

## Original Article

# An Analysis of Tourism Carrying Capacity in the Development of the Hortimart Agro Center Tourism Site, Bawen–Semarang

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## ABSTRACT

The increasing number of tourist visits to the Hortimart Agro Center from year to year presents new challenges in managing environmental carrying capacity. This study aims to analyze the tourism carrying capacity to ensure sustainability and enhance visitor experience quality. Utilizing a quantitative approach, this research involves calculations of physical carrying capacity (PCC) and effective carrying capacity (ECC), as well as a SWOT analysis to formulate appropriate development strategies. Data were collected through observation, interviews, questionnaires, and documentation involving 100 respondents selected using accidental sampling. The findings indicate that the ECC value is only 10 persons per hour, while the actual number of visitors (ANV) reaches 230 persons per day, suggesting that the environmental capacity has been exceeded. Although the aspects of attraction, amenities, and accessibility received positive evaluations, weaknesses remain in attraction innovation and digital promotion. Therefore, a sustainable development strategy that includes capacity adjustment, service enhancement, and attraction diversification is essential to maintain the sustainability and competitiveness of the destination.

## KEYWORDS

Tourism Carrying Capacity;  
Sustainable Development Strategy;  
Hortimart Agro Center.

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## INTRODUCTION

Tourism is a strategic sector that contributes significantly to economic development, both nationally and regionally. If managed optimally and sustainably, this potential can be an important instrument in improving community welfare, creating jobs, and strengthening the local economy (Rahma, 2020). According to Stange & Brown, the components of tourism development consist of 4As, namely Attraction, Accessibility, Amenities, and Ancillary. All four of these are key elements that support

each other in creating attractive and easily accessible tourist destinations. If one component is neglected, it can reduce the attractiveness of tourism (Audrey, 2025).

Tourism development requires tourism carrying capacity to maintain the sustainability of destinations (Jamin et al., 2022). Carrying capacity includes the limits of a tourist area's ability to accommodate visitors without causing negative impacts on the environment, society, and culture (Sofiyan et al., 2019). Tourism carrying

capacity includes three aspects: physical, real, and effective. Physical carrying capacity serves to achieve tourist satisfaction. Effective carrying capacity is used to maintain ecosystem balance, and to protect the comfort and safety of tourists, real carrying capacity is determined (Handika et al., 2023). The main objectives are to maintain the quality of tourist attractions, increase their appeal, and ensure visitor satisfaction (Jamin et al., 2022). This should be a concern for managers, as limiting the number of tourists allowed to enter a tourist site is an effective strategy for maintaining the physical, social, cultural, and environmental appeal of the site. Without capacity-based planning, an increase in visits can actually reduce the quality and function of a tourist destination (Saepul & Fadlina, 2023).

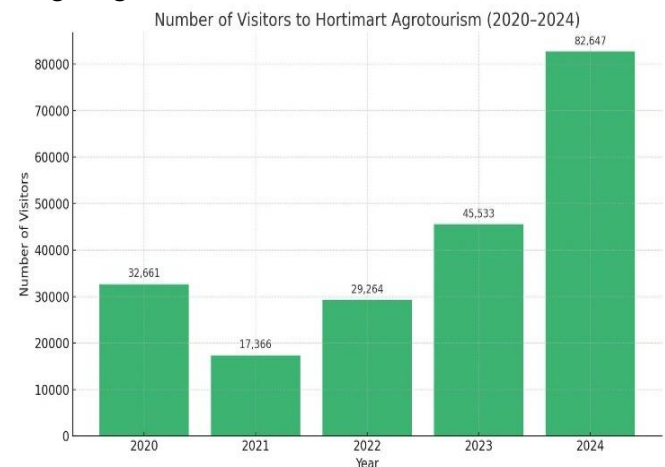
Tourism carrying capacity is based on factors that influence a tourist attraction, such as facilities, accessibility, and interaction between tourists and the local community. According to Mathieson & Wall (1982) in Syiddatul Akliyah & Zulkarnain Umar (2013), the carrying capacity of a tourist attraction is the ability of a tourist site to optimally meet the needs of tourists without affecting environmental conditions or reducing the quality of tourism. Tourist attractions have various characteristics of carrying capacity that differ in each tourist destination (Dewita & Maryati, 2023). In this study, tourism carrying capacity is used as a method to classify several available tourist attractions into large, exceeded, or optimal classifications.

Apsari et al. (2023) explain that agrotourism is growing rapidly in Indonesia as a form of sustainable tourism that combines education, conservation, and rural economy. Based on the Joint Decree of the Minister of Agriculture and the Minister of Tourism, Post, and Telecommunications No. 204/KPTS/HK/050/4/1989 and No. Km.4/PW. DOW/MPPT/89, it is stipulated that agrotourism is a tourism activity that uses businesses as tourist attractions with the aim of expanding recreation, knowledge, travel, or business in the agricultural sector (Windia et al., 2017).

With the growing interest in the concept of agrotourism, a number of regions in Indonesia have begun to develop agriculture-based destinations as an effort to realize sustainable tourism (Darmawan (2023). Semarang Regency is one example of a region that has successfully utilized this potential through the development of Hortimart Agrotourism, located in Bawen District. Its location on a strategic route connecting the cities of Semarang and Solo, as well as the topography of the area, which is dominated by hills and mountains,

make this area a potential destination for nature and agriculture-based tourism (Novianti, 2022). Hortimart is a modern agricultural tourism concept that combines recreation, education, and consumption of local products in one area. In this area, visitors can buy fresh agricultural products and see firsthand the cultivation process of various types of horticultural plants, take garden tours, enjoy culinary tours based on agricultural products, and participate in various educational activities related to sustainable agriculture. Hortimart is also equipped with supporting facilities such as cafes and educational rides, making it attractive to tourists (Huda et al., 2022).

The increase in tourist visits to the Hortimart area from year to year presents new challenges in terms of environmental carrying capacity management. Data shows that tourist visits to Hortimart Agrotourism have increased consistently in the 2020–2024 period, despite a significant decline in 2021 due to the COVID-19 pandemic. After the pandemic, the number of visitors has surged again.



**Figure 1.** Hortimart Agrotourism Visitor Data

Source: Geodatabase BPS Kab Semarang 2019-2023

However, if this increase in visitor numbers is not managed properly, it has the potential to exceed the capacity of the area, which can put pressure on the environment, reduce tourist comfort, and threaten the sustainability of the tourist area itself. In this context, an analysis of tourism carrying capacity is very important to ensure that tourism activities in the Hortimart Agrotourism area remain within the limits of the available ecosystem and infrastructure. Therefore, it is important to assess the extent to which the tourism carrying capacity of Hortimart Agrotourism can support the sustainability of tourism in this area. This assessment is necessary as a basis for formulating sustainable tourism

management strategies and as a reference for designing tourism development that balances economic, social, and environmental aspects.

In recent years, the issue of sustainability in the management of agriculture-based tourist destinations (agrotourism) has become a major focus in academic literature and tourism development practices (Fitroh et al., 2014). Studies on tourism carrying capacity (TCC) have increasingly developed, not only discussing physical aspects, but also social, economic, and managerial aspects as efforts to maintain environmental quality and tourist experience (López-Sánchez, Y., & Pulido-Fernández, 2016; Tolkach et al., 2016). In the context of agrotourism, carrying capacity is crucial to prevent excessive exploitation of agricultural land and local resources (Sidali et al., 2016).

Various studies have developed quantitative and spatial approaches to comprehensively measure tourism carrying capacity, such as through GIS-based carrying capacity index models and multi-criteria approaches. Meanwhile, the integration of carrying capacity and community-based planning has also been examined in the context of sustainable tourism, especially in rural and developing areas.

Although many studies have examined the development of agrotourism and the importance of carrying capacity, there is still a gap in contextual research in Indonesia that integrates comprehensive tourism carrying capacity analysis, especially in developed agro-tourism sites such as Hortimart Agro Center. Previous studies in Indonesia have focused more on economic potential or destination promotion aspects without examining the maximum capacity that a tourist destination can sustainably accommodate (Widiastuti et

al., 2020). In addition, there have not been many studies that specifically link tourism carrying capacity with community-based agrotourism development models and ecological sustainability.

This study presents a new contribution by conducting an analysis of tourism carrying capacity based on an integrative approach that covers physical, social, and managerial carrying capacity at the Hortimart Agro Center tourist attraction. This research will also enrich the literature by providing a contextual case study from Indonesia, specifically Semarang Regency, which has not been widely studied in terms of agro-based tourism carrying capacity. In addition, this research offers a quantitative and spatial approach based on actual visitor data and physical land conditions, which has not been widely done in similar studies in Indonesia. Thus, the results are expected to form the basis for strategic planning for sustainable tourism development based on carrying capacity.

The objective of this research is to calculate and analyze the tourism carrying capacity at Hortimart Agro Center, Bawen District, Semarang Regency, and to formulate guidelines for the sustainable development of this tourist attraction. This research is motivated by the importance of managing tourism carrying capacity so that tourism activities do not exceed the available environmental, social, and managerial capacity. By knowing the carrying capacity limits and the appropriate development potential, it is hoped that Hortimart Agro Center can continue to develop as a competitive and environmentally friendly agrotourism destination, as well as provide economic and social benefits to the surrounding community.

## METHOD

This research was conducted at the Hortimart Agro Center located at Jalan Gatot Subroto No. 55, Gembol, Bawen District, Semarang Regency. Geographically, this area has a strategic location with the following boundaries: to the north, it borders Jalan Solo–Semarang, which is the main road connecting the two cities; to the east, it borders Jalan Letjen MT Haryono; and to the west, it borders the Gembol Bawen gas station (Novianti, 2022).

### Research Approach

This study uses quantitative methods. The quantitative approach was chosen because this study describes variables that will produce numerical values in

describing conditions or objects or phenomena. The phenomena and objects observed are then converted into values or numbers and evaluated in terms of tourism carrying capacity.

### Research Procedures

In this study, tourism carrying capacity analysis was conducted by calculating physical carrying capacity, real carrying capacity, and effective carrying capacity using formulas that comply with the sustainable tourism standards of Labibah et al. (2023). To reinforce the analysis results, a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis approach was also used

to identify internal and external factors that influence the development of the Hortimart Agro Center (Arikunto, 2010). The results of the combination of carrying capacity and SWOT analyses will provide a comprehensive picture of the capacity and appropriate strategies for developing competitive agro-tourism.

**Data Collection Instruments**

The data collection techniques used in this study consist of primary data sourced from observation, interviews, questionnaires, and documentation. The secondary data required for this study was obtained from other sources such as Statistics Indonesia, journals, and books. Data collection aims to obtain information about the level or magnitude of an object or phenomenon by comparing it to a predetermined standard of measurement.

**Data Analysis**

The analysis technique used is a quantitative descriptive analysis technique used to analyze the first objective, which is to determine the carrying capacity of the Agro Center Hortimart tourist attraction. Physical carrying capacity (PCC) is the maximum number of visitors that can be physically accommodated by the available area at a given time. Therefore, it can be calculated using the formula referred to by Cifuentes (1992) as follows:

$$PCC = A \times \frac{1}{B} \times Rf$$

Description :

- A = Area size for tourism Physical carrying capacity
- B = Visitor area per square meter
- Rf = Average length of stay divided by the time spent in the tourist area in one day

Effective carrying capacity calculations are calculated After physical carrying capacity. Effective carrying capacity (ECC) is the maximum number of visits at which management capacity (MC) is available. Effective carrying capacity is a combination of actual data

and the management capacity of the tourist area. The following formula refers to Cifuentes (1992):

$$ECC = PCC \times MC$$

Description :

ECC = (Effective Carrying Capacity/ECC)

PCC = (Physical Carrying Capacity/PCC)

MC = (Management Capacity), approached through the capacity of management personnel in tourist areas, using the formula (Siswantoro, 2012) :

$$MC = Rn/Rt \times 100\%$$

Description :

Rn = Number of existing management personnel

Rt = Number of management personnel required

After determining the effective carrying capacity (ECC), the next step is to compare this value with the actual number of visitors (ANV) to determine the carrying capacity that is appropriate for the tourist attraction. The actual number of visitors is calculated using the following formula:

$$ANV = \frac{\text{Number of Visitors in a Specific Month}}{\text{Number of Days in a Specific Month}}$$

The next step is data analysis to formulate strategic factors, which are then compiled in the form of a SWOT Matrix. This matrix provides an overview of potential external opportunities and threats that may arise, as well as how these can be aligned with internal strengths and weaknesses (Edison et al., 2020). Next, a development strategy for the Hortimart Agro Center tourist attraction is determined through the formulation of a strategy based on data that has been validated in the SWOT combination table. Each SWOT element is linked to produce alternative strategies that are relevant to the potential and carrying capacity of the tourist area. Finally, appropriate management strategy recommendations are compiled based on the results of the analysis (Kurmidianata & Suwasono, 2022).

**RESULTS AND DISCUSSION**

Hortimart Agro Center is located at Jl. Gatot Subroto No. 55, Bawen, Semarang Regency, about 30 km from the center of Semarang City. This area is located at an altitude of 480-600 meters above sea level with a cool temperature between 23°C-30°C. Hortimart is a private company engaged in agribusiness with an integrated

agrotourism concept. Founded by Ir. Budi Darmawan in 1579, Hortimart has 25 hectares of land. Since 2007, the company has been operating an integrated agribusiness system through five divisions: Agro Estate, Agro Tour, Agro Mart, Agro Resto, and Agro Supply. Agro Estate manages the cultivation of organic fruits and vegetables

on 20 hectares of land, with 90% fruit gardens and 10% vegetable gardens. Agro Mart handles the sale of crops from the gardens and surrounding partner farmers (Jatiningtias, 2017). Agro Supply provides agricultural production facilities such as seeds, pots, fertilizers, pesticides, and agricultural tools. Agro Resto offers processed fruit and vegetable products. Agro Tour organizes educational tours. for government agencies and educational institutions (Pratiwi, 2019).

The 4A concept encompasses four main components, namely Attraction (tourist appeal), Amenity (supporting facilities), Accessibility, and Ancillary (institutional support). The application of these four components is expected to form the basis for the development of Hortimart Agro Center tourism to be more optimal and competitive.



Figure 2. Facilities at the Hortimart Agro Center Tourist Attraction

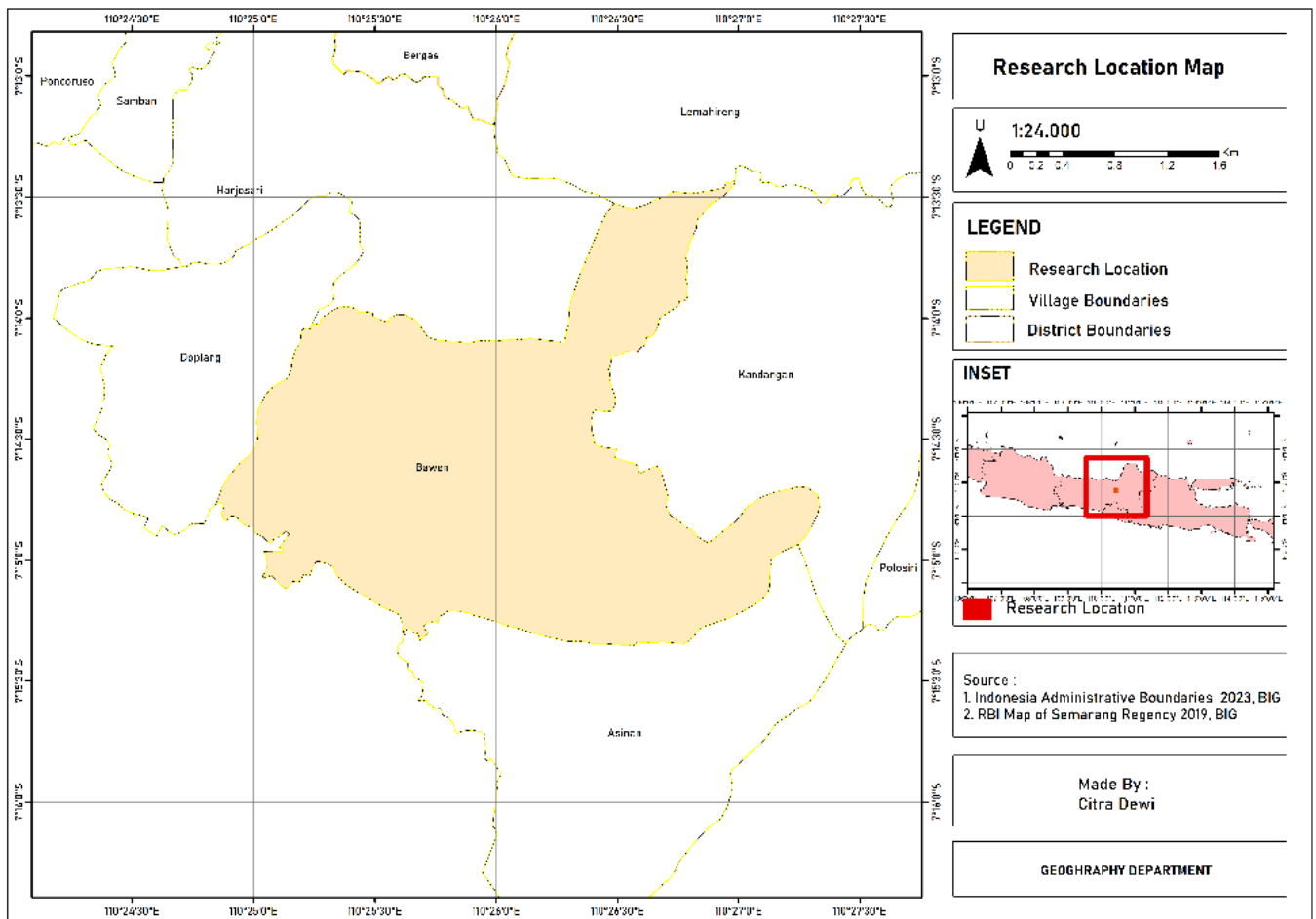
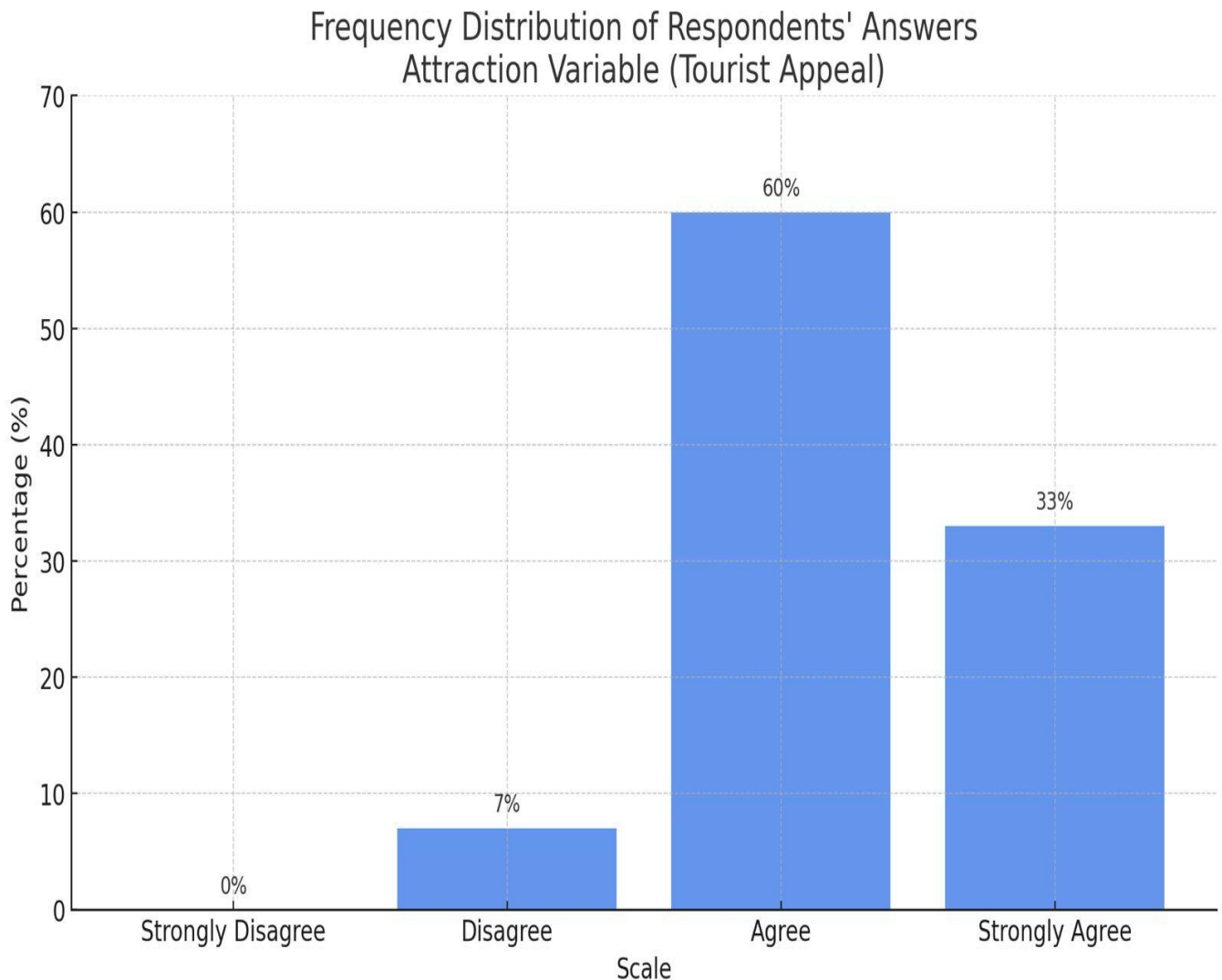


Figure 3. Research Location Map



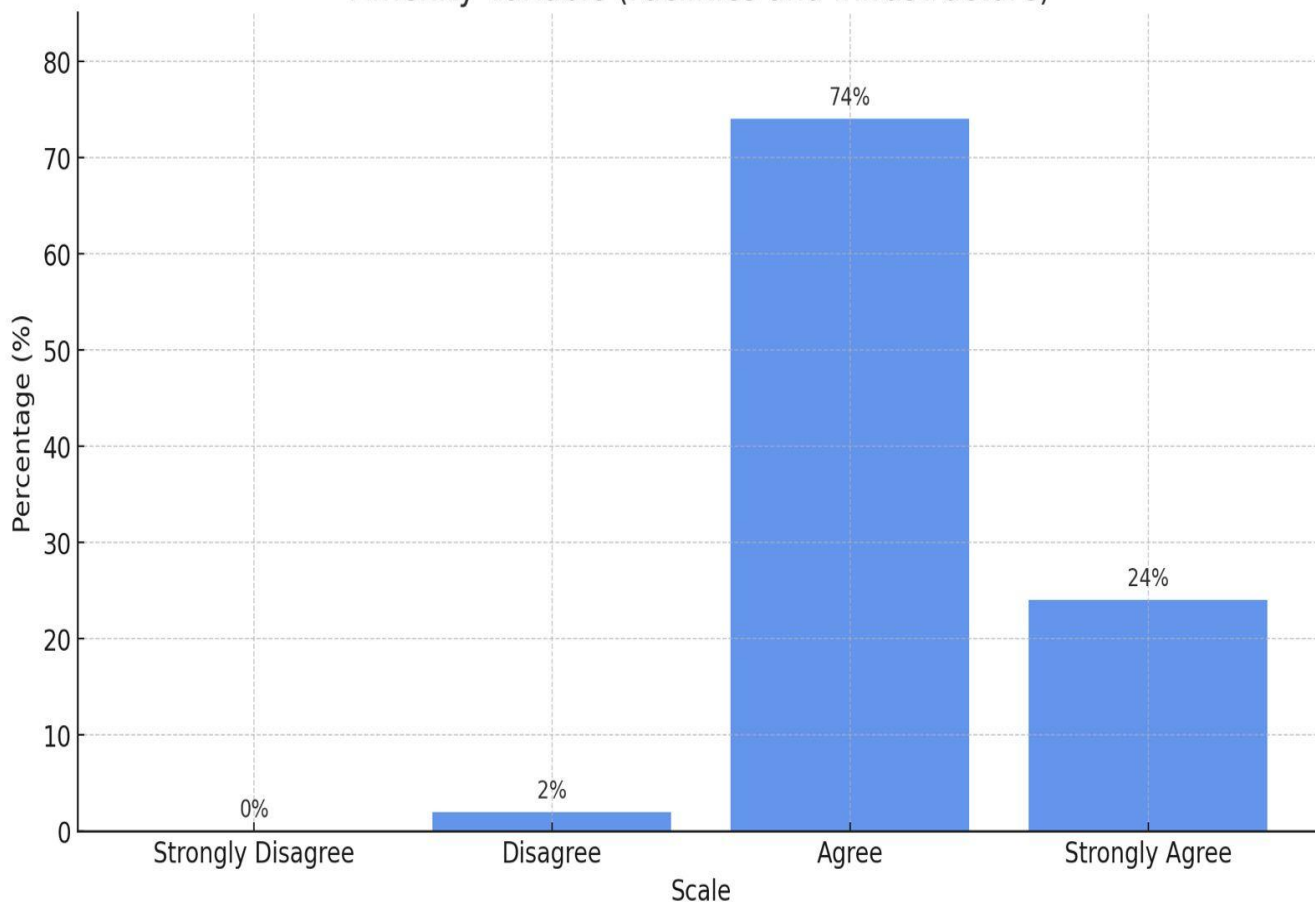
**Figure 4.** Frequency Distribution of Respondents' Answers for the Attraction Variable (Tourist Attraction)  
Source: Results of Research Data Processing in 2025

In their study, García-Hernández et al. (2017) showed that the success of a tourist destination is greatly influenced by tourists' perceptions of its appeal, which includes visual beauty, uniqueness of attractions, and the educational experiences offered. In the context of agrotourism, Sidali et al. (2016) also emphasized that educational tourism attractions based on agriculture can strengthen visitor loyalty and expand the tourism market segment, especially when combined with a natural and family-friendly atmosphere. Furthermore, Wang & Xu (2015) emphasize that destinations that are able to offer enjoyable and unique experiences tend to receive higher levels of satisfaction and repeat visitation. This reinforces

the interpretation that the dominance of "agree" and "strongly agree" ratings in respondents' perceptions of Hortimart's appeal indicates the success of this tourist attraction in creating memorable experiences for visitors.

Thus, the frequency distribution findings showing that the majority of respondents agreed and strongly agreed with Hortimart's appeal are in line with previous research results. This shows that appeal factors such as the uniqueness of attractions, educational facilities, and environmental comfort are indeed key components in building a positive image of agro-based tourist destinations.

Frequency Distribution of Respondents' Answers  
Amenity Variable (Facilities and Infrastructure)



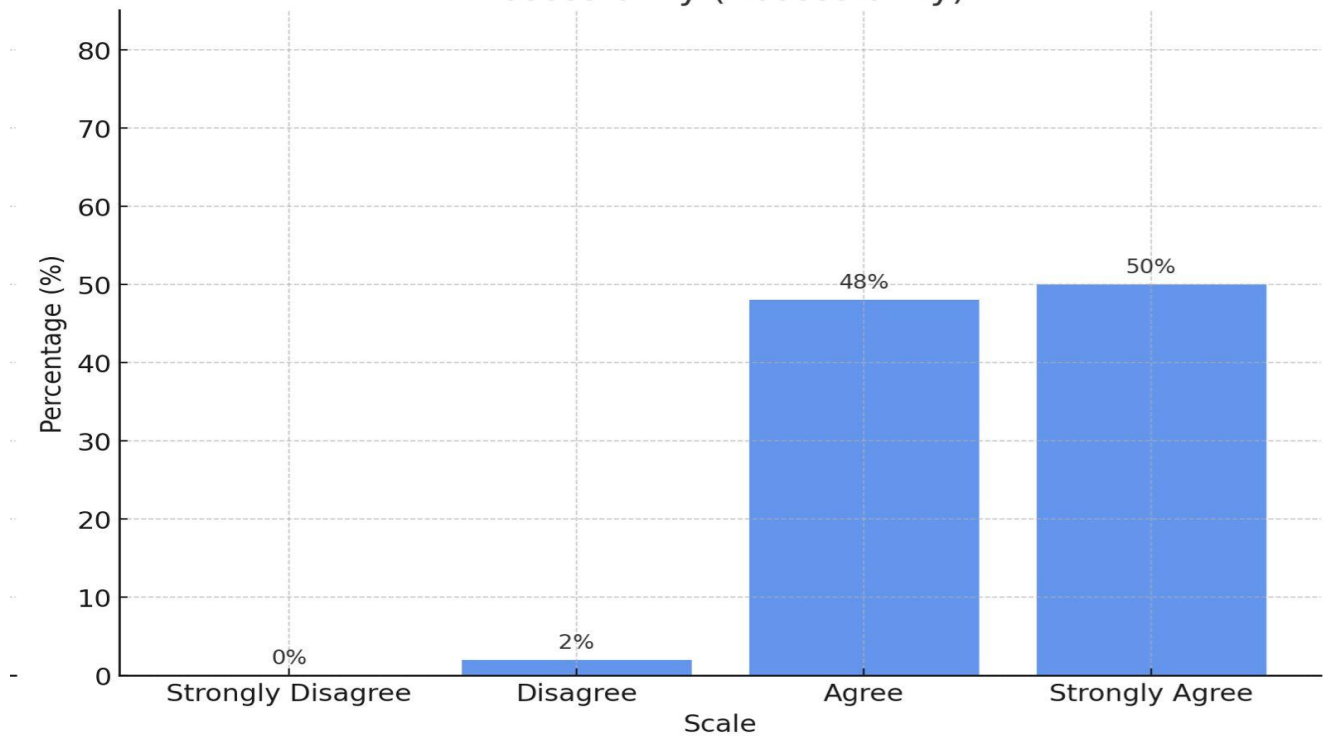
**Figure 5.** Frequency Distribution of Respondents' Answers for the Amenity Variable (Facilities and Infrastructure)  
Source: Results of Research Data Processing in 2025

Previous studies have shown that the quality of amenities is a key component in shaping tourist satisfaction and an enjoyable visiting experience. Ali et al. (2016) emphasized that the availability of basic facilities such as clean toilets, adequate parking, and rest areas such as gazebos greatly affects the comfort and satisfaction of visitors at tourist destinations. Their research found that amenities functional and Well-maintained facilities have a direct correlation with the likelihood of repeat visits. This is in line with the results of the distribution at Hortimart Agro Center, where 74% of respondents rated the facilities as adequate, while the other 24% gave higher ratings, indicating a basis for satisfaction but also opportunities for further optimization. In a study by Anuar et al. (2019) on tourism in semi-urban areas of Malaysia, it was found that tourist destinations located close to transportation networks

Prime locations with adequate road infrastructure tend to receive positive perceptions from visitors. This is consistent with the condition of Hortimart Agro Center, which is located in a strategic area of Bawen that is traversed by main roads and transportation hubs, making it easily accessible to both local and out-of-town tourists.

This finding is also supported by Nugroho et al. (2020) in Indonesia, which shows that tourist attractions with high accessibility tend to experience faster growth in visits compared to locations that are difficult to reach. Therefore, the majority of respondents' positive perceptions of the accessibility of Hortimart Agro Center can be considered a strategic factor that supports the sustainability and development of this tourist destination.

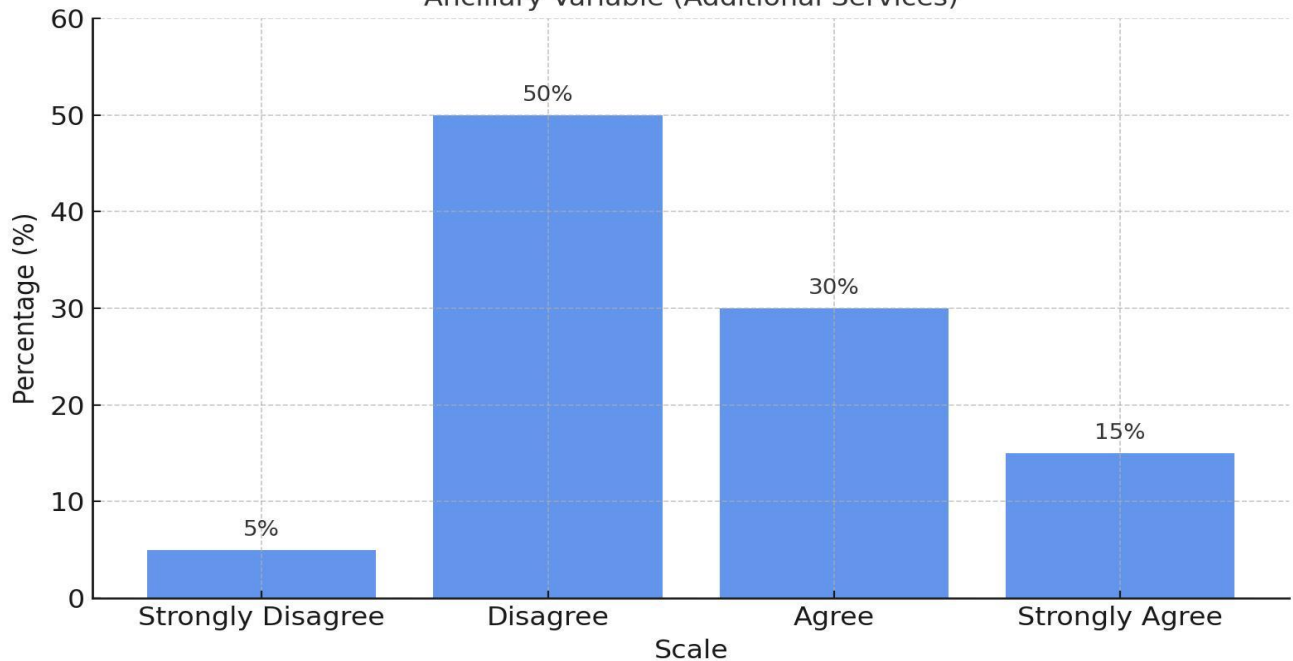
Frequency Distribution of Respondents' Answers  
Accessibility (Accessibility)



**Figure 6.** Frequency Distribution of Respondents' Answers Variabel *Accessibility* (Aksesibilitas)

Source: Results of Research Data Processing in 2025

Frequency Distribution of Respondents' Answers  
Ancillary Variable (Additional Services)



**Figure 7.** Frequency Distribution of Respondents' Answers to the Ancillary Variable (Additional Services)

Source: Results of Research Data Processing in 2025

Ancillary services, especially in terms of providing written information such as brochures or other promotional media, indicate that destination communication at Hortimart Agro Center still needs improvement. This is in line with research by Kastenholz et al., (2018), which states that the existence of additional services such as information centers, promotional print media, and educational materials can enrich the tourist experience and strengthen their understanding of the value and activities of the destination. Additional services are very important because visitors often need specific information about

seasonal activities, visiting hours, or educational program. In addition, Mariani & Borghi (2021) emphasize that destinations that do not actively manage information communication systems, both offline through brochures and online through digital platforms, tend to experience stagnation in visitor growth because potential tourists do not get a comprehensive picture of the potential on offer. Therefore, the low perception of respondents regarding additional services at Hortimart indicates the need to strengthen destination communication strategies through promotional media and supporting facilities.

**Table 1.** Field Data Results

Tourist Attractions	size (Ha)	Tourist opening hours (hours)	Average travel time
Hortimart Agro Center	25 Ha	8 hours	2 hours

Source: Primary data, 2025

Based on the research results, the physical carrying capacity (PCC) calculation for the Hortimart Agro Center tourist attraction produced a value of 5, using the formula:

$$PCC = 250 \times \frac{1}{200} \times 4 = 5$$

Description:

- A = area size (250 m<sup>2</sup>)
- B = minimum space per person (200 m<sup>2</sup>)
- Rf = daily rotation of visits (4 kali)
- PCC = Maximum visitor capacity per hour (5 people/hour)

These results show that under current physical conditions, Hortimart Agro Center can accommodate a maximum of five visitors per hour.

The effective carrying capacity (ECC) was calculated after determining the maximum capacity (PCC), taking into account managerial factors such as the number of staff, operating hours, and supporting facilities. Based on interviews with Hortimart Agro Center managers, it was found that there are 110 active staff, while the ideal number needed is 55 people.

**Table 2.** Area Management Capacity

Tourist Attractions	Number of Officers	Number of officers needed
Hortimart Agro Center	110 people	55 people

Source: Primary data, 2025

The calculation of area management (MC) capacity at the Hortimart Agro Center tourist attraction is based on a comparison between the number of available staff and the ideal number required. With 110 active staff (Rn) and a minimum requirement of 55 staff (Rt), the management capacity is calculated using the following formula:

$$MC = \frac{110}{55} \times 100\% = 200$$

Based on the calculation of the area management capacity at the Hortimart Agro Center tourist attraction of 200%.

After obtaining the physical carrying capacity (PCC) and area management capacity (MC) values, the next step is to calculate the effective carrying capacity (ECC) using the formula:

$$ECC = PCC \times MC = 5 \times 200\% = 10$$

Thus, the Hortimart Agro Center tourist attraction has an effective carrying capacity of 10 people per hour.

To assess whether this capacity is in line with actual conditions, a comparison was made with the actual number of visitors (ANV). Based on visitor data for May 2025, there were 7,116 visitors over 31 days, resulting in:

$$ANV = \frac{\text{Number of Visitors in a Specific Month}}{\text{Number of Days in a Specific Month}}$$

$$ANV = \frac{7.116}{31} = 299,54 = 230 \text{ person/day}$$

These results show that the actual number of visits exceeds the effective carrying capacity, which can only accommodate around 10 people per hour. This condition indicates that the environmental capacity has the potential to be exceeded, thus requiring more measured and sustainable management

**Table 3.** Carrying Capacity Classification

Carrying Capacity (ECC) and Actual Number of Visits	Carrying Capacity Classification	Development Guidelines
ECC>ANV	Large	Can be developed
ECC<ANV	Exceeded	Needs to be organized and developed
ECC=ANV	Optimal	Already effective and efficient

Source: Mutu'ali (2015)

Based on the carrying capacity classification according to Mutu'ali (2015), it is known that the effective carrying capacity (ECC) of the Hortimart Agro Center tourist attraction is 10 people/hour, while the actual number of visits (ANV) reaches 230 people/day. Because the ANV value is > ECC, it can be concluded that the tourist carrying capacity has been exceeded

exceeded. This condition indicates that the intensity of visits exceeds the ideal environmental capacity, thus requiring reorganization and development in terms of management, infrastructure, and visitor control so that sustainability and the quality of the tourist experience are maintained.

**Table 4.** Results of the SWOT Analysis Identification for Hortimart Agro Center

Strengths	Weaknesses	Opportunity	Threats
1. The charm of natural beauty	1. Lack of innovation and renewal of tourist attractions	1. fairly strategic tourist location	1. Competition from similar tourist attractions
2. Affordable ticket prices	2. Lack of optimization of promotion using social media among the public	2. Potential for cooperation with the education sector	2. Dependence on the harvest season
3. Quality facilities and services		3. Government support for agrotourism	

Source: Results of Research Data Processing in 2025

Based on Table 8 of the SWOT analysis results, we can see the strengths, weaknesses, opportunities, and threats of the Hortimart Agro Center tourist attraction. In terms of strengths, there are three main points that make Hortimart attractive, namely its natural beauty, economical ticket prices, and the quality of its facilities and services. Its location in the Bawen area, with its beautiful mountainous landscape and cool air, makes Hortimart offer a visually and atmospherically relaxing tourist experience. In addition, the policy of not charging entrance fees or parking fees, as well as affordable rates for additional activities, such as shuttle tours and fruit

picking, are unique advantages in attracting visitors (Fitriana et al., 2022). Fees are only charged for additional activities such as riding the shuttle and fruit picking, with affordable rates of IDR 15,000 on weekdays and IDR 25,000 on weekends. The adequate quality of facilities and services also contributes to a pleasant tourist experience, which is an added value in maintaining visitor loyalty.

However, Hortimart also has several weaknesses that need to be addressed. The lack of innovation in presenting tourist attractions causes the visitor experience to be monotonous, thereby reducing the

incentive to return. On the other hand, social media has not been fully utilized as a promotional tool. There is a lack of digital interaction and information is not being communicated effectively broadly restrict range Hortimart for potential tourists, especially from the local community.

However, Hortimart has great potential for continued growth. Its location on the main Solo–Semarang route makes it easily accessible, giving it high potential to attract visitors (Yuliyardi et al., 2021). In addition, the concept of educational agrotourism opens up opportunities for collaboration with educational institutions as a place for field learning or internships (Zebua, 2018). Government support for the agrotourism sector is also a potential that can be utilized, particularly in terms of improving facilities and strengthening tourism promotion based on education and sustainability.

However, the threat of competition from similar tourist attractions in the surrounding area, such as Dusun Semilir and Umbul Sidomukti, which continue to innovate, could reduce Hortimart's competitiveness if it is not balanced with relevant updates. In addition, dependence on the harvest season poses a challenge, given that main activities such as fruit picking cannot take place throughout the year. Without alternative attractions available outside the harvest season, the number of visits and revenue may experience significant fluctuations. Therefore, attraction development and diversification strategies need to be a major focus in maintaining the sustainability of Hortimart Agro Center as a competitive tourist destination.

The next step that needs to be taken is to formulate a development strategy. Researchers formulated a development strategy using the SWOT matrix (Kholil & Khoirunnisa, 2018). The results of the SWOT matrix can be seen in the following table:

**Table 9.** Results of SWOT Matrix Strategy Analysis Identification

Internal External	<i>Strenghts</i>	<i>Weakness</i>
		<ol style="list-style-type: none"> <li>1. The charm of natural beauty</li> <li>2. Affordable ticket prices</li> <li>3. Quality facilities and services</li> </ol>
<i>Opportunity</i>	SO	WO
<ol style="list-style-type: none"> <li>1. A fairly strategic tourist location</li> <li>2. Potential for cooperation with the education sector</li> <li>3. Government support for agrotourism</li> </ol>	<ol style="list-style-type: none"> <li>1. Optimizing the use of social media.</li> <li>2. Collaborating with relevant agencies.</li> </ol>	<ol style="list-style-type: none"> <li>1. Develop new, more enjoyable educational attractions through collaboration with educational institutions.</li> <li>2. Take advantage of strategic locations to reach local/regional tourists with affordable tickets as the main attraction.</li> </ol>
<i>Threat</i>	ST	WT
<ol style="list-style-type: none"> <li>1. Competition from similar tourist attractions</li> <li>2. Dependence on the harvest season</li> </ol>	<ol style="list-style-type: none"> <li>1. Developing non-seasonal facilities, such as educational areas or artificial tourist attractions, to reduce dependence on the harvest season.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make small innovations on a regular basis.</li> <li>2. Build partnerships with local communities or MSMEs to increase the variety of attractions and reduce dependence on seasonal conditions.</li> </ol>

Source: Research Data Processing Results for 2025

The discussion on the development of the Hortimart Agro Center tourist attraction through the 4A approach (Attraction, Amenity, Accessibility, Ancillary) is in line with best practices in sustainable tourism destination management as suggested by various previous studies. According to Cooper et al. (2018) and Morrison (2013), the 4A framework is an effective analytical tool for evaluating the competitiveness and readiness of a tourist destination, as it covers the key elements that tourists need to make visiting decisions and determine their level of satisfaction. This approach is considered simple yet holistic because integrating attractiveness factors, facilities, ease of access, and information service support.

In terms of tourist attraction, the results show that most visitors consider Hortimart to be very attractive to visit. This is in line with the research by Li et al. (2021), which states that the uniqueness of agrotourism lies in its authentic natural scenery and the opportunity for tourists to participate directly in activities such as picking fruits or vegetables. Research by Sidali et al. (2016) also supports this, stating that direct and real experiences in gardens or agricultural fields make visitors feel more satisfied and interested in returning. In addition, this also helps maintain Hortimart's image as an environmentally friendly and sustainable tourist destination.

In terms of amenities, adequate and well-maintained facilities, such as parking areas, toilets, and gazebos, are an important part of tourist comfort. Research by Wang & Xu (2015) states that adequate facilities directly affect visitor satisfaction and the decision to recommend the destination to others. Meanwhile, Ali et al. (2016) emphasize that good amenities strengthen the image of the destination and add value to the sustainability of the local tourism sector.

The aspect of accessibility, which received a positive assessment in this study, is also consistent with a study by Liu et al. (2021), which shows that strategic location and good accessibility are crucial factors in increasing visitor traffic. Good road infrastructure, ease of transportation, and clear signage affect the ease with which tourists can reach the destination, while also increasing their perception of comfort during the trip.

However, in the Ancillary dimension, namely additional services and promotions, weaknesses were still found, especially in the dissemination of information and the use of digital media. This is in line with the findings of Mariani & Borghi (2021) and Sigala (2018), who stated that the use of digital platforms such as social media, websites, and online reservation systems plays a major

role in expanding market reach and shaping a strong destination image. Optimizing digital marketing strategies will strengthen interactions with potential tourists and increase the destination's exposure, especially in the post-pandemic era, which relies on digital information for travel planning (Zulkarnain & Miswar, 2021).

Thus, the 4A approach used in this study not only provides an overview of the actual conditions of the Hortimart tourist attraction, but also aligns with international literature that emphasizes the importance of integrating attractions, facilities, access, and supporting services in sustainable tourism development.

## CONCLUSION

The results of the study show that Hortimart Agro Center has great potential to be further developed as a sustainable tourist destination. This place has beautiful natural attractions, affordable prices, and fairly good facilities. However, the results of the tourism carrying capacity analysis reveal that the number of visits has exceeded the ideal limit. The effective carrying capacity (ECC) value of 10 people per hour is not proportional to the actual visits, which reach 230 people per day, thus posing a risk of pressure on the environment and the quality of the tourist experience.

Research on four main aspects (4A) shows that Attraction, Amenity, and Accessibility are already in the good category, while Ancillary services, especially in terms of digital promotion, still need improvement. Another weakness lies in the lack of use of Geographic Information Systems (GIS) for spatial analysis, so that the distribution of facilities and tourist density are not yet fully described.

Therefore, to support sustainable development and increase the competitiveness of the destination, the necessary development strategies include adjusting carrying capacity, diversifying tourist attractions, improving supporting services, and optimizing digital-based promotion. Further research is recommended to use a GIS approach in mapping facilities and visitor zoning so that tourism management is more accurate, efficient, and adaptive to field dynamics.

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**Conflict of interest** The author has no competing interests to declare that are relevant to the content of this article.

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