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TECHNOLOGICAL INGENUITY UNVEILING SUSTAINABLE PARADIGMS: A SYNERGISTIC NEXUS CATALYZING EDUCATIONAL TOURISM VILLAGES THROUGH INNOVATION AND SUSTAINABLE TOURISM

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ABSTRACT

Innovation and technology within higher education institutions play a pivotal role in driving academic, industrial, and societal advancements. This article explores the impact of implementing innovation and technology from higher education on sustainable tourism and the development of educational tourism villages. Through quantitative research employing a survey approach, this study was conducted in Tanjung Pinang II Village, Ogan Ilir Regency. Analysis using Structural Equation Modelling (SEM) reveals that the implementation of innovation and technology significantly affects sustainable tourism (1.007) and the development of educational tourism villages (0.727). Additionally, sustainable tourism also positively contributes to the development of educational tourism villages (0.279). Through the integration of technological innovation in higher education, substantial enhancements in sustainability tourism and educational tourism village development are evident, creating new potentials in resource management, tourist attraction, and community involvement. The article concludes that innovation and technology from higher education institutions are crucial in strengthening sustainable tourism, providing sustainable experiences for tourists, and supporting local economic development. Recommendations aim to enhance collaboration among higher education institutions, local governments, and communities to drive innovative technology development in support of sustainable tourism and educational tourism village development. This encompasses policy development, master planning, and cross-sector collaboration to maximise the benefits of technology in tourism education and environmental sustainability.

Keywords: *Edu-tourism, Innovation, Technology, Sustainable*

INTRODUCTION

Higher education serves as a primary stage for innovation across various domains. As an institution dedicated to education and research, higher education provides fertile ground for new ideas and experiments that drive advancements across diverse disciplines. Research on innovation within higher education encompasses explanations of how such innovations impact the academic environment, industries, and society at large (Li & Jiao, 2021).

Higher education has served as a primary catalyst for the creation of innovation. It encompasses more than just scientific discoveries, extending to the development of curricula, learning technologies, and teaching models that are more adaptive and responsive (He, 2020). Innovation and technology play a crucial role in the evolution of higher education today. Technological advancements have altered the traditional paradigm of learning in higher education. Innovation within higher education also involves the development of new technologies applied in multidisciplinary research, accelerating discoveries, and presenting innovative solutions to contemporary challenges (Muangmee et al., 2021). The involvement of higher education institutions in research and technological development can significantly contribute to societal and economic progress while preparing students for an increasingly technologically interconnected workforce.

The implementation of innovation and technology in higher education has wide-ranging impacts on society. Collaboration between higher education institutions, industry, or government can yield beneficial innovations. Initiatives fostered by universities through technology implementation facilitate knowledge exchange, enabling the discovery of innovative solutions to social issues. For instance, the dissemination of solar-powered IoT fish farming technology integrated with urban farming, as conducted by (Masnila et al., 2022), has had an impact on fish farmers' economic growth. Similarly, the revitalization of agricultural land and optimization of shallot cultivation within the Harapan Jaya Farmer Group in the Talang Keramat village (Febriantoko et al., 2020) has introduced diverse crop cultivation, enhancing productivity. Innovative programs at universities aid communities in developing new skills aligned with the evolving demands of the job market. Moreover, resource management and information dissemination to the public foster enhanced understanding. Innovation and technology in higher education not only enhance the quality of education but also create significant added value for society.

The educational tourism village serves as a platform that integrates education, culture, and tourism within a village. Implementing innovation and technology in educational tourism villages is an intriguing prospect. The utilisation of technology in these villages can have a broad impact, not only on formal education but also on enhancing knowledge about local cultures. Innovations from higher education institutions can enrich the knowledge within educational tourism villages.

Ogan Ilir Regency in Indonesia offers various tourist attractions scattered across intriguing locations such as Semambu Island, Supi Beach, Jodoh Beach, Sriwijaya Botanical Garden, Teluk Seruo Lake, Burai Colorful Village, Ancol Tanjung Atap, Si Punai Garden Tourism Park, and Teluk Putih Seasonal Lake. The unique allure of each destination has gained national recognition as appealing tourist destinations. One particular focus of tourist destinations is located in the Tanjung Batu Subdistrict, home to 19 villages and 2 sub-districts. Among these villages, Tanjung Pinang II Village stands out due to its location, just 10 km from the administrative centre of Ogan Ilir Regency, Indralaya. Its proximity to the administrative centre and other major tourist destinations positions Tanjung Pinang II Village as a significant potential area for tourism development. Well-structured road infrastructure leading to the location further supports this potential. The development of Tanjung Pinang II Village as a tourist destination is one of the efforts expected to enhance the local economy (Alfitriani et al., 2021).

METHOD

The research methodology in this quantitative research article involved 200 respondents described through a survey approach. The study was conducted in Tanjung Pinang II Village, Ogan Ilir Regency. The research design delineates the data collection process conducted through a validated questionnaire instrument with high reliability. The gathered data underwent preprocessing stages before entering the analysis phase. The analysis process employed Structural Equation Modelling (SEM) technique using the AMOS program, wherein the analysis model was chosen, tested, and interpreted for its outcomes. Model validation and assumption testing were the primary focus to confirm the model's suitability with the collected data. Additionally, this method section discusses research limitations, research ethics, and measures taken to minimise biases and ensure compliance with applicable research ethics standards.

RESULT AND DISCUSSION

Results

The sample size used comprised 200 respondents. The analytical technique employed was Structural Equation Modelling (SEM) using the AMOS software.

Table 1.
Goodness of Fit Index.

GoF Index	***Value***	***Cut off Value***	**Criteria**	**Information**
Chi-Square	219,181	<**α.df**	Good Fit	Marginal Fit
		<0,05		
Probability	0,000	0,01 - 0,05	Marginal Fit	
		≤ 0,08	Good Fit	Marginal Fit
RMSEA	0,097	0,08 - 0,10	Marginal Fit	
NFI	0,911	≥ 0,90	Good Fit	Marginal Fit
		0,80 - 0,89	Marginal Fit	
TLI	0,912	≥ 0,90	Good Fit	Good Fit
		0,80 - 0,89	Marginal Fit	
CFI	0,928	≥ 0,90	Good Fit	Good Fit
		0,80 - 0,89	Marginal Fit	
IFI	0,925	≥ 0,90	Good Fit	Good Fit

Based on Table 1 and the results of the Goodness of Fit Index, it is indicated that the overall model (Full Model) meets four criteria for a good fit, which are the goodness of fit indices TLI and IFI. Two criteria for a reasonably good fit (Marginal Fit) are observed, namely Chi-Square Probability and RMSEA. This demonstrates that the overall model (Full Model) generated has achieved a satisfactory level of goodness of fit.

Table 2.
Direct and Indirect Effects

	Effect
Implementation of Innovation and Technology Sustainable Tourism	1.007
Implementation of Innovation and Technology Edutourism Village Development	0.731
Sustainable Tourism Edutourism Village Development	0.279
Implementation of Innovation and Technology Sustainable Tourism Edutourism Village Development	0.286

Based on Table 2, it indicates that the Implementation of Innovation and Technology has a positive effect on Sustainable Tourism by 1.007, a positive impact on Edutourism Village Development by 0.727. Sustainable tourism positively influences Edutourism Village Development by 0.279. Additionally, the positive influence of Implementation of Innovation and Technology on Sustainable Tourism and its implications for Edutourism Village Development amount to 0.286.

Discussion

1. *The Implementation of Innovation and Technology has a positive influence on Sustainable Tourism.*

The result indicates that the implementation of innovation and technology has a positive impact of 1.007 on sustainable tourism. This suggests that any enhancement or alteration in the application of innovation and technology within the context of higher education correlates strongly with the development and sustainability of tourism. Consequently, the increased utilisation of innovation and technology in higher education approaches holds significant potential to support and enhance the sustainability aspects within the tourism sector.

The implementation of innovation and technology from higher education, such as creating a master plan for the development of an integrated educational tourism area, is highly beneficial. Developing a Tourism Development Blueprint through Focus Group Discussions involving the Village Government, village facilitators, community members, and Higher Education is crucial for tourism development. Similar activities have been implemented in Bukit Tulen Telase Tourism, Air Limau Village, as documented by (Mallangke et al., 2022). The implementation of technology from higher education offers benefits for students. Problem-based learning methods assist students in enhancing higher-order thinking skills such as problem-solving and critical thinking (Hursen, 2021). Research findings indicate that the use of technology not only enhances students' academic achievements but also significantly influences the development of their critical thinking skills (Fadilla et al., 2021). However, students actively engaged with technology feel more prepared to enter the workforce. Additionally, apart from its impact on society, the implementation of technology from higher education also aids lecturers in validating their expertise while enabling students to apply their acquired knowledge to real-world settings.

2. *The Implementation of Innovation and Technology has a positive influence on Edutourism Village Development*

The research findings indicate a significant positive impact, at 0.727, of implementing innovation and technology on the development of educational tourism villages. This figure denotes a substantive contribution of innovation and technology implementation towards the advancement of educational tourism villages. It signifies that the adoption of technology and innovation plays a pivotal role in the progression of these villages, offering support and the potential to enhance their quality and resource utilisation.

Previous studies have highlighted that the integration of technology in tourism activities is emerging as a new trend in the tourism industry (Golja & Paulišić, 2021). This contributes to the community through enjoyable avenues for students. Additionally, the application of technology and innovation in educational tourism can enhance tourists' experiences and elevate the productivity of local products (Magnaye, 2019).

3. Sustainable Tourism has a positive impact on Edutourism Village Development

Research findings in the field of sustainable tourism demonstrate a positive influence of 0.279 on the development of educational village tourism. This value signifies that the discussions within tourism management for sustainable practices contribute positively to the development of educational village tourism, albeit with a potentially moderate effect. It implies that discussions and research in sustainable tourism management offer insights and a positive contribution to the development of educational village tourism, although there may be other influencing factors.

The positive impact of Sustainable Tourism on the development of the Educational Tourism Village encompasses driving the preservation of natural and cultural environments surrounding the village, fostering conservation efforts, and nurturing awareness of traditional values (Tjitunga et al., 2023). Furthermore, sustainable tourism practices might bring additional income to the village, which could be directed towards infrastructure development, education, and the welfare of the local community (Astuti et al., 2023). Other studies suggest that with sustained growth in tourist visits, the Educational Tourism Village can become an alternative learning centre for tourists interested in understanding the local culture, history, and educational values intrinsic to the village (Alipour et al., 2020).

4. The Implementation of Innovation and Technology has a positive influence on Sustainable Tourism and its implications for Edutourism Village Development.

The implementation of innovation and technology significantly contributes positively at 0.286 to sustainable tourism. This indicates that utilising technology and innovation within the context of sustainable tourism yields a noticeable positive impact. In the context of developing educational tourism villages, the implication is that adopting innovation and technology in sustainable tourism management can be a crucial factor in driving the development of educational tourism villages. This suggests that efforts to integrate technology and innovation into sustainable

tourism practices enrich tourists' experiences and reinforce the development of educational tourism villages by enhancing accessibility, attraction, and environmental sustainability.

The implementation of innovation and technology in Sustainable Tourism has a highly significant positive impact, particularly on the development of Educational Tourism Villages. It can be observed that utilising innovation and technology in sustainable tourism broadens tourists' access to richer and more sustainable experiences, enhancing the attractiveness of tourist destinations (Ariffin et al., 2022). Other research indicates that technology can facilitate sustainable practices, such as waste management, renewable energy use, or the development of environmentally friendly infrastructure, which are key elements in the development of the Educational Tourism Villages (Fafurida et al., 2020). The adoption of innovation and technology can reinforce efficient destination management, enhance tourists' experiences, and support local income (Schuhbert et al., 2020). Therefore, the implementation of innovation and technology in Sustainable Tourism holds significant potential for enhancing the quality, attractiveness, and sustainable economic benefits for the development of Educational Tourism Villages.

CONCLUSION

The implementation of innovation and technology from higher education institutions has a significant impact on the development of sustainable tourism and educational tourism villages. The application of innovation and technology in the context of higher education has a strong positive correlation with sustainable tourism, enhances students' abilities, and supports the development of educational tourism areas. Integrated edu-tourism with technology can provide sustainable experiences for tourists and important economic contributions to local communities. In this regard, the use of technology and innovation in sustainable tourism is key to strengthening destination attractiveness, environmental conservation, and increasing local income.

Further research implementation requires closer collaboration between higher education institutions, local governments, and communities to drive the development of technological innovations for sustainable tourism and educational tourism villages. Concrete steps such as master plan development, policy formulation, and increased collaboration with relevant stakeholders need to be pursued. Full support for the use of technology in tourism education can yield a greater positive impact on environmental sustainability and the development of educational tourism villages.

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