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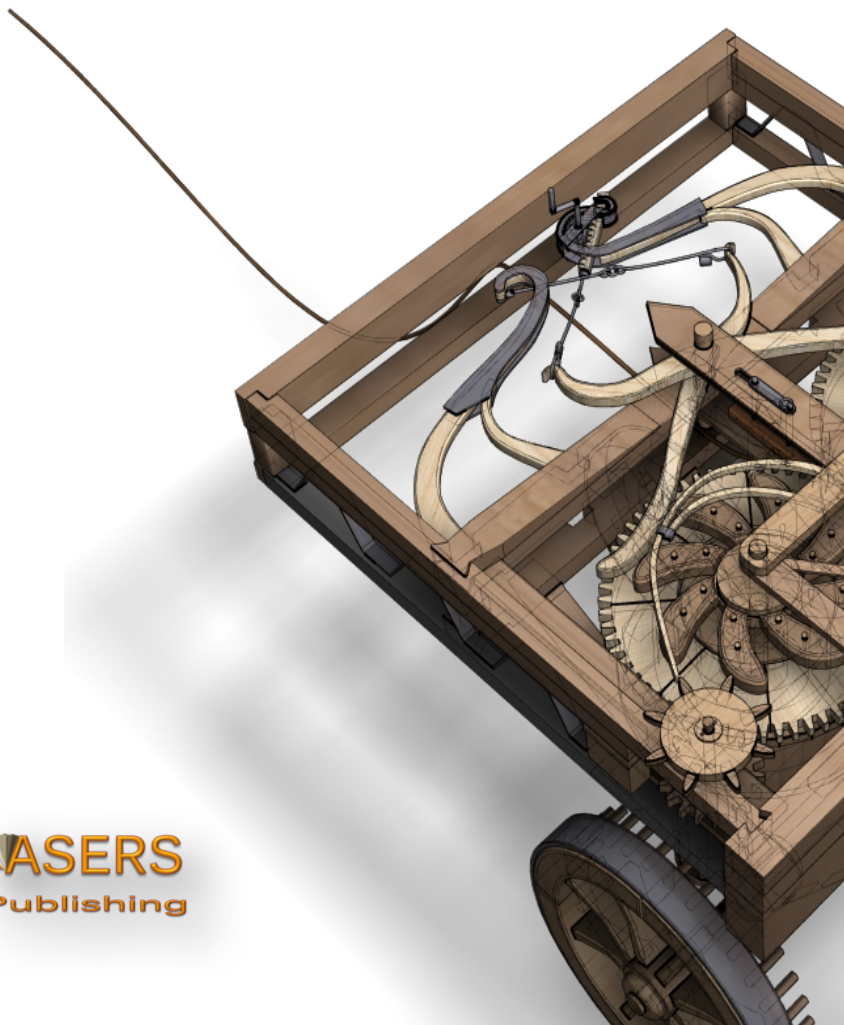

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Strategy Approach for the Development of a Sustainable Environmentally Friendly Tourism City

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Abstract: This study employs a case study approach in the Batu City Region, East Java Province, Indonesia. Over time, Batu City has undergone a significant transformation, particularly in the tourism sector, leading to the growth of a large service industry. This study aims to propose a comprehensive development strategy for the Batu City area integrating economic, social, and environmental elements into the spatial layout of Batu City, with the ultimate goal of establishing an environmentally friendly Tourism City. Strengths, weaknesses, opportunities, threats analysis and analytic hierarchy process were employed to assess data from interviews, questionnaires, and agency sources. The stages of analysis are as follows:

1) data collection, 2) analysis, and 3) strategic prioritizing. This study recommends the main priority strategy for the development of a sustainable environmentally friendly tourism city is committing to implementing the principles of sustainable urban development and environmentally friendly tourism citiy through Regional Regulations. Considering the unique attributes of each city, such us their economy, resources, policies, and environment, among other factors, this paper considers contextual relevance issues. By doing so, it assists cities in developing sustainable cities based on their own strengths, weaknesses, opportunities, and threats.

Keywords: analytic hierarchy process (AHP); strength, weakness, opportunity, threat (SWOT); tourism city development; urban spatial.

JEL Classification: R58; D79; Z32.

Introduction

This study focuses on the Batu City Region in East Java Province, Indonesia, known for its mountainous terrain and highland territory The city's landscape includes plantation and agricultural lands, with hilly regions dedicated to agro crops and ornamental plants. Agriculture, plantations, and tourism are the primary livelihood sources for its residents. Batu City is located in a location with relatively good soil fertility, and the majority of the land is used for agriculture and tourism (Lusiana *et al.* 2017). The growth of Batu City in 2021 is good, as evidenced by a 4.04 percent (%) increase. Batu City is placed ninth out of 38 East Java regencies and cities in terms of economic growth (CBSBC (Central Bureau of Statistics of Batu City). 2022). The phenomenon of agricultural land conversion in Batu City happens in all sub-districts. Both in Batu District, which serves as the city's heart, Bumiaji District, which serves as a buffer since most of the area is forest, and Junrejo District, which serves as an agricultural area. When it occurs in paddy fields, the conversion of agricultural land in Batu City creates several problems. This is since paddy fields are the most ideal place for cultivation to preserve food stability. It must be conserved to prevent the function of paddy fields from shifting to other land purposes (Prayitno, Subagiyo, Kusriyanto 2020). The aim of the current study is to propose a comprehensive development strategy for the Batu City area integrating economic, social, and environmental elements into the spatial layout of Batu City, with the goal of establishing an environmentally friendly Tourism City. This study has been carried out in Batu City on Mei, Indonesia in 2022.

This study used AHP-based SWOT analysis to improve the quantitative side in producing strategic planning by determining priorities among SWOT factors methodically. This study acknowledges the importance of contextual relevance in city development, recognizing the significance of tailoring strategies to the specific strengths and weaknesses of each city. By adopting the SWOT-AHP method, the paper contributes to the theoretical understanding of sustainable tourism city development strategies while reflecting on the current situation of Batu Tourism City. This study provides decision-makers with a systematic flowchart, encompassing the fundamental stages of identifying factors, formulating strategies using the matrix, and prioritizing strategies using the quantitative approach. From a practical standpoint, this study offers a comprehensive and systematic approach to decision-makers involved in sustainable tourism city development strategies.

1. Research Background

In the twenty-first century, sustainable urban development has emerged as a crucial topic in urban policy debates, emphasizing the need for sustainable policies in environmental planning and decision-making (Pezzey 2004). Sustainability concepts trace back to influential works such as those of the Club of Rome, the Bruntland report, and the Rio Declaration. In recent years, the urgency of sustainability has been underscored by the adverse impacts of human activities (Yigitcanlar, Teriman 2015). The United Nations Sustainable Cities Program aims to sustainably manage natural resources while achieving economic, physical, and social progress and safeguarding against environmental risks (Hassan, Hyowon 2015). A sustainable city integrates social, cultural, environmental, political, economic, and physical objectives, ensuring equitable access to services while preserving resources for future generations (Hassan, Hyowon 2015). Such 'urban sustainability' demands a cohesive interaction among three environments: eco-physical, social, and economic.

Furthermore, today's tourism industry has always incorporated the concept of sustainability. This is linked to the economic improvement of a region that can be achieved by using sustainable tourism (Song, Hongmei 2023), including attracting investment into the regional economy, improving the standard of living, reducing unemployment (Dudin *et al.* 2017). Sustainable tourism can be defined as a form of tourism that can improve the quality of life of local people, provide a high-quality experience for visitors whileining environmental quality (Ginting, Munazirah, Julaihi Wahid. 2023), so good management of tourist enterprises must grow alongside efficient environmental management of all sectors (Phoochinda 2018). The link between tourism development

and environmental compatibility will form a framework for sustainable ecosystems. The framework explains the balance between business and environmental interests inining ecological systems with the help of moderation of government support and policy intervention (Baloch, *et al.* 2023; Nugroho *et al.* 2023). A study carried out by (Firman *et al.* 2023) revealed that environmentally friendly product innovation, environmentally friendly process innovation, organisational innovation, ecologically friendly tourism policy, and social media have a positive relationship with sustainable tourism growth in Indonesia. This is in line with the rise in international interest in the links between tourism, technological developments, and climate change in recent years (Song, Hongmei 2023). Therefore, environmental innovation as well as tourism policies can boost tourism development and need attention. Therefore, environmental innovation as well as tourism policy can boost tourism development and need attention.

Batu City's transformation has resulted in a large service industry, particularly in the tourism sector. The result is the establishment of numerous permissions that promote function transfer and the subtle appropriation of agricultural economic space. Additional issues arise, such as the conversion of forests to seasonal agriculture, rising temperatures, and agricultural practices that rely on pesticides and medications, which eventually damage the soil, causing the slow death of apples and other commodities, causing farmers to lose money. This condition was observed during Batu City's major makeover. Agriculture that was not "profitable" was abandoned, the land was sold, and farmers changed careers. Massive function transfer, with farmers eventually becoming workers in the tourism sector or filling service areas. Exploitation is also becoming more prevalent in the Brantas watershed's upstream section. Its status can be evaluated by satellite imagery using data from Global Forest Watch (GFW). For nearly two decades, Batu City's Forest cover has shrunk by 348 hectares (ha). In total, roughly 1,295 ha of forest were lost in Batu City, including 113 ha of protected forest. Furthermore, the area of green land in Batu City has decreased from 6,034.62 ha to 5,279.15 ha between 2012 and 2019. The changes that have transpired over the last almost ten years have been one of the elements driving the temperature increase in Batu City, as well as the problem. Temperature and rainfall fluctuations have caused a drop in apple yield. This circumstance has resulted in a huge modification of agricultural land functions. Farmers who are losing money because of decreased apple yields are urged to sell their land and convert it to other purposes, such as housing, tourism attractions and tourism support building. Food agricultural land, such as rice farms, is also converted for housing, tourism, and other purposes. From 2009 to 2019, using geographic information system (GIS) analysis, it was found that paddy fields decreased by around 6.19%, then settlements increased by 5.46% (Prayitno, Subagiyo, Kusriyanto 2020). The aforesaid conditions are becoming increasingly evident in Batu City data from the Central Bureau of Statistics In the Batu City in Figures report, there is a significant change in the type of work. In 2010, approximately 35,427 people worked as farmers out of a total working population of 95,679 people. A decade later, the number of persons working as farmers fell by around 5,426 people. This statistic is derived from the difference in the farming profession's average population in 2021, which is 3,001 people out of a total of 112,623. This drop has also led to a rise in the number of people working in the service industry. If in 2010 there were 14,932 people, then in 2021 it will skyrocket to 64,529 people, an increase of 49,581 people.

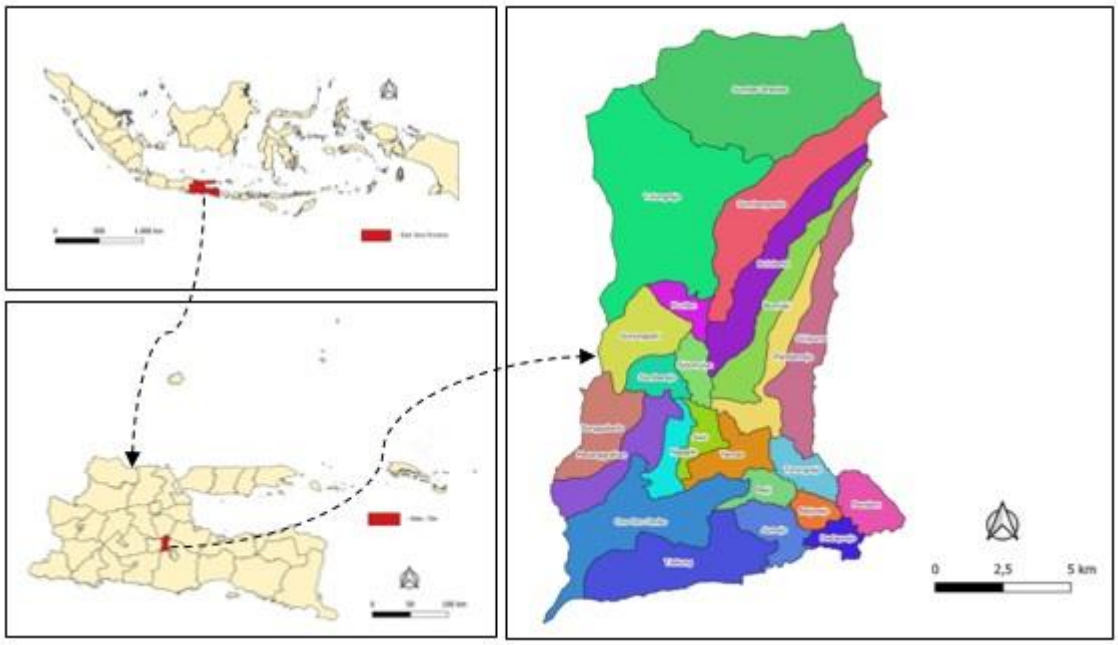
Plans and strategies are critical in assisting governments in developing sustainable cities (Mora, Deakin, Reid 2019; Yuan, *et al.* 2020). To better manage the connection of socioeconomic systems and natural resources, sustainability plans should be designed from this perspective (Fan, Fang, Zhang, 2019; Lee, Chueen-Wah, Ke Xue. 2021a). AHP-based SWOT analysis is used to improve the quantitative side in producing strategic planning by determining priorities among SWOT factors methodically (Gorener, Toker, Ulucay 2012). Furthermore, the proposed analytic hierarchy process and strength, weakness, opportunity, threat (AHP-SWOT) hybrid method can be used as an effective quantitative strategic planning tool for various purposes, including to help determine the right strategy to develop significant strategic determinants of smart cities for manufacturing companies (Gorener *et al.* 2012); define strategies to strengthen local sustainable development and urban resilience (Escobar *et al.* 2020) formulate sustainable smart city development strategies (Yuan *et al.* 2020); develop a strategy to accelerate the growth of the satellite industry (Lee *et al.* 2021b); decision-making strategies used in the revitalization of fishing village tourism (Lee *et al.* 2021c); make suggestions regarding province sustainable development goals (SDGs) (Kaymaz *et al.* 2022); reviewing suggestions for the development of science tourism (Long *et al.* 2023); analyze how to increase citizens' sense of profit in smart cities (Li, *et al.* 2023); and hiding the impact of green space planning on increasing social sustainability (Nasrabadi *et al.* 2023). This study provides a quantitative path analysis for strategic formulation of sustainable tourism city development by examining the benefits, drawbacks, possibilities and risks of existing developments. This is analyzed by SWOT (strength, weakness, opportunity, and threat) which is the right tool to identify the key variables currently influencing the

development of cities, highlighting internal (strengths and weaknesses) and external (opportunities and threats) factors that determine choices and provide strong support for decision makers.

2. Methodology

The geographical location of Batu City is 7° 44' 55,11" until 8° 26' 35,45" NL and 122° 17' 10,90" until 122° 57' 00,00" EL, as presented in Figure 1.

Figure 1. Gheographic location of the study area in Batu City, Indonesia



SWOT analysis is a widely used tool for simultaneously analyzing the external and internal environment, providing a systematic approach and decision-making support in various situations [Kurttila *et al.* 2020; Yuksel, Metin 2007; Oreski 2012). SWOT analysis is able to grow strengths, eradicate weaknesses, issue opportunities and minimize threats in an analytical way (Saaty 1987). In this research, SWOT and AHP methodologies were employed to analyze data obtained from interviews, questionnaires, and the Batu City Government. The SWOT and AHP analysis in this study encompassed the following stages: 1) data collection, 2) analysis, and 3) strategic prioritization. Through data collection, the internal and external environments were examined, with the internal assessment revealing strengths and weaknesses, while the external evaluation highlighted opportunities and threats. The data sources included primary data from interviews and surveys, as well as secondary data from related agencies. During the SWOT strategy formulation and analysis phase, both internal and external factors were considered, leading to the development of strategic priorities. This comprehensive approach allowed for a robust and informed decision-making process in formulating the development strategy for Batu City The formulation of the four sorts of strategies is presented in Table 1.

Table 1. SWOT Strategy Formulation Matrix

IFAS/EFAS	Internal Strenghts (S)	Internal Weaknesses (W)
External Opportunities (O)	SO Strategy Creating strategies that use strengths to take advantage of opportunities.	WO Strategy Creating strategies that minimize weaknesses to take advantage of opportunities.
External Treaths (T)	ST Strategy Create strategies that use strengths to overcome threats.	WT Strategy Creating strategies that minimize weaknesses and avoid threats.

Source: Rangkuti, F. 2016

Following the completion of the SWOT analysis, the next stage involves decision-making based on the multiple SWOT outcomes, with priority determined using the AHP. AHP is a powerful decision-making strategy, especially when dealing with subjective criteria (Saaty 1987). By performing pairwise comparisons, AHP

determines the relative importance of factors to select the optimal choice among different options. The use of AHP allows for objective prioritization of plans derived from the set of potential strategies identified in the SWOT analysis. To conduct the AHP analysis, Expert Choice software was employed, which enables the assessment of relative priorities on an absolute scale (Semih, Sipahi Seyhan. 2011). Each component in the AHP hierarchy is evaluated through pairwise comparisons, with a scale of 1-9 utilized to gauge the relative importance of factors at each level (Saaty 1977). The scale is presented in Table 2. The analysis engaged several experts in the field of urban spatial planning, who provided their evaluations using the Expert Choice software.

Table 2. Comparison Saaty Matrix

Intensity of interest	Definition
1	Equally important compared to the others
3	Slightly more important than the others
5	Quite important compared to the others
7	Very important compared to others
9	Extreme importance compared to others
2,4,6,8	Value between two adjacent assessments

Source: Saaty 1977.

According to Kahraman (2007), the hierarchy of the AHP-SWOT method consists of multiple tiers or levels. At the first level, the elements encompassed in each group of factors derived from the SWOT analysis are included. The second level comprises strategic considerations associated with each group of factors from the SWOT analysis, and finally, the strategies are reviewed and compared at the third level. In this study, a comprehensive SWOT-AHP assessment approach was adopted for sustainable tourism city development, integrating social, economic, and environmental dimensions. Saaty's AHP (1977) is among the most widely used multicriteria decision-making strategies. Building on this concept, Saaty (1982) developed a comparison method that models a hierarchical decision-making framework with numerous criteria and one-way interactions. AHP utilizes logical and numerical consistency to establish hierarchies and assess the preferences among alternatives (Wind and Saaty 1980).

It is a robust and comprehensive methodology that leverages empirical data and subjective judgments to support decision-makers in making well-informed choices (Escobar, Aguarón and Moreno-Jiménez 2004; Sólnes, J. 2003).

3. Case Studies

SWOT analysis

The strategy for building Batu City as a sustainable tourism destination was determined using the Internal Factor Analysis Strategy (IFAS) and External Factor Analysis Strategy (EFAS) components within the SWOT matrix. This matrix provides an overview of how external opportunities and threats are balanced against internal strengths and weaknesses. The SWOT matrix is a valuable tool for designing four types of strategies, namely S-O (Strengths-Opportunities), W-O (Weaknesses-Opportunities), S-T (Strengths-Threats), and W-T (Weaknesses-Threats) strategies (Attar *et al.* 2013). Combining these elements, the SWOT analysis generates four feasible alternative tactics. To prioritize the strategies, a strategic priority scale was developed based on previous studies (Rangkuti 2016, Abulebdah, and Musharavati 2011). Table 3 presents the findings of the alternative strategy study, outlining the four feasible alternatives: S-O, W-O, S-T, and W-T strategies. These strategies reflect an approach to developing Batu City as a sustainable and environmentally friendly Tourism City. According to Kanom *et al.* (2020), developing tourism destinations with a focus on sustainable tourism ideally involves attention to various aspects, including environmental sustainability, economic sustainability, and social and cultural sustainability for local communities.

Furthermore, AHP is used to prioritize the decision-making phases of the numerous SWOT outcome tactics. The priority values are determined based on the results of the questionnaire and analyzed using expert choice 2000 (Figure 2). The AHP findings reveal the weight values for the strategic priorities of Batu City's development as a sustainable tourism destination, ranked from the highest to the lowest priority.

Table 3: Matrix of SWOT strategy analysis results

IFAS/EFAS	STRENGHTS (S)	WEAKNESSES (W)
	S1. Batu City's economic growth continues to increase. S2. Batu City, which is still dominated by forests, is a tourist attraction. S3. Most of the population works in the tourism support sector. The second line of business is agriculture, forestry, hunting and fishing. S4. Geological conditions support the development of the agricultural and plantation sectors. S5. The agricultural sector can also be used for tourism. S6. Tlekung final landfill has implemented integrated waste management, TPS3R has been built in 8 urban villages.	W1. The topography of Batu City is a mountainous and hilly area that is prone to landslides, flash floods and mudflows (RPJMD 2017-2022). W2. Types of disasters with a high level of hazard and vulnerability are landslides, forest and land fires, and drought. W3. About 23 percent of the population in the 16-18 year age group are not in school. W4. The number of schools at the junior and senior high school level between the 3 sub-districts is not balanced between sub-districts. W5. Batu City still lacks green open space by 9%.
OPPORTUNITIES (O) O1. Investment value continues to increase. O2. The number of tourists in general has increased.	**SO Strategy** (1) Developing sustainable tourism and agriculture sectors as Batu City's leading sectors while preserving natural resources.	**WO Strategy** (2) Using commercial opportunities and regional income, particularly in the tourism industry, to create educational facilities and infrastructure and provide scholarships to raise school enrollment rates, so that an increasing number of people have access to environmental education from a young age.
TREATHS (T) T1. The population of Batu City in 2021 will experience a growth of 0.75 percent. T2. The occurrence of natural disasters in 2021 increases. T3. Paddy field area from year to year decreased. T4. Ecosystem services at very low class: ecosystem services function of shelter and living space; recreation and ecotourism; as well as climate regulation and cultural functions of natural aesthetics. T5. The Tlekung final landfill is said to be almost full. T6. The Upper Brantas River has a slightly polluted status. T8. Investors can be a threat because it is possible to pay less attention to nature and the environment. T7. The development of public transportation is not yet a priority.	**ST Strategy** (3) Commit to applying the concepts of sustainable urban development and eco-friendly tourism cities through Regional Regulations by taking the following factors into account: (a) expansion of public transportation facilities and infrastructure; (b) expansion of waste processing both at the final landfill, Waste Processing Site - Reduce Reuse Recycle, and at the source; (c) protection of the Brantas watershed upstream so that it is no longer polluted and is not used as much built-up area; (d) land use that does not deplete natural resources. (4) Increase selectivity in tourism and real estate development due to ecosystem services for shelter and living space; recreation and ecotourism; Climate regulation, as well as the cultural function of natural beauty, have the highest percentage value in the extremely poor class.	**WT Strategy** (5) Develop community disaster mitigation capabilities from an early age through environmental education in schools.

AHP analysis

Furthermore, AHP is used to prioritize the decision-making phases of the numerous SWOT outcome tactics. The priority values are determined based on the results of the questionnaire and analyzed using expert choice 2000 (Figure 2). The AHP findings reveal the weight values for the strategic priorities of Batu City's development as a sustainable tourism destination, ranked from the highest to the lowest priority.

Table 4. AHP analysis results

No	Strategies	AHP value
1	Developing the sustainable tourism and agriculture sectors as the leading sectors of Batu City while concurrently preserving the natural environment	0.170
2	Utilizing regional revenues, particularly from the tourism sector, to build educational facilities and infrastructure at increasing school enrollment rates.	0.060
3	Committing to implementing the principles of sustainable urban development and environmentally friendly tourism citiy through Regional Regulations.	0.565
4	Exercising selectivity in tourism and real estate development to ensure sustainable growth.	0.138
5	Instilling disaster mitigation capacity in the community from an early age through environmental education in schools	0.067
	Inconsistency = 0.09	

The firts priority strategy is The Batu City government should firmly commit to implementing the principles of sustainable urban development and eco-friendly tourism cities through Regional Regulations. To achieve this, the following factors need to be considered. (a) Increased development of public transportation facilities and infrastructure. The construction and improvement of public transportation facilities and infrastructure are essential for promoting sustainable urban development. By investing in efficient and accessible public transportation systems, the city can reduce reliance on private vehicles, lower travel expenses, and encourage a shift towards more environmentally friendly modes of transportation (Wang *et al.* 2018). (b) Increased development of waste processing: Proper waste management is crucial for long-term sustainable growth. The Batu City government should focus on developing waste processing facilities, including final landfills and Waste Processing Sites, using the Reduce, Reuse, Recycle approach. Effective waste management not only contributes to environmental protection but also enhances the overall sustainability of the city (Phdungsilp 2022). (c) Preservation of the Brantas watershed upstream. Protecting the Brantas watershed upstream from pollution and excessive urban development is essential to maintain the health of the water source and surrounding ecosystems. Preserving natural water resources is vital for sustainable development and the well-being of both residents and visitors. The study by Sulistyowati *et al.* (2023) emphasizes that the Government should immediately pay attention to the problem of Brantas DAS which includes the large proportion of change of land function to agriculture and tourism without taking into account the conservation aspects of land, as well as the shifting of the function of the river boundary designated as green areas, which is not in accordance with its provisions. In turn, water pollution can affect ecosystem and human health. (d) Sustainable land use practices. Land use planning should prioritize the conservation of natural resources and avoid excessive exploitation. Sustainable land use aims to preserve or restore soil quality and fertility, ensuring long-term physical and economic sustainability (Wrachien 2001). The approach recommended by Kisi (2019) in a study of sustainable tourism development in Zonguldak, Turkey, aligns with the results of this study. Both studies advocate for strategies that focus on enhancing tourism infrastructure, addressing waste management, and conserving nature. Additionally, empowering local authorities to apply sustainable principles is crucial in overcoming environmental threats and preserving natural resources. Furthermore, according to Baloch *et al.* (2023), sustainable ecotourism development requires supportive government policy interventions to ensure effective conservation of natural resources and the environment without compromising the economic viability and social well-being of the local population.

Second, developing sustainable tourism and agriculture sectors as Batu City's leading sectors while preserving natural resources. The statement emphasizes the importance of sustainable tourism development and its principles to ensure a positive impact on the tourism sector without compromising the needs of future generations (Obot, and Setyawan 2017). The principles of sustainable tourism development, as defined by MCT (The Minister of Culture and Tourism) (2010), include maintaining environmental quality, providing benefits to local communities and tourists, preserving the relationship between tourism and the environment, fostering harmony between local communities, tourist needs, and the environment, creating dynamic conditions aligned with carrying capacity, and promoting collaboration among all stakeholders based on a shared mission. Additionally, Kisi (2019) examination of the strategic approach to sustainable tourism development provides

valuable recommendations. These include supporting product diversification and event management through the guidance of destination management organizations to organize national and international events. Moreover, the development of traditional handicrafts can contribute to the preservation of local culture and heritage, which are essential components of sustainable tourism. By adhering to these principles and implementing the recommended strategies, Batu City can foster sustainable tourism development that respects the environment, benefits local communities, and creates a dynamic and resilient tourism sector for the present and future generations. This approach will ensure that tourism growth in Batu City is not only economically viable but also environmentally and socially responsible.

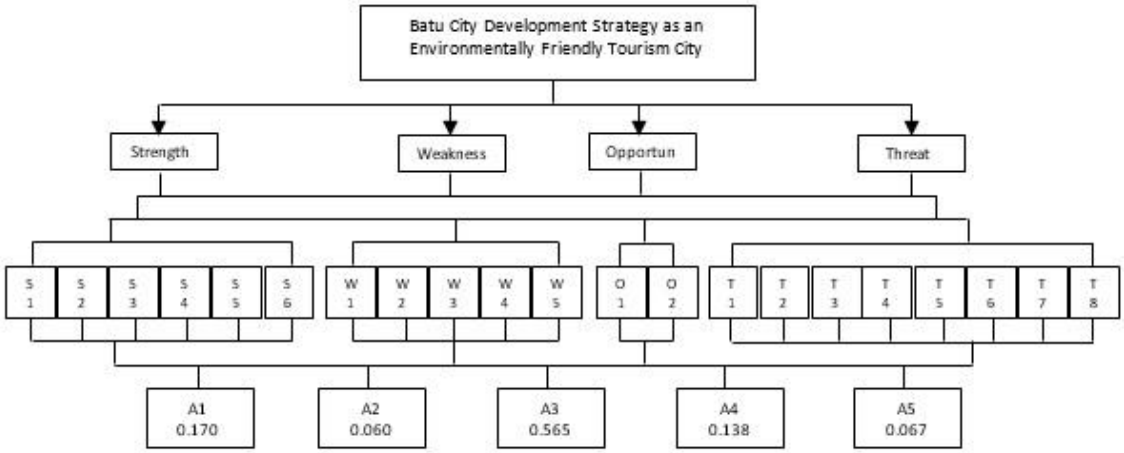
Third, increase selectivity in tourism and real estate. Increasing investment in improving the technological level of urban public pollution control infrastructure and other facilities can yield several benefits, particularly in terms of urban socioeconomic development. Upgrading technology not only contributes to lowering energy consumption and pollutant emissions but also enhances the overall urban environment. A beautiful and sustainable urban environment promotes the health of the urban population and attracts new residents, which, in turn, stimulates the economy and provides a skilled labor force for social development. Cities with advanced socioeconomic development usually offer better educational opportunities, which play a crucial role in encouraging people to adopt resource-efficient and environmentally friendly lifestyles (Fan, Fang and Zhang 2019). This highlights the interdependence and synergy between the social-economic subsystem and the ecological environment subsystem in generating a sustainable urban system (Wang, *et al.* 2011; Bai, *et al.* 2016; Fang, *et al.* 2016). Furthermore, in the context of sustainable tourism development, Kisi (2019) emphasizes the importance of organizing permanent programs for public-private partnerships. Strengthening linkages between tourism and other regional industrial sectors is also crucial to overcome threats to the environment and natural resources. Such collaborations can foster sustainable tourism practices that benefit both the tourism industry and the overall environmental preservation efforts. By investing in technological advancements and fostering partnerships between various sectors, Batu City can accelerate its socioeconomic development while ensuring the preservation of its ecological environment. This integrated approach will support sustainable urban growth and promote responsible tourism development in the region.

Fourth priority strategy is developing community disaster mitigation capabilities from an early age through environmental education in schools. Environmental sensitivity refers to an individual's ability to empathize with the environment, which subsequently leads to proactive environmental care activities. In the context of students, their comprehension of environmental issues is influenced by their personal experiences. As students' environmental knowledge increases, so does their empathy and concern for environmental issues, which can translate into a greater intention to take environmental action (Putri *et al.* 2022). Similarly, Kisi (2019) also emphasized the significance of education as a key strategy for sustainable tourism development. This includes educating students and communities about the city's identity and culture, raising awareness about community tourism entrepreneurship while considering the optimal utilization of environmental resources. Additionally, training on sustainable tourism practices can benefit stakeholders, leading to waste reduction and overall environmental preservation. By fostering environmental sensitivity and providing education on sustainable practices, Batu City can cultivate a community that actively engages in environmentally conscious actions. Empowering students and community members with knowledge and empathy for the environment will contribute to the preservation of natural resources and promote sustainable tourism practices in the region. This holistic approach will support the long-term development and resilience of Batu City as a sustainable tourism destination.

Fifth priority, using regional income, particularly in the tourism industry, to create educational facilities and infrastructure to raise school enrollment rates. Tourism has a role in national development by providing foreign exchange, leveling and growing employment and income prospects, strengthening unity and unity, and learning about the culture of the country. One of the area's potentials is tourism, which has the potential to become a large industry if adequately managed, directed, and sustainable (Setiyanti *et al.* 2011). Moreover, school participation rates correlate with progress in sustainable development. Research conducted by Song and Hongmei Han (2023) looks at how increased innovation and tourism can help the economy of the people. Evidence suggests that the level of primary school participation promotes sustainable development by reducing environmental degradation and promoting economic growth.

Figure 2 depicts the hierarchy for developing Batu City's growth strategy as a sustainable tourism city. The factors contained in each group of factors from the SWOT technical definition are at the first level; the strategic factors included in each group of factors from the SWOT definition are at the second level; and the strategy that must be assessed and compared is at the third level.

Figure 2. The hierarchy of Batu City's growth strategy as an environmentally friendly tourism city



Source: analysis result, 2023

Conclusion

Based on the results of the SWOT-AHP calculation, a quantitative priority analysis can be derived. The initial step in strategy formulation involves evaluating urban development to identify various factors derived from the SWOT analysis. By assessing strengths, weaknesses, opportunities, and threats, the research findings can not only assist Batu City in devising effective approaches for promoting and developing eco-friendly sustainable tourism cities but also serve as a guiding framework for other cities with similar characteristics. This study recommends the following strategies for the Batu City Government to develop the area into an environmentally friendly Tourism City; 1) committing to implementing the principles of sustainable urban development and environmentally friendly tourism citiy through Regional Regulations; 2) developing the sustainable tourism and agriculture sectors as the leading sectors of Batu City while concurrently preserving the natural environment; 3) exercising selectivity in tourism and real estate development to ensure sustainable growth; 4) instilling disaster mitigation capacity in the community from an early age through environmental education in schools; and 5) utilizing regional revenues, particularly from the tourism sector, to build educational facilities and infrastructure at increasing school enrollment rates.

This model case serve as an effective strategic planning tool for other countries or cities. Each city possesses unique attributes, such as economy, resources, policies, and environment, requiring distinct strategies for their development. This study acknowledges the importance of contextual relevance in city development, recognizing the significance of tailoring strategies to the specific strengths and weaknesses of each city. By adopting the SWOT-AHP method, the paper contributes to the theoretical understanding of sustainable tourism city development strategies while reflecting on the current situation of Batu Tourism City. This study provides decision-makers with a systematic flowchart, encompassing the fundamental stages of identifying factors, formulating strategies using the matrix, and prioritizing strategies using the quantitative approach. From a practical standpoint, this study offers a comprehensive and systematic approach to decision-makers involved in sustainable tourism city development strategies. The utilization of the SWOT-AHP method empowers decision-makers with data-driven insights, enhancing the effectiveness of decision-making processes and promoting the sustainable development of tourism cities.

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Credit Authorship Contribution Statement

Lilik Sulistyowati: developed the concept and plan for this project research, carried out the project administration, supervised the entire research, and reviewed and edited the manuscript.
Eny Krisnawati: developed the concept and plan for this project research, and reviewed and edited the manuscript

Novi Andareswari: carried out the project administration, collected the data, carried out the analysis include the software, wrote the manuscript.
Firman Afrianto: collected the data, carried out the analysis include the software.
Abdul Rais: developed the concept and plan for this project research, carried out the project administration.
Mohammad Fauzi Hafa: collected the data, conducted a literature review, and wrote the manuscript.
Darwiyati: conducted a literature review and wrote the manuscript.
Andi Lopa Ginting: collected the data, conducted a literature review, and wrote the manuscript.
Rifqi Rahmat Hidayatullah: carried out the analysis include the software, wrote the manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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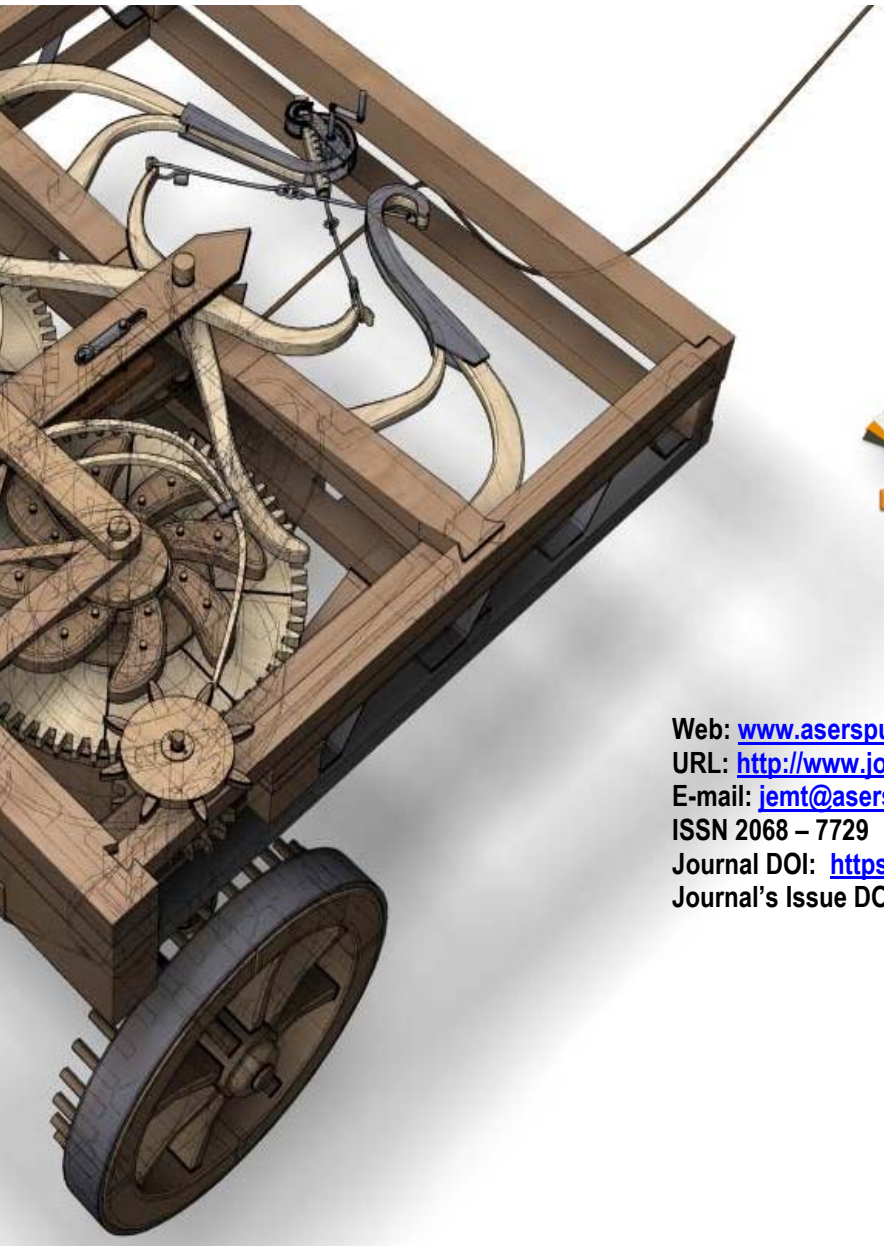

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