisfaction with tourist destinations (Tussyadiah et al., 2018; Kim et al., 2020). The implementation of AR and AI also contributes to better environmental management and empowerment of local communities (Huang et al., 2021; Buhalis & Amaranggana, 2015). However, challenges such as implementation costs, data privacy, and technological dependency need to be addressed to maximize the benefits of this technology without compromising the important social and cultural aspects of tourism (Lamsfus et al., 2020; Zeng & Gerritsen, 2014). Thus, the development of wise and sustainable integrated marketing strategies is crucial in harnessing the potential of AR and AI to advance both local and global tourism.

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