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Integrating BIM and GIS with AI for Flexible Tourism Master Planning in Setiu Wetland Terenganu towards Future Demands

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Abstract

Natural wetlands with potential for ecotourism and economic development can be found in Terengganu, Malaysia, at the Setiu Wetland. The current planning for tourism development is still not well integrated since neither the government nor the business community uses BIM/GIS technology as a means of full collaboration. Tourism master planning could undergo a revolution with the combination of Artificial Intelligence (AI) with Geographic Information Systems (GIS) and Building Information Modeling (BIM). This is especially applicable in environmentally sensitive places like Terengganu's Setiu Wetland. This integration can offer a thorough and adaptable strategy to meet the expectations of future tourism growth while guaranteeing sustainable resource management. The study aims to identify gaps in the physical planning development progression for sustainability strategic planning guidelines. The following seven crucial techniques were found: well-articulated goals and plans, funding support, competencies and skills, cooperative work, risk and change management, organizational and performance measures, government policy, and incentives to promote BIM/GIS deployment. The results suggest that the tourism sector setting is intrinsically linked to the implementation of systematic integration guidelines for BIM/GIS and that technical, institutional, and managerial factors are necessary to adapt changes to improve current BIM/GIS implementation and can be also integrated into the AI Tourism medium and explores the benefits offers. Few studies have been conducted on the use of integrated BIM and GIS in rapid development planning for urban wetlands as an integrated coordination and management tool. Therefore, the study can support the 4.0 Digital Transformation and national guideline master planning in line with "Rancangan Malaysia Ke-12" (RMKe-12) and current AI technologies have the potential to improve stakeholder collaboration, decision-

making, energy efficiency, resource management, flexibility, and accessibility. The study is ongoing, and the conclusions are supported by recent data.
Keywords: Building Information Modelling (BIM), Geographic Information System (GIS), Artificial Intelligent (AI), Master Planning, Sustainability Tourism.

Introduction

The Setiu Wetland Nowadays

Wetland ecosystems are among the most diversified ecological perspectives and crucial settings for human habitation (Bradley et al., 2016). They each play specific roles and provide specific advantages. As a big population center, the city's natural environment is unquestionably problematic (Wang et al., 2016a). Wetland areas are shrinking and wetland resources are being overused as a result of severe occurrences and conditions such as the rapidly rising population, the rapidly improving economic climate, and the expanding metropolitan region. Urban development is one of the human activities that contributes the most to local species extinction rates and frequently leads to the extinction of the majority of local species (Wang et al., 2016b). Urban wetlands are the "kidneys" of cities, and preserving and building wetlands is an essential part of urban ecological development (Li et al., 2020).

The urban wetland park is constructed as a pleasant urban living environment that blended with a natural ecological environment (Chow et al., 2019). Urban wetlands differ greatly from other natural wetlands in that they are found in or near cities and are strongly influenced by the urban environment, economic development, and social and cultural forms (Yan et al., 2018). People's impressions of urban wetland parks are a little skewed, which makes it difficult to fully comprehend the park's benefits and also contributes to their lack of high-quality landscape design (Wang, 2016). The significant transformation of urban landscapes is the process of urbanization and social and economic development's most obvious outward manifestation (He, 2022).

As a result, both the qualities of the wetland landscape and the amount of urban river wetlands are drastically reduced (Wang, 2016). In actuality, wetlands have been lost in significant amounts in many cities but wetlands are one of the by-products of urbanization that are vanishing the quickest (He, 2022). Therefore, it is crucial to preserve and research urban wetland parks (Qiao et al. 2016).

BIM and GIS Integration

Worldwide adoption of BIM and GIS integration has grown quickly in recent years. According to McGraw-Hill Construction (2014), several projects in the US, Singapore, the UK, Denmark, Finland, and Norway now call for the usage of BIM and GIS. Furthermore, the Australian government has a three-year plan to integrate BIM and GIS into its public AEC projects and to encourage BIM use nationally, according to Building SMART Australasia (2012). To promote its use in the tourism industry, BIM was also mentioned as an important project in China's National Economic and Social Development Plans (Bernstein et al., 2015).

Integration of BIM with GIS has been shown to offer a few significant advantages in the field. In a recent survey conducted by Dodge Data and Analytics (2017), participants from the US, the UK, France, and Germany said that their projects had adopted BIM had a 25% larger return on investment. In addition, a recent case study (Kim et al. 2017) demonstrated that the use

of BIM in a building project might fix issues that cost 15.92% of the project's entire budget. However, the use of BIM and GIS in the tourism sector requires strategic planning to accommodate the systematic deployment of BIM and GIS Integration and realize its potential benefits. This topic has not been the subject of any studies. Even though BIM and GIS Integration include organizational strategies and industry implementation (Eadie et al. 2015; Davies et al. 2017; Ma et al. 2018; Cao et al. 2016; Liao and Teo (2018).

Summary

Ecotourism and economic growth have potential at the Setiu Wetland in Terengganu, Malaysia. Wetland landscape characteristics and urban river wetlands are disappearing due to rapid urbanization, social development, and economic growth. However, a lack of administration, coordination, and national policy has slowed down development. The study uses building information modelling (BIM) and geographic information systems (GIS) to find gaps in the physical planning development progression for sustainability strategic planning guidelines. Thus, this study identifies the Integration of AI tools between BIM and GIS, aims to provide updated information for more accurate collaborative decision-making in strategies, and frames them in the tourism projects collaboration. This study reveals that BIM and GIS Integration have started to spend in-depth research on the efforts of sustainable tourism industrial, which aids in the development of better tourism strategies and master planning in Setiu, Terengganu. Through a review of the literature and interviews with people with different levels of competence, this article will also conduct in-depth research and analysis in conjunction with the aforementioned pertinent theories to advance the development of wetland tourism using BIM and GIS Integration AI technologies.

Literature Review

Sustainable Wetland Tourism Challenges in Setiu, Terengganu.

Malaysian wetland management faces many challenges, including limited resources and funding, poor interagency cooperation, insufficient public awareness and education, and legal and legislative gaps (Aziz et al., 2021). The study stressed the importance of managing wetlands holistically, considering their ecological, social, and economic aspects.

According to Alipiah et al., (2020) examined Setiu Wetland tourist management possibilities. The study highlighted the wetland's diverse ecosystems and fauna. The study stressed sustainable tourism practices and the economic benefits of ecotourism in the wetland area. Malaysia's National Ecotourism Plan suggests ecotourism at Setiu Wetland.

The article written by Razak et al. (2020) says that the sustainability of Malaysia's wetlands is threatened by many things, such as changes in land use, pollution, and climate change. Even though wetlands are very important to sustainable development because they provide ecosystem services, they need better coordination and more effective policy and regulatory systems to be protected and managed.

A previous study by Hamid et al. (2017) that looked at how wetland managementis done in Malaysia found that the main focus of wetland management in Malaysia is on waterquality control and monitoring, with less focus on wetland ecosystem conservation and restoration. The authors also pointed out several problems with how wetland management is done, such as a lack of funds and assets, a lack of coordination between government agencies, a lack

of public education and expertise, and a lack of clear laws and policies. The study showed how important it is to handle wetland ecosystems in a way that takes into account their ecological, social, and economic aspects.

AI As a Part of Sustainable Tourism Medium

Artificial Intelligence, or AI, is a fast-developing technology that has the potential to completely transform several industries, including travel. To maximize advantages for local people and support conservation efforts, sustainable tourism sometimes referred to as responsible tourism or ecotourism, tries to reduce the negative effects of tourism on the environment, culture, and society. AI integration in sustainable tourism has the potential to improve productivity, lessen environmental impact, and offer travelers personalized trips.

AI Applications in Sustainable Tourism can offer Smart Destination Management, Personalized Recommendations, Natural Resource Conservation, Energy Efficiency, and Customer Service Automation.

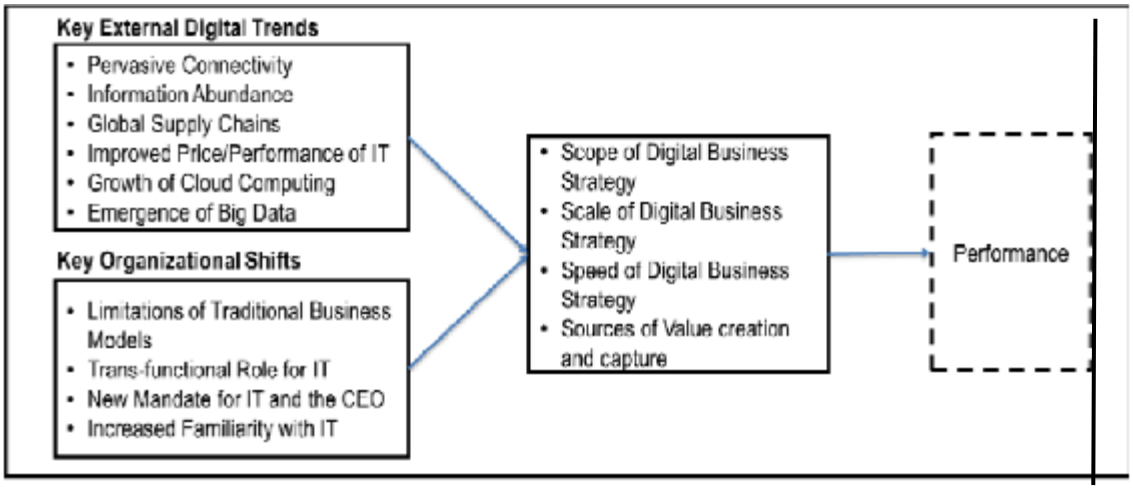

Figure 1. Drivers of the Four Key Themes of Digital Business Strategy (Bharadwaj.; Anandhi and El Sawy.; Omar and Pavlou.; Paul and Venkatraman, Venkat., 2018)

BIM As Sustainable AI Tourism Medium

In recent years, the use of BIM has grown rapidly. According to McGraw-Hill Construction (2014), BIM adoption has become a standard guideline in some projects in Denmark, Finland, Norway, Sweden, the United Kingdom, the United States and Singapore. In addition, the Australian government policy set a three-year target of implementing BIM in public AEC projects and promoting BIM use throughout the country (Building SMART Australasia 2012). BIM was also highlighted as a key initiative in China's National Economic and Social Development Plans to increase BIM adoption in the tourism industry (Bernstein, 2015). However, to accommodate the systematic application of BIM, the use of BIM in the tourism area necessitates strategic planning. There has been no research into this topic. However, few strategic plans have been allocated to improving BIM application in tourism practice projects focusing on wetlands.

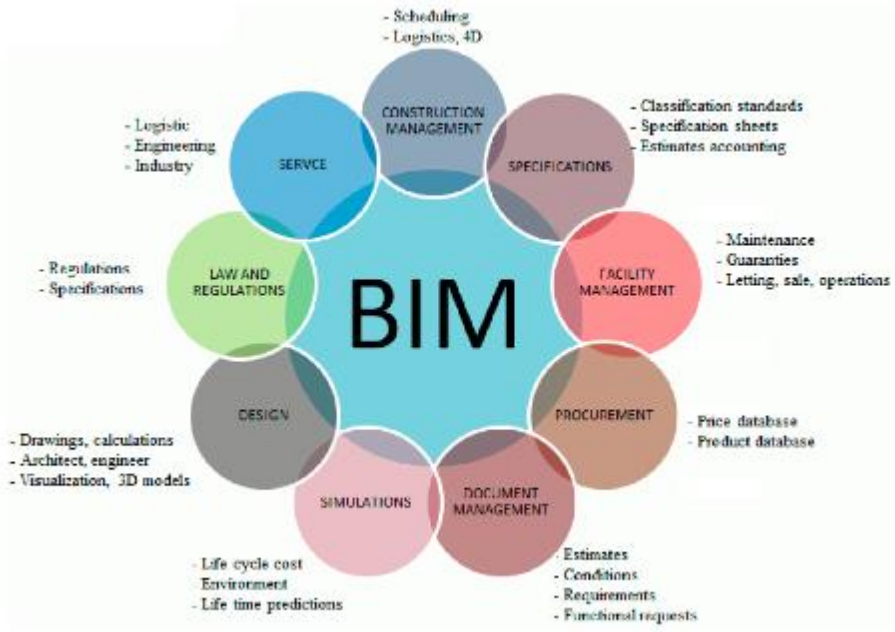

Figure 2. Building Information Modeling (BIM) lifecycle view (Ustinovičius, Rasiulis, Nazarko, Vilutienė, Reizgevicius, 2015)

Building information modeling facilitates decision-making (Utiome, 2010). According to Isikdag et al. (2007), it is the process of successfully creating, disseminating, exchanging, and managing information throughout a building's lifecycle. Using a single data source to which the entire team has access is the basic tenet of BIM. This single model or database, or group of databases, can be linked to facilitate information interchange and access (Autodesk, 2011). The fundamental tenet of building information modeling, according to Thompson and Miner (2007), is the execution of projects in a virtual setting where all project-related data can be kept in a single (central) online system.

Making decisions is aided by information modeling (Utiome, 2010). According to Isikdag et al. (2007), it is the process of successfully creating, disseminating, exchanging, and managing information throughout a building's lifecycle (Ma et al., 2018). Utilizing a single data source to which all team members have access is the fundamental tenet of BIM. This single model or database, or set of databases, can be linked together to allow for easier information access and exchange (Autodesk, 2011). The primary idea of Building Information Modelling, according to Thompson and Miner (2007), is project execution in a virtual environment where all project-related data can be housed in a single (central) online system.

BIM will develop into a reliable information source. By linking BIM and GIS platforms, which provide a high level of information from GIS to detailed information in BIM, it is now possible to close the gap between data at the global scale and data in great detail.(Mancini et al., 2017). Additionally, BIM will promote high efficiency over the long term by maximizing product deliverables through knowledge capture, engaging communication, and continuing work analysis (Gerges et al., 2016).

GIS As AI Sustainable Tourism Medium

A potent instrument for managing sustainable tourism, GIS (Geographic Information System) integrates artificial intelligence (AI) to improve decision-making and raises the general

efficacy and efficiency of tourism operations. AI can support the sustainable growth of tourism by utilizing GIS technology to provide insightful research and facilitate well-informed decision-making grounded in precise geospatial data analysis (Fischer et al., 2004). The capability of GIS to combine and evaluate diverse data sets from multiple sources is one of the main benefits of employing it as an AI medium for sustainable tourism. This contains data on socioeconomic variables, infrastructure, cultural legacy, environmental elements, and visitor behavior. Patterns, trends, and correlations that are essential for sustainable tourism planning and management can be found by GIS through the processing and analysis of these datasets utilizing AI algorithms. (Xie et al., 2019).

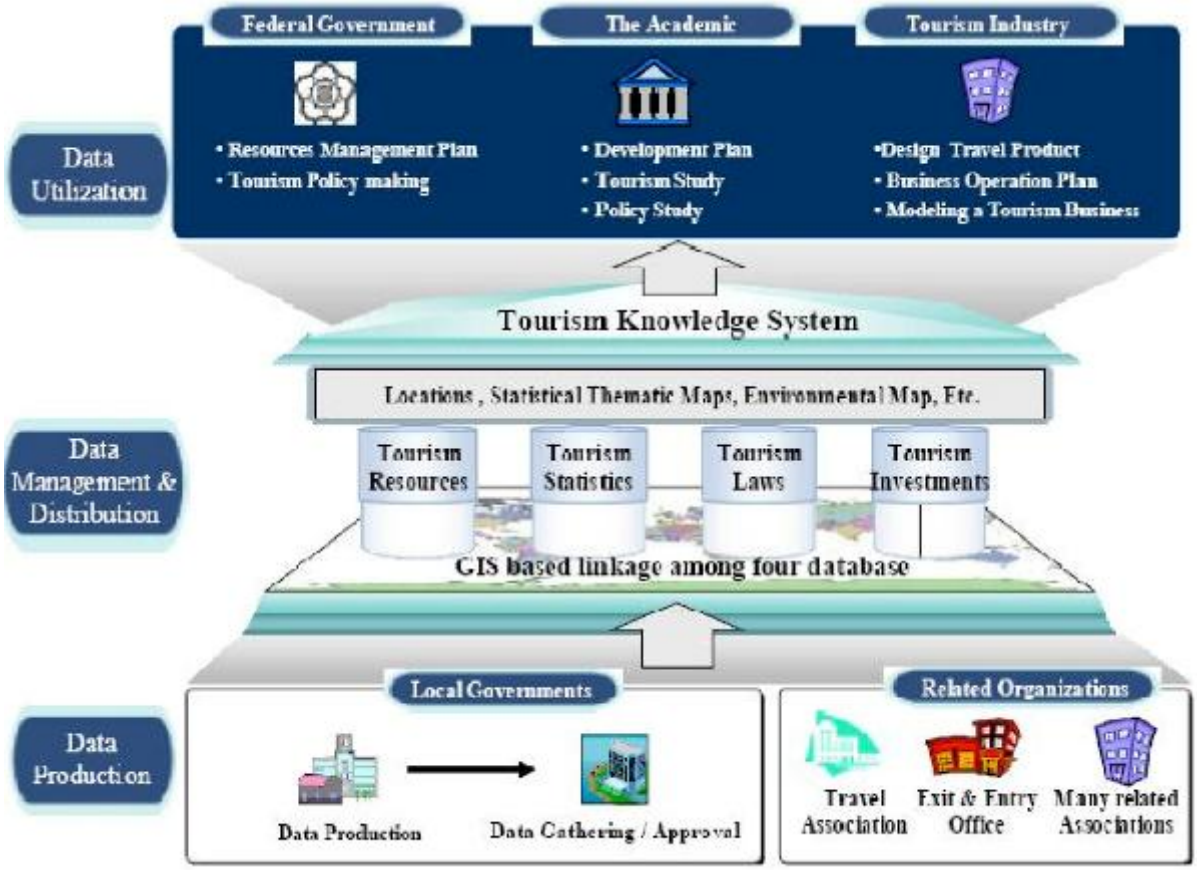

Figure: 3. Conceptual Role of Tourism Knowledge System (Kim, 2002)

According to (Fazal, 2008), a GIS is "a system for capturing, storing, verifying, integrating, manipulating, and displaying spatially referenced data." As a result, while BIM coordinates rely on modeling objects that are irrelevant to a specific location on the globe, GIS coordinates are dependent on geographic coordinate systems and global map projections (Fosu et al., 2015). GIS was utilized by Ebright-Mckeehan et al. (2009) to assess the value of traffic and the proximity of rail lines to intermodal facilities. To provide public services more effectively, Wiltshire Council makes use of mobile GIS tools. Ireland's national utility is able to deliver clean water to 1.8 million people thanks to the deployment of a mobile ArcGIS software that more effectively finds leaks, coordinates repair teams, manages data, and maintains the water network.

In areas of civil engineering, where it offers geographic answers, GIS has several uses. A few examples are transportation, water resources, facilities management, urban planning,

building, and e-business. Additionally, GIS can be utilized to properly display the topographical features of a construction site (Palve, 2013).

For a variety of reasons, there have been ongoing efforts over the years to merge BIM with GIS, which can provide a project with a full image and information drawn from building information models and pertinent geographic data (Fosu et al., 2015).

Geographical Information Systems (GIS) can be viewed as a toolbox of approaches and technology with broad relevance for achieving sustainable tourist development. Spatial (environmental) data can be used to investigate disputes, assess impacts, and make decisions. Impact assessment and simulation are becoming increasingly essential in tourism development, and GIS may help with inspecting environmental conditions, assessing the feasibility of places for proposed developments, finding competing interests, and modeling linkages (ESRI UK, 2015). Systematic evaluation of environmental effects is frequently hampered by a lack of information, but also by technologies for data integration, processing, visualization, and analysis.

Overall, planning, managing, and marketing destinations can benefit greatly from the use of GIS as an AI-sustainable tourism medium. Intelligent decision-making and the creation of sustainable tourist practices that strike a balance between social progress, environmental preservation, and economic growth are made possible by the integration of AI algorithms with geospatial data analysis provided by GIS.

BIM and GIS Integration with AI Sustainable Tourism

The development of sustainable tourism can be greatly aided by the integration of two potent technologies, Building Information Modeling (BIM) and Geographic Information Systems (GIS), with Artificial Intelligence (AI). " In contrast to GIS, which is a system for gathering, storing, processing, and managing spatial data, BIM is a digital depiction of a building's or infrastructure's functional and physical attributes. Conversely, artificial intelligence (AI) is the replication of human intellect in machines, which includes functions like learning, thinking, and problem-solving.

It is possible to integrate BIM with GIS (Fosu et al., 2015). Ten strategies have been utilized to achieve complete BIM/GIS integration with AI interoperability. As a result, enhancements such as Geo BIM extensions (Laat and Berlo, 2011) and urban information modeling extensions for facility management (Mignard and Nicolle, 2014) were developed. Amirebrahimi et al. (2015) recommend using a data model to integrate BIM with GIS. (Hjelseth et al., 2008) offer an IFC (Industry Foundation Classes)-based tool.

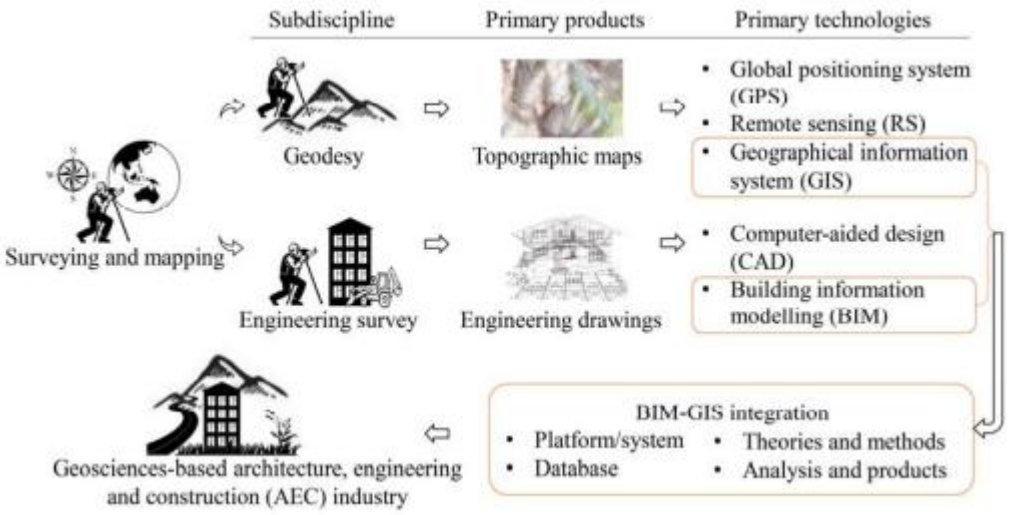

Figure 4. History of BIM-GIS integration from the perspective of surveying and mapping.

El-Mekawy, Stman, and Hijazi (2012) presented the Unified Building Model (UBM) method, which allows users to merge the features and capabilities of BIM and GIS into a single unified mode (Fosu et al., 2015). Several strategies have been utilized to achieve complete BIM/GIS integration. Various authors, for example, have presented various methodologies and built new tools based on existing standards.

As a result, enhancements such as Geo BIM extensions (Laat and Berlo, 2011) and urban information modeling extensions for facility management (Mignard and Nicolle, 2014) were developed. Amirebrahimi et al. (2015) recommend using a data model to integrate BIM with GIS. Hjelseth and Thiis (2008) offer a tool based on IFC (Industry Foundation Classes). UBM enables bidirectional data exchange between IFC for BIM and CityGML for GIS. This reduces data loss due to conversion for the exchange. This study's integration intends to deliver up-to-date information for more accurate collaborative decision making.

In summary, how BIM, GIS, and AI are integrated into sustainable tourism has the potential to completely change how travel destinations are planned, created, and managed. Using these technologies, policymakers may design tourism developments that are socially and environmentally conscious, improving visitor experiences and destination sustainability. (Ahmad et al. 2016; Liang et al., 2020).

Method

In-depth interviews and a literature review were two qualitative research approaches used in the current study. Setiu Wetland's observation has provided important insights into the benefits and drawbacks of facility planning. Undoubtedly, the construction of physical infrastructure and facilities in coastal wetlands involves time-consuming and expensive procedures, thus it is essential to guarantee their excellence and compliance with international standards. Factor studies are frequently used in many academic disciplines. For example, key success factors (CSFs) research is prevalent in strategic management and project management.

Identification of the strategies through Literature Review

A detailed review of BIM/GIS implementation with current digital technology (AI) studies aids in the identification of methods. To begin, the initial literature research referenced factor studies such as Eadie et al. (2015), Rogers et al. (2015), and Jin et al. (2017b) to provide an overview of BIM/GIS implementation. The investigation that followed concentrated on qualitative studies about BIM/GIS/AI practice, such as that of Ahn et al. (2015), Liu et al. (2017), and Dainty et al. (2017). These two sorts of investigations were used to create strategies. However, for the strategies to be practical and contribute to improving BIM/GIS implementation with AI technology in projects, they are based on qualitative studies that directly research BIM/GIS/AI practice rather than empirical factor studies, and they include at least one source of qualitative BIM/GIS/AI practice studies. Table 1 shows the ten strategies identified during the evaluation for BIM/GIS/AI interoperability deployment in projects.

Table 1
The previous study of the strategies for BIM and GIS Integration with AI interoperability

Code	Strategies	Sources
S1	Clearly defined plans and objectives	Dainty et al. (2017); Ding et al. (2015); Liu et al. (2017), Wang, Hou, *et al*., 2014), (Sebastian, Böhms and Helm, 2013), (Lin *et al*., 2013), Junxiang Zhu et al. (2021), Ferrando et al. (2020)
S2		Dainty et al. (2017); Jin et al. (2017b)
S3	Financial support	Ding et al. (2015),
S4	Capabilities and skills	Willenbacher et al. (2006), Eadie et al. (2015), Liu et
	Collaborative working and	al. (2017), (Niu, Pan and Zhao, 2015), (Irizarry and
	Flexibility to execute	Karan, 2012), Kang and Hong (2015), Rafiee, Dias,
		Fruijtier and Scholten (2014), Ebrahim et al. (2016),
		Irizarry et al. (2013), Sebastian et al. (2013), Liang, Y.,
		Zhang, J., Yao, Z., & Zhang, H. (2020).
S5		Jin et al. (2017a); Ding et al. (2015), (Isikdag,
	Managing changes and risks in	Underwood, and Aouad, 2008), (Irizarry, Karan,
	projects	Jalaei, 2013), (Karanand Irizarry, 2014).(Liu and Issa,
S6		2012).
	Organizational and delivery	Liu et al. (2017), (Shiu and Sar, 2014), (Wang, Li, *et*
	measures	*al*., 2014), (Amirebrahimi *et al*., 2015), (Elbeltagi and
S7		Dawood, 2011).
S8		Ding et al. (2015), Abuimara et al. (2021)
	Government policy and incentives	Rao et al. 2021 (2021), Abioye Sofiat et al. 2021,
S9	Justification of cost changes	Anumba et al. (2021)
S10		Huang, NiniÄ, and Zhang (2021), Li, Afsari, et al.
	Continuous updating	(2020)
	Increase productivity	Na et al. (2022), Sacks, Girolami, and Brilakis (2020)

Identification of the Strategies through Interview

Data Collection

Based on qualitative information gathered from primary sources, the study used an explorative qualitative research methodology (Creswell, 2003; Binder et al. 2016). In-depth interviews were recently used to gather primary data. The interviews, which started with

open-ended questions to explore themes, were conducted with ten experts in the fields of tourism, BIM, and GIS implementation with AI interoperability, including a BIM expert, program and project manager, AEC, town planners, Setiu wetland experts, ICT expert, and GIS expert. For face-to-face interviews, video calls, and online interviews (Zoom), recordings of the interviews have been made using a recording device. The researcher manually converted the audio interview into a text write-up and used Nvivo software to analyze it. The interview transcripts were grouped according to the straightforward themes and subjected to pattern coding analysis.

Data Analysis

NVivo software was used to conduct the thematic analysis throughout the research project. We employ an inductive strategy to identify and learn from the research expertise's ideas, opinions, knowledge, experiences, and values because there is not currently a body of literature on the use of BIM, GIS, and AI for sustainable wetland tourism. So, utilizing NVivo software, we were able to separate major themes with ease.

Table 2
The overview of the participant's demographic information.

Code	**Role Type**	**No of Expert**	**Years of Experience**
Architect	Design	4	5-20
BIM Expert	Design & coordinate	3	5-10
Contractor	Off-site works	5	5-20
Engineer	Civil & Mechanical & Electrical	6	5-20
Program Manager	Overall management	1	5-12
Project Manager	Facility management	3	5-12
Town Planner	Planning	6	5-20
Wetland Expert	Off-site Coordination	1	5-10
ICT Expert	AI interoperability & communication	3	3-10
GIS Expert	Land-use planning & managing geospatial data.	1	5-10
Total		33	

Findings and Analysis

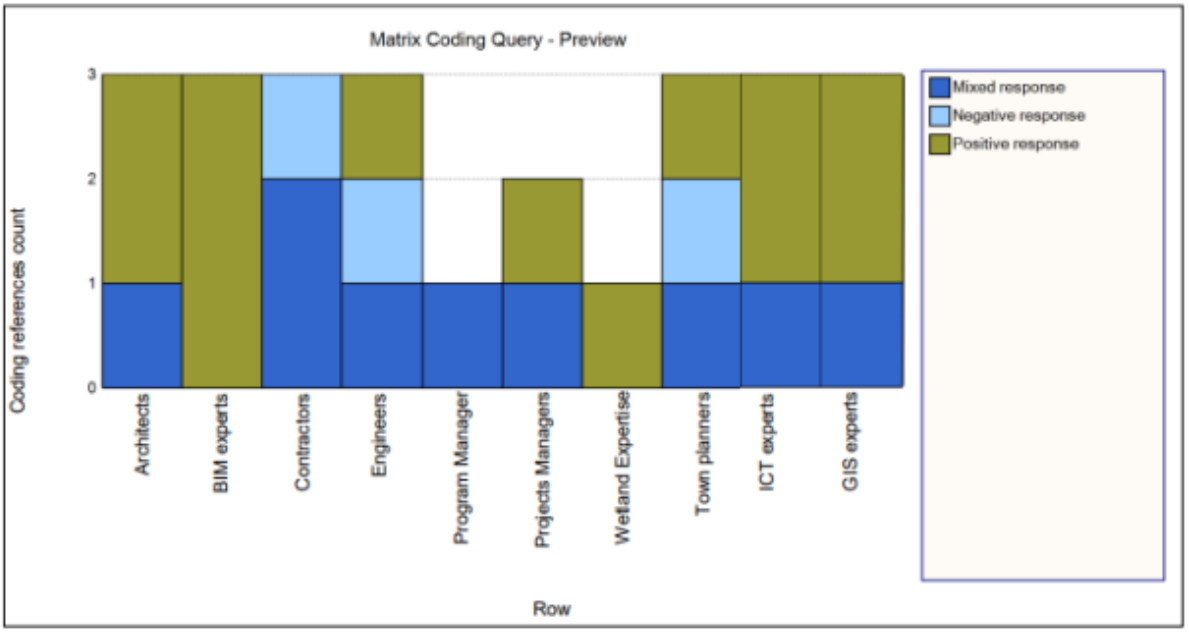

Figure 5. Perception of interviewed expertise towards implementation BIM/GIS/AI for strategic planning in wetland

By gathering and entering the audio and written transcripts of the interviews into the NVivo program, the research was then assessed. The analysis's findings showed that different levels of stakeholders had varying opinions about the use of BIM and GIS integration to sustain wetlands as a tourist destination. The findings show that the decisions about the adoption of expertise would be based on their familiarity with BIM and their accessibility to BIM/GIS and AI application capability. The use of BIM/GIS with AI integration for complicated wetland projects is depicted in Figure 5 along with various managers' assessments of their level of skill. Positive response reactions show that these experts believed the adoption of BIM and GIS Integration with AI interoperability for wetland project case studies was feasible. Mixed response reactions show experts who are unsure of the benefits of BIM and GIS with AI Integration adoption, and negative response reactions show experts who are not yet ready to adopt BIM/GIS integration with AI technology interoperability.

According to Figure 5, the majority of architects have sufficient knowledge of BIM and GIS integration and towards AI technology injection, which results in a stronger favorable reaction or influence. While engineers and municipal planners lack sufficient expertise about BIM and GIS Integration with AI medium, some of them have conflicting opinions. Despite being fully aware of the advantages of BIM and GIS Integration with AI touch for such projects, the manager representative organizations are utterly impartial and unsure about it. The Setiu wetland experts and BIM and GIS modelers are fully informed and prepared to embrace BIM/GIS with AI technology benefits, however certain engineers, municipal planners, and contractors appear to depend on the customers for this decision. To execute BIM/GIS with AI platform for the used in wetland projects, other expertise such as BIM/GIS/AI managers, project managers, and contractors' attitudes are impartial (AGC 2006).

Discussion

In order to improve BIM/GIS/AI application in wetland Malaysian tourist practices and increase BIM/GIS/AI use in the tourism business, this study looked at the guidelines for planning, guidelines awareness, and adoption. The findings emphasize the importance of implementing BIM/GIS for wetland strategy planning as well as latent influences on these strategies. The consequences of the criticality analysis and strategy planning are thus covered in the debate. The Setiu wetland in Terengganu is used as a case study in the current study. The technical features of BIM (Chong et al. 2017a) for building construction and GIS as the site's topography solely are the key areas of focus in earlier publications (Fosu et al., 2015). In order to provide detailed data's and solutions for smart optimization, the BIM/GIS platform must be integrated with new Virtual Reality (VR) technologies like Artificial Intelligence (AI), Machine Learning (ML), the Internet of Things (IoT), and three-dimensional technologies. (Altohami et al. 2021).

The audio was gathered and entered into the Nvivo program for analysis of the interpretative research in the current study. The findings showed that varied levels of skill were perceived in relation to the use of BIM/GIS/AI and its adaptability in terms of site topography and building construction and digital communication technology to provide overall master planning at Setiu Wetland. The person in charge of the Setiu Wetland (competence) towards future growth and planning in the tourism sector is shown in Figure 5 together with diverse perceptions of various levels of BIM/GIS/AI expertise in building/land use/digital communication technolog and development. The positive response reaction shows that the case study projects' adoption of BIM/GIS/AI for wetland planning as part of future strategic planning is possible. The mixed response shows those who are unsure about BIM/GIS/AI adoption, while the negative reaction shows those who are not ready to adopt BIM/GIS/AI. Although the advantages of BIM/GIS/AI include increased productivity, better decision-making, informational advantages, competitive advantages, and better risk management by reducing project mistake during construction. (Bryde et al., 2013). Cost savings, the elimination of redundant tasks, and ease of coordination and monitoring are other advantages.

In addition, by implementing BIM/GIS/AI in whole project life cycle in the Built Environment to solving problems or risk occur during the construction and development process and management (Arayici et al. 2008). However, a negative response shows that they are not yet prepared to embrace BIM/GIS/AI because they still lacked the necessary knowledge and expertise to apply BIM/GIS/AI throughout the project lifecycle. The mixed response indicates that some people are unsure about adopting BIM/GIS/AI because there are no clear guidelines or government regulations to follow. Less financial support for the adoption of BIM/GIS/AI Integration was another factor.

Table 3
The Critical Strategic Planning of BIM/GIS/AI implementation in Wetland

Code	Nodes
S1	Clearly defined plans and objectives on the given project time-line basis.
S2	Financial support to adopt BIM/GIS/AI software for each level of construction team or consultants in order to maximize the values of project delivery.
S3	Capabilities and skills will be developed by provide the BIM/GIS/AI training workshop for
S4	the construction team or consultants that will be organize by professional BIM /GIS/AI
S5	trainer.
S6	Collaborative working before project execution by doing VA/VE evaluation in BIM/GIS adoption.
S7	Managing changes and risks in projects by using BIM/GIS/AI integration solution. Organizational and delivery measures department should be setup for each consultant's department consists of AEC team/planning team/ICT team. Formulate government policy to implement BIM/GIS/AI at the very beginning stage and incentives should be given for wetland development project in order to increase values in tourism industry.
S8	AI-BIM integration can control the cost and complexity of building jobs in construction projects, as well as lower the rate of budget and schedule instability.
S9	Building professionals can benefit from important data provided by AI-assisted BIM machines through their updating features, as AI devices are dependent on experimental knowledge and learning from past and present projects.
S10	Investment in the building sector has accelerated the development of AI-assisted BIM, which has improved project pace and reduced inefficiencies in the construction process.

Table 3 shows the critical strategic planning of BIM/GIS/AI implementation in wetland based on various perceptions of expertise and several managers towards adoption of BIM/GIS/AI for complex wetland projects. For an exploratory interpretative research, the analysis is semi-structured, therefore the interview starts with open ended questions to allow the responses further (Oates et al, 2005).

In order to enhance BIM implementation there is 10 (S1-S10) critical strategic planning of BIM/GIS/AI implementation in wetland projects were identified. Hence, we summarized the summary of the main points through the nodes by coding similarity as shown in Table 2 critical strategic as majority of interviews identified S2, S3, S7,S9 as the saturation intersection results. After reviewing the need to adopt BIM/GIS/AI for strategic planning in wetland projects suggested by the participants, solutions were offered for existing or new development in wetland projects.

Hence, by referring code S2, financial support would be from the government assistance in terms of financial resources to adopt BIM/GIS/AI in the whole project life cycle for each level of construction team or consultants in order to maximize the values of project delivery (Rowlinson & S., 2017). While referring the code S3, Capabilities and skills will be developed by provide the BIM/GIS/AI training workshop for the construction team or consultants that will be organize by professional BIM/GIS/AI trainer from the legal company such as Autodesk to develop set of skills by using BIM/GIS/AI tools. Lastly, by referring code S7, Formulate government policy to implement BIM/GIS/AI at the early stage of projects will educate awareness among stakeholders. S9, AI devices rely on experimental knowledge and learning

from previous and current projects, which means AI-assisted BIM machines can provide useful data to building workers through their updating features. Thus, incentives should be given for wetland development project in order to attract interest among public and private industry players, at once increase values in tourism industry (Miettinen & Paavola, 2014).

Conclusion

BIM/GIS/AI has many uses in the industry and is highly regarded in academia, however there are difficulties with its methodical application in tourism projects. Planning techniques for BIM and GIS Integration with AI medium are outlined in this case study. For the tourism industry to reap the potential benefits of BIM/GIS/AI, it is necessary to stay current with technology advancements. Through the integration of BIM/GIS/AI systems, the gap between global scale and detailed data may be closed. According to the literature, cooperation may be essential to wetland tourist initiatives and may help solve current issues, opening up vast prospects and improving strategic planning (Eriksson et al., 2007). There is not enough study, though, that focuses on integrating them.

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