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Full Length Research Article

Evaluating Tourism Performance through Tourist Perceptions: A Case Study of Petengoran Mangrove Tourism in Lampung, Indonesia

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ABSTRACT

The existence of components that did not represent the concept of ecotourism and the decline in the number of visits was very significant. This research evaluated tourism performance based on tourists' perspectives to determine the components that need improvement. The respondents in this study were 100 tourists, who were obtained by applying the Slovin formula. This study used primary data collected through research questionnaires distributed to respondents. The research instrument was tested to ensure its validity and reliability. The collected data were analyzed using the Customer Satisfaction Index (CSI), Gap Analysis, and Importance-Performance Analysis (IPA). Petengoran Mangrove Tourism does not match tourists' expectations. The attributes that become the main priority because their performance is considered not to have met tourists' expectations are the availability and diversity of tourist activities, accessibility conditions, implementation of educational activities, and several facilities that do not meet tourist satisfaction, even though these components are what tourists highly expected.

1. Introduction

Tourism and travel have rapidly developed to become an industry and a significant source of income for many developing countries (Magio et al. 2013), including Indonesia. The increase in foreign exchange is partly supported by the growth of tourist attractions (Nurul et al. 2021), but this growth can harm the environment (Hakim 2017; Khrisnamurti et al. 2016), and the increase in community welfare is less felt (Widowati and Nadra 2013). The development of tourism in Indonesia is vast and diverse. Thus, it can be further developed to be more attractive and become one of the world's leading tourism destinations (Fattah et al. 2022). Tourism in Indonesia from 2013 to 2019 showed extraordinary development, marked by the increasing number of foreign tourists visiting Indonesia through all entrances. In 2013, the number of foreign visits was 8,802,129 people and continued to increase until the number of visits reached 16,106,954 people in 2019. However, in 2020, there was a drastic decrease of up to 75% compared to the number of foreign tourist visits in 2019. This happened due to the COVID-19 pandemic, which forced the Indonesian Government to limit activities and close flight entrances to Indonesia. Foreign tourist visits decreased by 61.57% in 2021 compared to 2020. However, in 2022, Indonesia's tourism

sector slowly began to rise, and the number of visits increased again by 278% compared to 2021 (BPS 2023).

Tourism is essential in rural development for the local economy and the environment (Tou et al. 2022). Tourism has become a new hope in some areas with a reduction in economic activity, especially in areas where agriculture is no longer as competitive as it used to be (Martínez et al. 2019). Tourism is an appropriate medium for stimulating the economy, especially in rural areas in both developed and developing countries (Hall and Page 2014). Rural tourism can contribute to economic development and diversification of the local economy, given that tourism pays more attention to the social and natural environment in which it is developed. In addition, as a system, tourism can be synergized with socio-economic activities and other activities in remote villages (Setijawan 2018). Islam (2023) found that Melandaha Upazila, a rural tourism company, ensured economic sustainability and reduced economic leakage in Jamalpur District. Research by Vitriani et al. (2017) showed that rural tourism has increased financial support and training in developing and promoting local products (MSMEs) while increasing land value in Sembalun, East Lombok, and West Nusa Tenggara. Meanwhile, Leonandri and Rosmadi (2018) found that Palalangonyang Tourism Village, as rural tourism, has created new jobs and accelerated equitable development, increasing the income and welfare of local communities in Pasirjambu District, Bandung Regency.

Rural tourism encompasses a variety of activities and concepts, such as agrotourism, ecotourism, green tourism, and nature tourism, which could be great alternatives for vacation compared to mass tourism (Zakia 2021). There has been an evolution in the concept of modern tourism, which is starkly different from the conventional approach. Modern tourism is characterized by an emphasis on preserving nature and culture, with a primary focus on improving the economy of local communities (Widowati and Nadra 2013). To counter the direction of mass tourism, ecotourism emerged, which aims to promote environmental conservation, cultural sustainability, community participation, economic benefits, and empowerment of people experiencing poverty (Cobbinah 2015). Tourism trends have shifted toward returning to nature, and ecotourism is becoming a concrete representation of sustainable tourism (Henri et al. 2021).

Mangroves have great potential for sustainable tourism development (Rosmawati et al. 2023). With this potential, the decline in the number of visits should not weaken management and can create other opportunities. The decline can filter tourists who aim to do ecotourism activities, not just recreation. Mangroves are unique coastal ecosystems, primarily found in tropical and subtropical regions, composed of salt-tolerant trees and shrubs that thrive in intertidal zones. These ecosystems play an essential role in coastal protection by buffering against storm surges, preventing erosion, and promoting biodiversity (Asari et al. 2021). Mangroves also benefit the ecosystem by serving as a home to unique vegetation, terrestrial, and aquatic fauna, supporting the production of other marine ecosystems and regulating both physical and ecological processes in the mangrove environment. Mangrove ecosystems provide unique ecological services and are increasingly integrated into tourism programs to boost local economies while promoting environmental conservation (Brandt and Buckley 2018). Through activities like ecotours, kayaking, and wildlife observation, mangrove tourism supports environmental awareness and provides an alternative income source for residents (Dasgupta and Shaw 2017). Successful examples of mangrove tourism have been documented in various countries, showing that well-managed tourism can contribute to mangrove conservation and local economic development (Moussa et al. 2024). Mangrove forest conservation positively impacts the local community's welfare (Putri et al. 2023).

Tourism performance, particularly in the context of nature-based tourism, such as mangrove tourism, is a critical metric for assessing the success and sustainability of tourism destinations. Research into tourism performance focuses on how well a destination meets both the ecological goals and tourists' expectations. Tourist satisfaction is one of the key performance indicators that can be improved by providing an extraordinary experience for tourists (Mendoza et al. 2024). Tourists' perceptions are a central determinant of tourism performance, as they directly influence tourists' satisfaction, repeat visitation, and word-of-mouth promotion (Rahim et al. 2022). Several studies indicate that tourists' experiences and perceptions are shaped by various factors, including the destination's natural beauty, the quality of services provided, the ease of access, and the educational value of the experience (Yu et al. 2020). Research by Moscardo (2017) has shown that tourists are more likely to revisit and recommend destinations that give them positive experiences.

The relationship between tourism performance and tourists' perceptions is cyclical and interconnected. Positive tourist perceptions generally enhance a destination's tourism performance, as satisfied tourists are more likely to contribute to the local economy, support conservation efforts, and spread positive feedback (Carvalho and Costa 2017). Conversely, poor performance, often reflected in inadequate facilities, environmental degradation or lack of clear conservation goals, negatively affects tourists' perceptions and can lead to reduced visitor numbers (Lai and Hitchcock 2017). In the case of mangrove tourism, maintaining a balance between environmental sustainability and meeting tourist expectations is crucial. Research by Diarta and Pitana (2022) stated that visitors' satisfaction arises from various factors, such as their previous experiences, expectations, and the experience at the tourist site.

In the context of Petengoran Mangrove Forest Tourism, understanding tourists' perceptions is essential to optimizing tourism performance. Ensuring visitors have a positive experience through well-maintained facilities, educational opportunities, well-managed management and local communities, and clear conservation messaging will likely lead to better perceptions, increased visitors' satisfaction, and improved tourism performance. The alignment of tourists' expectations with the actual offerings of a destination played a critical role in sustainable tourism success (Goh et al. 2017).

During tourism development, the perceptions of the community and tourists regarding the existing conditions and future expectations of tourism activities are crucial so that improvements to the tourism management model can be carried out sustainably (Dendy et al. 2019). Tourism development in the region can be measured by visitors' satisfaction with the performance of a tourist destination (Ibrahim et al. 2020). Thus, this study aims to analyze the level of performance and components that need to be improved to increase tourist satisfaction and interest in visiting. This research is designed to understand how visitors perceive the performance of Petengoran Mangrove Tourism. The decline in the number of visitors and the 4A component, which does not look entirely adequate at Petengoran Mangrove Tourism, is an impetus for them to evaluate its performance based on the tourists' perspective so that it can continue to grow.

This research can reveal how well current tourism practices meet their expectations by evaluating tourists' perceptions. This is critical because, as Ritonga et al. (2024) stated, aligning tourism practices with tourist satisfaction can enhance conservation efforts and economic benefits. Additionally, exploring these perceptions can help improve management strategies, as effective tourism often hinges on understanding the performance. The perception of tourists becomes input and evaluation in improving nature-based tourism destinations' facilities and services (Ervina et al. 2020). With this research, it is hoped that tourism management can strengthen its plan to

improve the components of tourism following tourist expectations, get back on its feet, and focus more on the concept of mangrove tourism that needs to be implemented more than the decreasing number of tourists.

2. Materials and Methods

2.1. Description of Research Location

Petengoran Mangrove Tourism (PMT) is in Gebang Village, Teluk Pandan District. This location is 23 km from the capital city of Lampung Province. Previously, this mangrove tourism area was only used as conservation land, then converted into a mangrove tourism destination. Administratively, Petengoran Mangrove Tourism was officially legalized in 2016 under Village Regulation Number 1 of 2016. The area of mangrove forest in this mangrove tourism reaches 113 hectares. The development of the Petengoran Mangrove Tourism Area was carried out by the Gebang Village-Owned Enterprise of Pesawaran Regency from 2017 to 2020, involving an area of 4,500 m^2 scattered around ± 12,000 mangrove trees and a nursery of 35,000 seedlings.

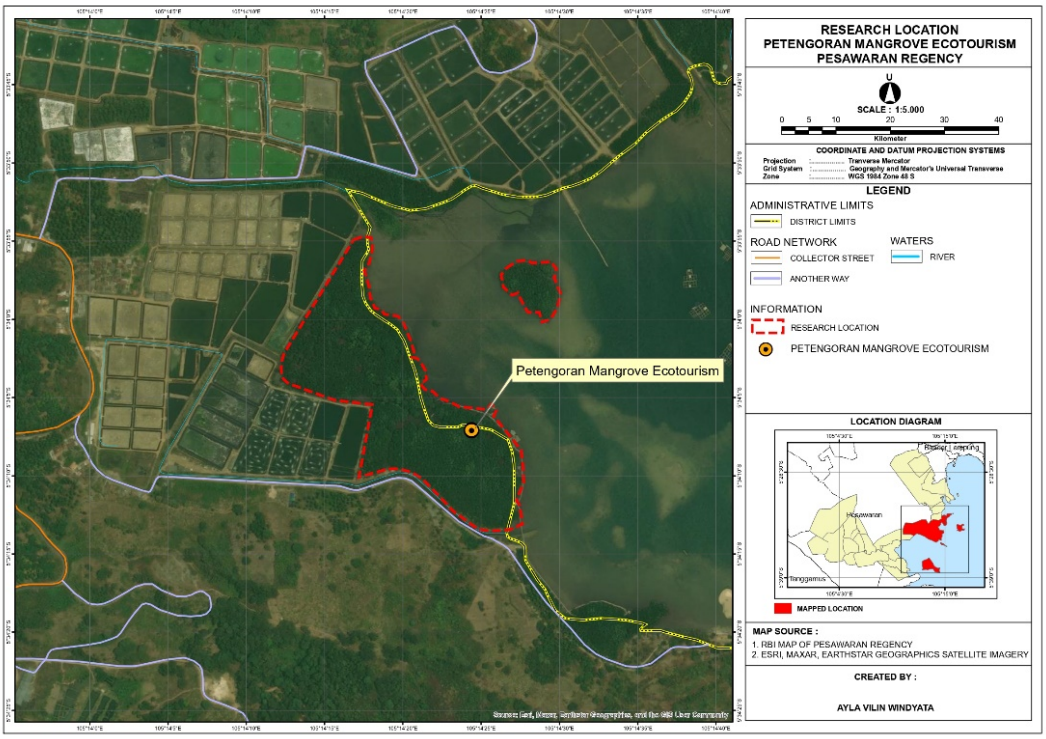

Fig. 1. Map of Petengoran Mangrove Tourism location.

Petengoran Mangrove Tourism presents a variety of facilities that tourists can utilize. There are two paths along the tourism route: the left and right. The left path is about ± 360 m, directing tourists to a smaller tracking path that enters the mangrove forest, a mangrove forest thickening zone, a large gazebo along the mangrove tracking circle, and 12 small gazebos. Meanwhile, the right lane stretches for ± 425 m with a tracking path that offers exciting photo spots, views of the mangrove island, mangrove forest passages, paddle boat/fishing boat rentals, two large gazebos, a culinary corner, toilets, and a prayer room. There is a pilot area for mangrove nurseries, BUMDes partner stalls, and a vehicle parking area outside the tourism site. There was damage to some of

the wood on the tracking path during the data collection process, making walking on the path uncomfortable.

2.2. Sample and Research Time

This sample was selected through a purposive sampling method, with criteria stipulating that tourists have visited Petengoran Mangrove Tourism at least once and have a minimum age of 17. Following Article 8 Paragraph 2 of the Law of the Republic of Indonesia Number 22 of 2009, it is stated that individuals at the age of 17 are considered to have self-identity because at that age, they are considered to have their responsibilities so that at this age, the respondents can determine travel decisions. The number of samples interviewed about the performance of Petengoran Mangrove Tourism was 95 tourists, as determined through the application of the Slovin formula. However, the number of samples was rounded up to 100 people to avoid invalid data so the researcher could use the overstated content of the questionnaire. Data collection time was conducted in May–July 2023.

Sampling is choosing a sample from individuals or population groups for a specific research purpose (Bhardwaj 2019). When a group of tourists visited the research site, the sample was determined based on their willingness to be respondents in this study. Not all members are often willing to become respondents in a group. The researchers did not take only one sample in a group because each sample will likely have different assessments of the proposed research attributes, so it may not necessarily represent the group. This was done to ensure the accuracy of the data collected. Technically, individual interviews are appropriate because this research aims to gain insight into people's perceptions, understandings, and experiences of a particular phenomenon, and it can also contribute to in-depth data collection (Bryman 2016).

2.3. Data Collection Method

This study used an individual interview method with paper-based questionnaires to collect data. This method was chosen for its ability to capture details and insights directly from tourists regarding their perceptions and experiences. Conducting interviews one-on-one ensured that respondents could provide in-depth feedback without the influence of group dynamics (Bryman 2016). The questionnaire predominantly consisted of close-ended questions using a 5-point Likert scale. This scale facilitated the collection of quantitative data on tourists' perceptions by offering structured response options ranging from strongly disagree to strongly agree. The questionnaires were designed to collect specific data on tourists' perceptions of importance and satisfaction levels during their visits to Petengoran Mangrove Tourism. Data gathered included perceptions of attraction, accessibility, amenities, ancillary service, conservation, education, and community participation. This approach allowed for a comprehensive understanding of tourist feedback, which is crucial for evaluating tourism performance.

2.4. Research Instrument Test

The validity of each attribute can be assessed from the corrected total item correlation value (r count) of each attribute (Sugiyono 2019). The r table value obtained from the product-moment correlation table, using the formula for degrees of freedom df = n-2, with n as many as 30 respondents, with a significance level of $\alpha = 0.05$, is 0.361. The validity test results show that of

the 25 statements related to the level of importance and 25 statements related to the performance level of Petengoran Mangrove Tourism, the lowest corrected total item correlation value is 0.367, and the highest is 0.680. So, it can be concluded that all statement items related to the level of importance and the level of performance have a corrected total item correlation value greater than 0.361 (Corrected Item Total Correlation > r table), so they are declared valid.

Reliability testing of the distributed research instruments obtained Cornbach's Alpha value through data processing with SPSS IBM 23 software, greater than 0.07 for the importance level and performance level statement items. Based on the test results, the research instrument is declared reliable and suitable for distribution. The reliable test results are presented in **Table 1**.

Table 1. The result of the reliability test

No.	Research Instruments	Cronbach's Alpha	Description
1	Statement item level of importance	0.837	The research instrument is reliable
2	performance level statement items	0.883	The research instrument is reliable

The analysis approach in this study involves the Customer Satisfaction Index (CSI), Gap Analysis, and Importance-Performance Analysis (IPA) methods. CSI is applied to comprehensively assess customer satisfaction by considering the importance and performance of the measured attributes. This method has proven to be very effective for internal organizational purposes because it focuses on measuring the level of customer satisfaction with the performance of services provided by the organization (Hana et al. 2022), in this case, the mangrove tourism manager. The CSI measurement stages include the calculation of Mean Importance Score (MIS), Mean Satisfaction Score (MSS), Weight Factor (WF), Weight Score (WS), and total weight (Gunawan and Iqbal 2018). The performance of Petengoran Mangrove Tourism is presented descriptively based on measurements using a Likert scale with an assessment score for each indicator of 1–5. CSI value criteria can be seen in **Table 2**.

Table 2. Interpretation of Customer Satisfaction Index (CSI) values

CSI value (%)	Criteria
81–100	Very satisfied
66–80.99	Satisfied
51–65.99	Quite satisfied
35–50.99	Less satisfied
0–34.99	Not satisfied

After knowing the CSI value and the category of satisfaction of tourists visiting the Petengoran Mangrove Tourism, a gap analysis is carried out to obtain the value of the gap between tourists' perceptions of the performance of mangrove tourism managers minus tourists' expectations using Equation 1.

$$Gap = P\text{-}E \quad (1)$$

where *Gap* is the gap value, *P* is the tourist's perception of performance level, and E is the tourist's expectation of importance level.

The gap is combined with other attributes and accumulates into an overall value. After calculating and finding the results, the gap between the level of importance and the level of performance can be seen based on the perceptions of tourists to the Petengoran mangrove tourism following the satisfaction tourists feel. Not only that, but the assessed attributes are also then mapped to determine which attributes are the main priority for improving their performance. The IPA Cartesian diagram is used to map attributes based on tourists' perceptions of the performance of Petengoran Mangrove Tourism. IPA is a method that is needed to determine respondents' perceptions of performance factors and expectations (Nagy and Somosi 2020). IPA is used as an analytical technique to assess the priority of factors in increasing customer satisfaction (Phadermrod et al. 2019).

The sections of the IPA Cartesian diagram provide an interpretation of the steps that need to be taken concerning the attributes located in each box. The X-axis (level of satisfaction) and Y-axis (level of importance) are used to establish the location of characteristics in the Cartesian diagram. Details about the Importance-Performance Analysis (IPA) cartesian diagram can be seen in **Fig. 2**. Esmailpour, in research conducted by Rachmawaty et al. (2021), interpreted the four quadrants on the cartesian diagram when associated with this study as follows:

1. Quadrant I (Concentrate Here)
   This quadrant shows attributes considered important and expected to be equal to tourist expectations, but mangrove tourism performance is considered unsatisfactory. So, mangrove tourism needs to focus attention and allocate resources to improve performance in this quadrant.
2. Quadrant II (Keep Up the Good Work)
   This quadrant identifies attributes considered important and expected by tourists as support for satisfaction. So, the mangrove tourism manager needs to maintain the performance achievements that have been achieved.
3. Quadrant III (Low Priority)
   The attributes in this quadrant are considered to have a low level of perception or actual level or are not very important to tourists. So, mangrove tourism management does not need to give priority or extra attention to these attributes.
4. Quadrant IV (Possible Overkill)
   This quadrant shows attributes that are only considered somewhat important to tourists. Instead, the management should allocate resources related to these attributes to other characteristics with a higher priority level.

3. Results and Discussion

3.1. Tourist Characteristics

The characteristics of tourists in this study are based on age, income, location of visit destination, motivation for travel, frequency of visit, and interest in revisiting. These characteristics can help understand tourists' behavior, preferences, and needs that affect mangrove tourism development. Visits to Petengoran Mangrove Tourism are dominated by tourists aged 18–31 years (68% or 68 tourists). This result is in line with findings from (Wakarmamu and Haryanti 2022), who noted that this age group is particularly drawn to tourist destinations that offer educational and recreational experiences. Younger tourists are often more adventurous and

interested in activities that combine learning with exploration, making them a key target demographic for tourism sites. Tourists outside Pesawaran Regency dominate mangrove tourism; most of the distance between tourists' residences and mangrove tourism is more than 30 km (51% or 51 tourists). This result aligns with the findings of (Wakarmamu and Haryanti 2022), which highlight that distance is a significant factor in tourism visits. The willingness to travel long distances often indicates that the destination offers unique attractions or experiences not easily found closer to home.

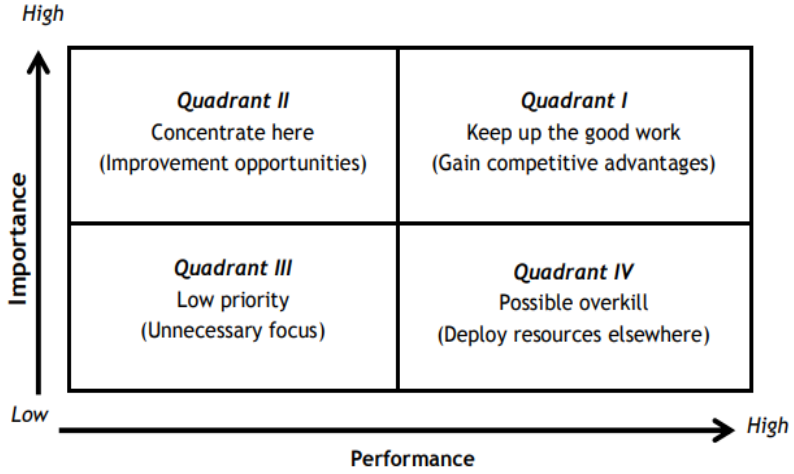

Fig. 2. IPA Cartesian Diagram **(**Source: Simon et al. 2020).

Most tourists are workers with various types of jobs. However, the highest percentage of work types are students (23% or tourists) with incomes of IDR 0.00-Rp1,500,000.00 (41% or 41 tourists). It aligns with research by Andari (2023), who observed that students are more likely to visit tourism sites due to their interest in learning about nature and conservation. A total of 45% (45 tourists) of tourists have considered visiting tourism because of its exciting attractions and beautiful scenery, which are also emphasized by Wakarmamu and Haryanti (2022), who identified these factors as key motivators for tourists choosing tourist destinations. However, this also highlighted the need for continuous innovation and enhancement of attractions to maintain and increase tourist interest. A total of 59% of tourists visited tourism once. 70% of tourists intend to revisit mangrove tourism, 21% answered doubtfully, and 6% were not interested in revisiting tourism. The strong revisit intention is a positive sign, comparable to the findings of Andari (2023), who found that a high revisit intention is often linked to satisfaction with natural attractions and overall experience. However, 21% of those who are doubtful and 6% uninterested indicate areas where improvement is needed, particularly in enhancing tourist engagement and satisfaction to convert these potential revisits into actual ones. More detailed characteristics of Petengoran Mangrove Tourism tourists are available in **Table 3**.

3.2. Tourist Satisfaction and Mangrove Tourism Performance

A negative gap value refers to a situation where some assessment variables' actual measurement results or performance are lower than the expected value or desired level of importance. Therefore, several indicators with gaps need to be improved by the Petengoran Mangrove Tourism manager to improve their performance and align it with tourist expectations.

The gap value of Petengoran Mangrove Tourism based on the difference between the performance level and the level of importance is presented in **Table 3**.

Table 3. Characteristics of research respondents

Characteristics	Category	Percentage of Tourists (%)
Age	18–31 years old	68
	32–44 years old	19
	45–57 years old	13
Distance	<10.1	10
	10.1–20	11
	20.1–30	28
	>30	51
Jobs	Civil Servants/State-Owned Enterprises' Employee	14
	Private Employee	15
	Entrepreneur/Merchant	14
	Honorary Employee	5
	Freelancer	7
	Fisherman	6
	Farmers	1
	Content Creator	1
	Housewife	11
	Student	23
	Not Employed	3
Revenue	Rp0,00–Rp1.500.000,00	41
	Rp1.500.001,00–Rp3.000.000,00	30
	Rp3.000.001,00–Rp4.500.000,00	16
	>4,500,000.00	13
Purpose of Visiting	Forest Recreation	73
	Conservation	21
	Education/Research	6
Travel Considerations	Interesting attractions and beautiful scenery	45
	Receive education and can plant mangroves	21
	Photography purposes	7
	Easy to reach location	9
	Traveling in nature at an affordable price	18
Frequency of Visit	1 time	59
	2–3 times	35
	> 3 times	6
Revisit Interest	Yes	70
	No	9
	Undecided	21

Table 3 shows that the overall tourist satisfaction value of Petengoran Mangrove Tourism is 72.65%. Based on the CSI value criteria submitted by (Hana et al. 2022), the results of the calculation of the CSI value are located between the ranges of 66–80.99%, which means that tourists are satisfied with the Petengoran Mangrove Tourism. Several factors likely contribute to this outcome, including the quality of the natural environment or the availability of amenities, because they have the highest Mean Satisfaction Score (MSS) based on **Table 4**. The results of this study align with those of (Sugianto and Kristanti 2015), who obtained a CSI value of 71.70%, meaning that tourists are very satisfied with the performance of mangrove tourism services.

Table 4. Gap value on performance assessment attributes of Petengoran Mangrove Tourism

Codes	Assessment Indicators	MIS	MSS	Gap	WF	WS
Attractions						
AW1	Availability of unique tourist attractions	4.55	3.41	-1.14	4.37	14.90
AW2	Diversity of tourism activities	4.47	3.29	-1.18	4.29	14.12
AW3	Sea water conditions	4.29	4.27	-0.02	4.12	17.59
Accessibilities						
AK1	Road access to the mangrove tourism area	4.25	3.04	-1.21	4.08	12.41
AK2	Wayfinding	3.63	3.54	-0.09	3.49	12.34
Amenities						
AM1	Ticket counter and entrance gate	3.71	3.38	-0.33	3.56	12.04
AM2	Food and drink facilities	4.39	3.26	-1.13	4.22	13.74
AM3	Toilet	4.31	3.32	-0.99	4.14	13.74
AM4	Tracking path	4.38	3.45	-0.93	4.21	14.51
AM5	Parking area	4.17	3.59	-0.58	4.00	14.37
AM6	Means of worship (mushola)	4.37	3.69	-0.68	4.20	15.48
AM7	Educational facilities	4.27	3.44	-0.83	4.10	14.10
AM8	Traveler's gazebo	4.44	3.81	-0.63	4.26	16.24
AM9	Wooden ship	3.56	3.70	0.14	3.42	12.65
AM10	Rubbish bin	4.19	4.17	-0,02	4.02	16.78
Ancillary Services						
AN1	Ease of obtaining information on mangrove tourism	3.95	3.98	0,03	3.79	15.09
AN2	Completeness of information online	3.84	3.66	-0.18	3.69	13.49
AN3	Caretaker and worker services	4.35	4.09	-0.26	4.18	17.08
AN4	Rules made for travelers	3.92	3.49	-0.43	3.76	13.14
Conservation						
KO1	Mangrove tree condition	4.42	4.13	-0.29	4.24	17.53
Education						
ED1	Completeness of information about mangrove tourism contained on information boards	4.23	3.27	-0.96	4.06	13.28
ED2	Educational benefits felt by tourists	4.01	3.26	-0.75	3.85	12.55
ED3	Openness of the management for travelers to conduct research	3.86	4.02	0.16	3.71	14.90
Community Participation						
PM1	Community knowledge	4.33	3.65	-0.68	4.16	15.17
PM2	Community participation in mangrove tourism management	4.26	3.91	-0.35	4.09	15.99
	Total	104.15	90.82		100.00	363.24
	Average	4.17	3.63	**CSI (%):**		**72.65**
	Gap Value:	**-0.53**				

The average level of importance (Yi) is 4.17, while the average level of performance (Xi) is 3.63 based on the tourists' perspective. This discrepancy suggests that while tourists find the tourism site highly important and attractive—reflected in the relatively high importance score—its performance falls short of these expectations. These results indicate that the performance level is lower than the level of interest, so the attributes of Petengoran Tourism still need to be higher than the expectations of tourists. Mangrove tourism has a relatively high level of importance based on tourists' perspectives. The average value of importance that reaches 4.17 indicates that tourists consider this mangrove tourism to have attributes that are important and attractive to tourists.

However, the performance level of 3.63 means that although mangrove tourism is considered important, many things still need to be improved in managing or providing services. A strong focus on improving facilities can help close the gap between tourist expectations and actual experiences in tourism sites (Asrianny 2021).

The overall gap between the performance level and tourists' expectations is -0.53. These results indicate that the current performance level of Petengoran Mangrove Tourism is lower than the level of importance expected by tourists. There is a gap between interests and performance on several indicators in the attributes of tourist attractions, accessibility, amenity, ancillary service, conservation, education and community empowerment, thus indicating that several characteristics in **Table 4** have low performance. This study's results align with Sugianto and Kristanti (2015), stating that there is a gap between perceptions and expectations of tourists on the attributes of accessibility, comfort, and activities in tourism. Based on the CSI value and the gap value obtained, mangrove tourism managers must improve performance and characteristics with a gap value between expectations and perceptions to increase tourist satisfaction to the "very satisfied" category.

Based on the result of the interview with the head of the Petengoran Mangrove Tourism management, the number of tourists to this mangrove tourism will fluctuate every month in 2021. It is known that the number of tourists was almost 25,000 people in 2021. However, this condition is inversely proportional to the year after that. The head of Petengoran Mangrove Tourism management said that the number of visits was less than 2,000 tourists in 2022, and similar numbers also occurred in 2023. This mangrove tourism management did not record the number of visits or tickets sold, so the researchers only obtained estimated numbers. What has certainly happened is that there has been a very significant decline in the last 3 years. This is because other tourist destinations have been operating and receiving tourists, and pandemic conditions are gradually showing good results, so this competition is inevitable.

After tracing the root of the previous problem, the high interest of tourists to visit Petengoran Mangrove Tourism in 2021 was due to its virality on social media. Tourists flocked to come solely to take selfies. When the virality began to fade, this mangrove tourism gradually lost some tourists. The entrance ticket price to Petengoran Mangrove Tourism is IDR 15,000. This price is relatively affordable when entering a tourist destination. Reviewing the research of Sukamdani et al. (2024), the cheapest ticket price to enter mangrove tourism is IDR 50,000. Widayati and Widiastuti (2022) explain that the price set by a tourist attraction will also be significant to a person's decision to visit. The relatively low cost of admission to Petengoran Tourism can trigger many visits. This can make mangrove tourism just a name/label because it has not been implemented. Instead, Petengoran Mangrove Tourism looks like mass tourism due to this phenomenon. Most tourists who come to this mangrove tourism are interested in recreation rather than purposes related to nature and environmental conservation. This is evidenced by the results of interviews conducted with 100 tourists who have visited Petengoran Mangrove Tourism. 73% visited mangrove tourism for recreation, while the rest were tourists who visited this mangrove tourism with the aim of conservation and education. Most tourists are motivated for recreational purposes because of the relatively affordable cost and beautiful scenery. On the other hand, mangrove tourism has not been equipped with adequate facilities and infrastructure, so it has not attracted many visitors (Sari et al. 2015).

Several findings related to the 4A components of tourism owned by Petengoran Mangrove Tourism were successfully obtained based on observation and interviews with mangrove tourism

managers. Regarding attractions, Petengoran Mangrove Tourism needs attractions that align with ecotourism principles. The attractions they have are the heart and crescent-shaped photo spots. The existence of this attraction invites tourists who come to mangrove tourism to take selfies because this attraction is not made for ecotourists, which is the supposed ecotourism market segmentation. Regarding accessibility, the road to Petengoran Mangrove Tourism 200 m is a rocky dirt road that has not been paved, so it becomes slippery and muddy when it rains. In terms of amenities, it was found that the facilities at Petengoran Mangrove Tourism were starting to be damaged, such as wood on the tracking path and gazebo, which needed to be repaired for the safety and comfort of tourists. In addition, educational facilities need to be improved, only in the form of information about mangroves posted on a board in one of the gazebos. Regarding ancillary services, Petengoran Mangrove Tourism is managed by BUMDes Makmur Jaya and the residents of Gebang Village. However, its management needs more intense attention and contribution from relevant government agencies regarding additional infrastructure provision to increase visits and community empowerment.

3.3. Mapping of Mangrove Tourism Attributes

The mapping was done using a Cartesian diagram divided into four quadrants with unequal indications. The purpose of this mapping is to place the attributes into the categories of "focus here", "keep up the good performance", "low priority", and "maybe too much" based on tourists' perceptions of the performance and importance of each attribute. The mapping of attribute performance based on tourists' perceptions is presented in **Fig. 3**.

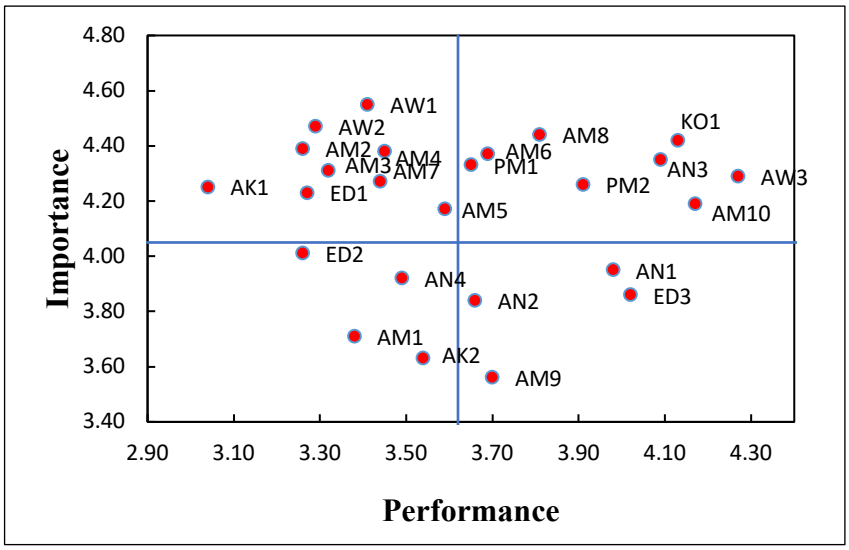

Fig. 3. Cartesian diagram of tourists' perceptions of tourism performance in the Petengoran Mangrove Tourism (Source: Data processed 2024).

Quadrant I is the part that describes the attributes considered important by tourists, but these attributes do not perform according to tourist expectations. The characteristics in this quadrant are high priority. This quadrant has the most attributes among other quadrants. Regarding tourist attractions, the availability of unique attractions and the diversity of tourist activities are considered very important by Petengoran Mangrove Tourism tourists. However, there are discrepancies with the reality. The unique attraction availability attribute has a performance score of 3.41, and the diversity of tourist activities has a performance score of 3.29. Petengoran

Mangrove Tourism provides scenic views of mangrove expanses and beaches, photo spots designed as crescent moon or heart symbols, and conservation activities. Despite this, not all attractions align with ecotourism principles, particularly the photo spots that serve primarily aesthetic purposes rather than contribute to conservation or environmental education. The activities are also monotonous, with some tourists enjoying the beauty of nature. These discrepancies highlighted a need for improving the integration of conservation elements into all ecotourism offerings.

The uniqueness of tourist destinations is one important attribute to tourists (Truong et al. 2018). Eating and drinking facilities, toilets, tracking trails, parking areas, and educational facilities are fundamental tourist amenities. However, mangrove tourism managers have yet to be able to provide amenities that meet tourists' expectations. Shopping significantly impacts how tourists behave; tourists spend more money buying food and drinks when they travel (Birch and Memery 2020; Md Khairi et al. 2019), so it must be improved by adding the diversity of food sold in mangrove tourism. However, in the research location, there is only a culinary corner that sells instant food and drinks, while tourists have more expectations than what is available. Tourists expected that mangrove tourism would sell processed seafood such as fish, shrimp and crabs, but this expectation differed greatly from the reality in the field. Based on the result of an interview with one of the locals who works at the culinary corner, they are only able to sell instant food and drinks because of an insufficient budget to provide processed food and drinks for tourists. Toilets have a performance score of 3.32; there are only two toilets in ecotourism with mediocre conditions. The tracking path has a performance score of 3.45 because some woods are becoming brittle, so they need to be repaired. Pengoran Mangrove Tourism has a tracking path of ± 360 m on the left entering the mangrove forest and ± 425 m on the right. The parking area has a performance score of 3.59; this area is near the entrance ticket booth, with an area that is not too large.

Educational facilities are crucial in mangrove tourism because tourists need educational benefits, but this attribute has a performance score of 3.44. This attribute is also related to the completeness of information about mangroves in information boards, which is also included in this quadrant. Managers must handle mangrove tourism properly and place more emphasis on this facility to increase visitors' satisfaction (Hamid et al. 2022). Road access is the attribute with the lowest performance score, 3.04. Tourists assessed the low level of performance because the road conditions for mangrove tourism around 200 m were inadequate. Vehicle drivers, especially two-wheeled vehicles, are advised to be more vigilant when crossing the road in wet conditions. The competitiveness of a destination is determined by accessibility and attractiveness, which simultaneously contribute to tourist satisfaction (Hossain and Islam 2019; Nasir et al. 2020). In line with Ibrahim et al. (2020), their research found that ease of access to tourist destinations is an important attribute for tourists and needs to be focused on more.

Quadrant II is the part that places attributes that are perceived as important by tourists and follow what tourists want. The attributes in quadrant II fall into the "maintain good performance" category. First, success in maintaining clean seawater conditions is a positive achievement, ensuring a pleasant tourist experience and supporting the sustainability of the marine ecosystem. Travelers view this attribute as the most satisfying, with a performance score of 4.27. Regarding amenities, the availability of worship facilities for spiritual needs, as most Indonesians are Muslims, gazebos for tourists to enjoy the mangrove expanse, and trash bins to maintain environmental cleanliness received a positive response from tourists.

In addition to amenities, the services of administrators and workers are also included in Quadrant II. This attribute is also related to characteristics in the same quadrant: worker knowledge and community involvement in tourism management. Tourists do not always look for information online; they look for information through interaction with humans. This needs to be maintained because the knowledge of workers' attributes is almost included in Quadrant I, namely by providing training and certification to develop customer service and product knowledge to increase overall tourist satisfaction with the destination (Rašovská et al. 2021). The knowledge that workers need is the true concept of ecotourism. This knowledge is known and needs to be understood and fully implemented. If this understanding has been mastered, workers can serve tourists by prioritizing ecotourism activities rather than just selling entrance tickets. Workers and local communities need to be mindful that tourists need to be given experiences and understanding related to mangrove tourism to make their visit memorable. This would enable tourists to return. In community-based tourism, the active participation of local communities in managing tourist destinations is a crucial element of success (Eviana and Achmadi 2022). To create participation in the conservation and maintenance of nature-based tourism areas requires an important foundation in the form of community understanding and awareness (Iqbal et al. 2021), including in Petengoran Mangrove Tourism. Awareness that encourages local community participation must be cultivated and developed intensively, systematically, and planned (Regmi and Walter 2016). The willingness, opportunity and ability to participate, which are the conditions for participation, need to grow and develop independently and sustainably. If these prerequisites are unmet, the first step is building awareness (Kim et al. 2019).

Quadrant III is a section that describes the attributes of mangrove tourism that are perceived as not too remarkable for tourists, and their performance is less attention (low priority). The characteristics of this quadrant are the availability of ticket counters and entrance gates, signposts, rules made for tourists, and the educational benefits that tourists feel. Meanwhile, quadrant IV contains attributes that are not too important in this mangrove tourism but in performance are supposed to be excessive for tourists (possible overkill), namely the ease of obtaining information in this tourism, the completeness of information on the internet, the openness of mangrove tourism administrators for tourists to conduct research and wooden ships. Wooden ships are included in the possible overkill category because most tourists sit in the gazebo while enjoying the beauty of the stretch of beaches and mangroves. Wooden boats are usually used for specific purposes, such as tourists' photoshoot needs. Attributes included in quadrants III and IV do not require more management focus (Simpson et al. 2020; Taplin 2012). Instead, focusing on those attributes can reveal scarce resources that can be reallocated to fix other attributes with poor performance issues (Parker and Simpson 2018; Simpson et al. 2020).

Tourism activities are organized with simplicity, maintaining the authenticity of nature and the environment, creating tranquility, maintaining flora and fauna, and maintaining the environment, thus creating a balance between human life and the surrounding nature (Avenzora et al. 2024; Sulistyorini et al. 2022). Tourism includes everything offered to tourists, including tourist attractions, accommodation, transportation, infrastructure, and supporting facilities, so it needs to be appropriately planned. Good planning for the development of facilities and infrastructure for tourist attractions will increase the number of visitors because enjoying tourist attractions is one of the goals of tourists (Xavier et al. 2018). Implementing tourism improvement and development strategies is inseparable from the community's role. Tourism planning often only focuses on building attractions, facilities, or infrastructure to facilitate physical access. However, access to

information for local communities must also be considered in tourism planning. Regular discussions with a family atmosphere should involve the government, developers, and local communities (Reindrawati 2023).

4. Conclusions

Petengoran Mangrove Tourism does not match tourists' expectations. The aspects that are the main focus, because they are considered not to have reached the standards expected by tourists, are the availability and diversity of tourist activities, accessibility conditions, implementation of educational activities, and several facilities that have not fully satisfied the tourists, even though tourists highly desire these components. Therefore, managers and local communities responsible for Petengoran Mangrove Tourism must improve and develop these four aspects to increase tourist satisfaction and interest in visiting. It is also important for the local government to be able to improve the inadequate road to the mangrove tourism site.

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