



RESEARCH ARTICLE

Enhancing Ecotourism Experiences in Forest Recreation Areas: Insights from Sukamantri Campground, Indonesia

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ABSTRACT

Forest-based ecotourism plays a crucial role in balancing biodiversity conservation and sustainable community development. However, the success of ecotourism management relies heavily on understanding visitor satisfaction. This study applies the 4A framework (Attractions, Accessibility, Amenities, and Ancillary) to quantify visitor satisfaction at the Sukamantri Campground, located within Mount Halimun Salak National Park, Indonesia. A total of 67 respondents were selected using a purposive sampling method, and data were collected through structured interviews and questionnaires. Visitor satisfaction levels were assessed using a Likert-scale evaluation and analyzed quantitatively. The results reveal that Sukamantri Campground generally meets the 4A criteria, with high satisfaction scores for attractions (3.29), accessibility (3.20), and ancillary services (3.23), while amenities (2.80) were identified as the weakest aspect requiring improvement. The overall satisfaction index was 3.13, categorizing visitors as “satisfied.” Despite relatively positive perceptions, facilities (particularly toilets and supporting infrastructure) remain critical factors influencing visitor experience. This study highlights the importance of integrating the 4A framework into forest recreation management to enhance visitor experiences while maintaining environmental sustainability. The findings provide valuable insights for ecotourism managers and policymakers to develop targeted strategies, including upgrading facilities, improving digital promotion, and strengthening collaboration with local communities to achieve sustainable forest-based tourism.

1. Introduction

Forest areas serve not only as water catchment areas and wood sources, but also play a strategic role in maintaining and increasing the availability of groundwater and soil fertility. In addition to its contribution to ecological and environmental aspects, forest areas also have great potential in the field of natural tourism, which has not been fully utilized. This potential encompasses the richness of biodiversity and the beauty of the natural landscape, making forest areas a valuable asset worthy of sustainable development (Herningtyas et al., 2022). Natural attractions in forest areas can be developed by utilizing existing environmental services. This use must be carried out in consideration of the preservation of the environment and the welfare of local communities. Herningtyas et al. (2022) stated that conservation areas, such as nature conservation areas and nature reserves, can attract tourists due to their diverse range of flora and fauna and their excellent potential for development as ecotourism destinations. Moreover, Nabila et al. (2025) also stated that with the increasing interest of people in traveling to nature, there is a growing tendency to care about the environment and enjoy the beauty of nature directly. Thus, attention to visitor satisfaction is a crucial aspect that managers of tourist destinations should consider. One approach that can be applied to identify visitor satisfaction levels is through the 4A aspects in tourism, namely, attractions, accessibility, amenities, and ancillary.

Fulfilling the basic principles in sustainable tourism development requires support from four main aspects: attractions, amenities, accessibility, and additional services (Fletcher et al., 2018). Each element in this approach represents an important dimension that is interrelated and determines a destination's success in attracting and retaining tourist visits. Therefore, the study of the 4A approach is important to identify the extent to which a destination has met the ideal standards in sustainable tourism management.

The potential for natural tourism in conservation areas such as Mount Halimun Salak National Park (TNGHS) continues to grow as public interest in ecotourism increases. Dewi et al. (2022) reported that TNGHS is a conservation area with beautiful natural scenery, which can attract tourists to visit. One of the tourist attractions in the TNGHS area is the Sukamantri Campground. In its development, the Sukamantri Campground encompasses four aspects. The number of visitors at the Sukamantri Campground from 2021 to 2024 was recorded at 19,268 people. The developments that occur from 2021 to 2024 tend to be unstable; this instability can be attributed to visitor satisfaction, particularly in the 4A aspects, which significantly impact visitor satisfaction. Sukamantri Campground Tour has weaknesses in its 4A aspect, for example, the amenities, because many tourists complain about the facilities provided. Hikmah (2024) stated that visitor satisfaction is an important factor that needs to be considered in the management of tourist destinations, because the level of satisfaction plays a role in forming a positive perception that can encourage tourists to recommend destinations to others. These recommendations have the potential to increase the number of visits, which ultimately contributes to the development and effectiveness of the tourist destination itself.

The presence of visitors and the effectiveness of management in a tourist area can be influenced by the level of satisfaction with the 4A aspects. The level of visitor satisfaction based on the 4A aspects can provide a comprehensive picture of the effectiveness of the management of a tourist destination. The purpose of this study is to identify the 4A aspects of the Sukamantri Campground of TNGHS and to find out the satisfaction of visitors in the Sukamantri Campground of TNGHS.

2. Materials and Methods

2.1. Study Area

This research was carried out in January-March 2025 at the Sukamantri Campground Tourism, Tamansari Village, Bogor Regency, Mount Halimun Salak National Park (TNGHS).

2.2. Determination of Number of Respondents

The population determination in this study was based on the average number of visitors recorded from 2021 to 2024, with the sample representing an average of 4,817 visitors per year during the period, as calculated using Equation 1 developed by Nelwan et al. (2019).

$$S = \frac{\lambda^2 \cdot N \cdot P \cdot Q}{d^2 (N - 1) + \lambda^2 \cdot P \cdot Q} \quad (1)$$

where S is the number of samples, N is the total population, λ^2 is the Chi-Square, error level 10%, D is 0.05, and $P = Q$ is 0.5

In this study, a total of 4,817 individuals were included, with a 10% sampling error used to determine the sample size. The sample to be studied consists of 67 respondents. Considering the limitations of cost, effort, and time available, the researcher has the authority to establish an error limit in determining the sample size. A sampling error of 10% with a 90% confidence level is still acceptable in a study, as it is based on the maximum error rate in research in the social sciences field. Therefore, the number of respondents, 67 people, is considered sufficient for the implementation of this study.

2.3. Data Collection Techniques

This study uses a quantitative descriptive approach. The data presented in this study were obtained directly by the researcher, following the situation that was happening at that time. The technique of collecting data at night in this study uses the purposive sampling method. The respondent criteria used in this sample selection process include those outlined by Wiliana (2022).

1. Respondents were over 17 years old, assuming that at that age, they were mature enough to understand and respond well to each question in the research questionnaire.

2. Able to communicate with researchers.
3. The respondents, taken as the data source, were visitors who had visited the Sukamantri Campground tour.
4. Interested visitors are given a questionnaire and asked to complete it in full.

One of the most commonly used data collection techniques is the interview, which involves direct communication between researchers and respondents to gain a deeper understanding of their experiences and perspectives on research topics. The data collection technique employs structured interviews, aiming to obtain the necessary data or information directly from the respondents concerned. In this structured interview, each respondent is presented with a specific question, and the researcher records their response. Therefore, by conducting structured interviews, the researcher has prepared research instruments in the form of written questions, each with alternative answers.

2.4. Test Research Instruments

2.4.1. Validity test

Validity tests are used to assess the extent to which a questionnaire can be considered valid. A questionnaire is considered valid if the questions can accurately measure what the questionnaire is intended to assess. Validity test was calculated using Equation 2.

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{(N \sum X^2 - (\sum X)^2)(N \sum Y^2 - (\sum Y)^2)}} \quad (2)$$

where r_{xy} is the correlation coefficient between variables X and Y, N is the number of respondents, $\sum X$ is the number of question points, $\sum Y$ is the total score of questions, $\sum X^2$ is the number of square scores of question items, and $N \sum Y^2$ is the total score squared of the question items.

According to Slamet and Wahyuningsih (2022), the test criteria are as follows.

1. If r calculates $> r$ table (sig. 0.05), the research instrument or question item shows a significant correlation to the total score (valid).
2. If r counts $< r$ table (sig. 0.05) or r counts negatively, then the instrument or question item does not show a significant correlation to the total score (invalid).

The significance level used in this study is 0.05 or 5% with $dk = n - 2$. The number of respondents in this study was 15 people, so $15 - 2 = 13$, which obtained the table r value of 0.4409. The results of the data analysis indicate that each statement item exceeds 0.4409, indicating that each statement item can be considered valid.

2.4.2. Reliability test

This test aims to measure the extent of consistency of a research instrument. A questionnaire is said to be reliable if the respondent's answers to the question are consistent from time to time. According to Afif (2019), dividing the reliability level by the criteria results in a Cronbach's Alpha value greater than 0.60. Calculations to determine the instrument's reliability are using Equation 3, with the following reliability level criteria.

1. The instrument is said to have reliability if the alpha or r value is calculated to be 0.8 – 1.0.
2. The instrument is said to have acceptable reliability if the alpha or r value is calculated to be between 0.6 and 0.799.
3. The instrument is said to have poor reliability if the alpha or r value is calculated less than 0.6.

$$r_{11} = \left(\frac{K}{K - 1} \right) \times \left(1 - \frac{\sum S_1}{S_t} \right) \quad (3)$$

where R/I is the reliability coefficient, K is the total number of items on the test, $K - 1$ is the number of score variants of each item, $\sum S_1$ is the total variance, and $S_t K$ is the number of items.

Calculations to determine the instrument's reliability are based on the Cronbach's Alpha technique, which is applied to interval-type data. This technique states that the reliability formula can be used in conjunction with the Cronbach's Alpha coefficient formula. The results of the data analysis are presented in Table 1.

Table 1. Reliability test results

Aspects	Cronbach Alpha	Information
Attractions	0.87	Reliable
Accessibility	0.88	Reliable
Amenities	0.80	Reliable
Ancillary	0.74	Reliable

2.4.3. Visitor satisfaction data analysis

The interview results from the questionnaire will be analyzed using the Likert scale technique (Equation 4). The answer sheets on the Likert scale consist of the categories “very dissatisfied”, “dissatisfied”, “satisfied”, and “very satisfied”. In this study, the researcher applied a scoring interval of 1–4, where a score of 1 represents the lowest score and 4 represents the highest score (**Table 2**).

$$C = \frac{X_n - X_i}{K} \quad (4)$$

where C is the interval, Class X_n is the maximum score, Class X_i is the minimum score, and K is the number of classes.

Table 2. Visitor satisfaction

No.	Score	Visitor satisfaction category
1	1 – 1.75	Very dissatisfied
2	1.76 – 2.51	Dissatisfied
3	2.52 – 3.27	Satisfied
4	3.28 – 4	Very satisfied

3. Results and Discussion

3.1. Characteristics of Respondents

The characteristics of the respondents in this study are presented in **Table 3**. The results showed that the majority of visitors to the Sukamantri Campground Tour were women, which was 64.18%, with a higher satisfaction rate (3.17) than men, who amounted to 35.82% with a satisfaction rate (3.05). [Hudiono \(2022\)](#) stated that, in general, the most visited tourist attractions are by women. Based on research on women's gender, it is evident that women are more satisfied with four aspects: attractions, accessibility, amenities, and ancillary services, compared to men. Women tend to be more active in traveling, while men make fewer sightseeing visits compared to women, as many of them prefer to focus on work rather than travel. In terms of marital status, most visitors were married (67.16%), with a satisfaction rate of 3.20, while unmarried visitors (32.84%) showed a lower level of satisfaction, at 2.99. Based on regional origin, 97.01% of visitors came from Greater Jakarta, with a satisfaction rate of 3.13, while the rest came from outside Greater Jakarta and showed a higher satisfaction rate of 3.18. In terms of age, visitors were dominated by the age group of 20–40 years (70.15%). Research by [Hudiono \(2022\)](#) indicates that in Indonesia, most tourist trips are undertaken by young age groups, particularly those under the age of 25. Although the number is small, the age group over 60 years old recorded the highest satisfaction rate, which was 3.25, as this destination is considered safe and comfortable for elderly visitors.

In terms of education, the majority of visitors had a high school education (55.22%). Visitors with the elementary education had the highest satisfaction rate of 3.41. In contrast, high school graduates had the lowest satisfaction rate of 3.11, indicating that visitors with higher levels of education tend to be more critical in assessing attractions, access, facilities, and services. In terms of income, most visitors have a monthly income of IDR 3,000,000–IDR 5,000,000 (38.81%). Visitors with an income of IDR 1,000,000–IDR 3,000,000 showed the highest satisfaction rate of 3.24, indicating that this destination is attractive to the middle-income group. Based on their occupation, visitors were mostly entrepreneurs (37.31%). Despite the fewest numbers, housewives recorded the highest satisfaction rate of 3.33 with all aspects of tourism, indicating that this destination is particularly suitable for married women with children.

Table 3. Characteristics of respondents

No	Characteristics of respondents	Frequency	Percentage (%)
1	Gender		
	Man	24	35.82%
	Woman	43	64.18%
2	Regional origin		
	Jabodetabek*	65	97.01%
	Outside Jabodetabek*	2	2.99%
3	Marital status		
	Married	45	67.16%
	Unmarried	22	32.84%
4	Age		
	< 20 years	5	7.69%
	20 – 40 years	47	70.15%
	40 – 60 years	13	19.40%
	> 60 years	2	2.99%
5	Education		
	Elementary school	2	2.99%
	Junior high school	10	14.93%
	Senior high school/vocational high school	37	55.22%
	Doctoral degree/master degree/bachelor degree/diploma degree	18	26.87%
6	Occupation		
	Civil servant/state-owned enterprise/private employee	21	31.34%
	Housewife	8	11.94%
	Entrepreneur	25	37.31%
	Student	13	19.40%
7	Income (IDR)		
	< 1 million	13	19.40%
	1 – 3 million	17	25.37%
	3 – 5 million	26	38.81%
	> 5 million	11	16.42%
8	Frequency of visits		
	1 – 2 times	37	55.22%
	3 – 4 times	18	26.87%
	4 – 6 times	7	10.45%
	> 6 times	5	7.49%
	Total	67	100%
9	Length of Visit		
	1 – 10 hours	32	47.76%
	1 day	25	37.31%
	1 – 2 days	9	13.43%
	> 2 days	1	1.49%
10	Participants		
	Friends	31	46.27%
	Family	28	41.79%
	Co-workers	7	10.45%
	Alone	1	1.49%
11	Number of people		
	Alone	1	1.49%
	2 – 10 people	59	88.06%
	11 – 20 people	4	5.97%
	21 - 50 people	3	4.48%
12	Purpose of Visiting		
	Camping	21	31.34%
	Play	24	35.82%
	Education/training	2	2.99%
	Togetherness events	20	29.85%
13	Vehicle		
	Motorbike	48	71.64%
	Private cars	11	16.42%

No	Characteristics of respondents	Frequency	Percentage (%)
	Public transportation	5	7.46%
	Rental vehicles (trucks/buses)	3	4.48%
14	Tourist information		
	Social media	4	5.97%
	Relatives who have visited	26	38.81%
	Co-workers	6	8.96%
	Locals	31	46.27%

Note: * Jabotabek: Jakarta-Bogor-Tangerang-Bekasi Metropolitan Area.

Judging from the frequency of visits, the majority of visitors have come 1–2 times (55.22%). The highest level of satisfaction was achieved by visitors who had visited more than six times, with a satisfaction rating of 3.18, indicating that previous visits had a positive impact on satisfaction. The length of time spent on most visits was 1–10 hours (47.76%), with the highest satisfaction rate of 3.22. Most visitors come with friends (46.27%) and family (41.79%). Visitors who came with friends reported the highest satisfaction, at 3.16. In terms of the number of people who visited, the majority came in groups of 2–10 people (88.06%), while groups of 11–20 people (5.97%) showed the highest satisfaction rate of 3.21.

The main objectives of the visit consisted of camping (31.34%), playing (25.37%), community events (29.85%), and educational or training activities (2.99%). Visitors who aim to play recorded the highest satisfaction rate of 3.18. Regarding the type of vehicle, most visitors use motorcycles (71.64%), followed by private cars (16.42%), public vehicles (7.46%), and rental vehicles such as trucks or buses (4.48%). Visitors who use motorcycles show the highest satisfaction rate of 3.14, highlighting the importance of accessibility in the travel experience. The most sources of information were obtained from residents (46.27%) and relatives (38.81%), followed by colleagues (8.96%) and social media (5.97%). Visitors who have received information from locals have the highest satisfaction rate, at 3.17. This aligns with the research by [Damanik and Yusuf \(2021\)](#), which suggests that visitor satisfaction can be achieved when there is a match between visitor expectations and the performance provided by the company.

3.2. Identify Aspect 4A

3.2.1. Attractions

Sukamantri Campground is a tourist attraction. The camping grounds at Wisata Bumi Camping Sukamantri are divided into two areas, each offering a different experience. Camp 1 was designed to offer views that directly overlook the city, allowing visitors to enjoy breathtaking views. Camp 2 offers a more intimate experience with nature, featuring stunning views of the surrounding forest. Tourist attractions in the form of a camping ground can be seen in **Fig. 1**.

3.2.2. Accessibility

Based on the research results, accessibility to the Sukamantri Campground is good. The road to the location has been paved, and some sections are concreted (**Fig. 2**). Road access to the Sukamantri Campground can be accessed by various types of vehicles, such as motorcycles, cars, trucks/and buses. The trip to Sukamantri Campground can be taken using a private vehicle, with a distance of 15 km from the center of Bogor City. The estimated travel time is 47 minutes by motorbike, while a car takes 58 minutes.

3.2.3. Amenities

Sukamantri Campground has a visitor center, hall, parking lot, rest area/gazebo, 24-hour ticket purchase area, 24-hour security post, eight stall units, wood deck, suspension bridges, 24-hour equipment rental facilities, 24 toilet units, and mosques. According to [Harianto et al. \(2023\)](#), with complete and quality amenities, visitors can enjoy their time better, feel more comfortable, and get a more satisfying experience while in the place.



Fig. 1. Tourist attraction in Camp 1 (a-b) and in Camp 2 (c-d).

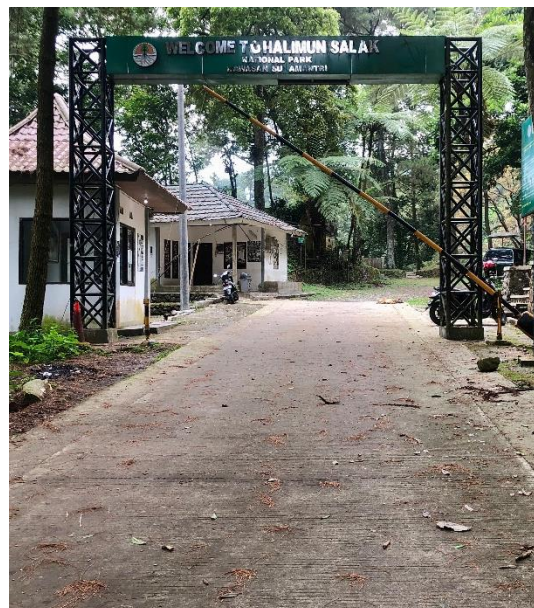


Fig. 2. Road conditions.

3.2.4. Ancillary (Additional services)

Sukamantri Campground is managed by a group of local communities called CV Sabuk Gunung, totaling nine people. The following are some of the additional services provided.

- a. Nature Atmosphere Camping Package: This service enables visitors to utilize tourist information services at Sukamantri Campground, allowing them to enjoy the camping atmosphere in natural surroundings while also learning about the local tourist attractions. To use this service, visitors only need to pay IDR 250,000/person for 2 days and 1 night. The services provided include entrance

tickets, camping, tracking, parking area, tents, mattresses, sleeping bags, three meals per day, and firewood/campfire.

- b. Hiking Trips: The availability of this service allows visitors to use tourist travel services at Sukamantri Campground. To use this service, visitors only need to pay IDR 175,000/person, with a trekking time range of 1–5 hours. The services provided include one meal, entrance and parking tickets, a tour guide, snacks, mineral water, and any necessary medications.

3.3. Visitor Satisfaction Analysis

Attractions at Sukamantri Campground include natural beauty, opportunities to enjoy outdoor activities, comfort of the place, photo spots, the area of Sukamantri Campground, environmental cleanliness, diversity of flora and fauna, trees and citylight, the natural atmosphere, and the freshness of the air are classified as very high with an average visitor satisfaction value of 3.29 showing that visitors feel very satisfied with the attractions provided. This finding aligns with research by [Wiliana \(2022\)](#), which shows that attractions play an important role in increasing visitor satisfaction; the more attractive the attractions offered, the higher the level of satisfaction. Conversely, the lack of attraction management has a negative impact on satisfaction. [Murniati et al. \(2024\)](#) stated that attractions are a major factor in visitor satisfaction, where the quality of good natural conditions can increase tourist visits. Therefore, attractions at Sukamantri Campground need to be maintained and developed sustainably.

Accessibility encompasses various factors, including road access, ease of navigation, smoothness of the road, road conditions, easy-to-reach location, information available on social media, presence on Google Maps, availability of parking areas, clear road directions, and road quality. Accessibility to Sukamantri Campground has an average visitor satisfaction score of 3.20, indicating that visitors are generally satisfied with the accessibility to Sukamantri Campground. Accessibility is an important factor in determining visitor satisfaction at the Sukamantri Campground. This is in accordance with [Hidayat et al. \(2023\)](#), stating that the ease of accessing tourist attractions is also an equally important factor in visitor satisfaction in a tourist area. Although the Sukamantri Campground is located quite far from the main road, the absence of public transportation is not a problem for visiting the Sukamantri Campground, as the majority of visitors who come to the Sukamantri Campground use private vehicles, with 2-wheelers accounting for 70.77% of the total and rental vehicles making up the remainder. Accessibility plays a crucial role in tourism development; without an adequate transportation network, a tourist destination will be difficult to access ([Zhang et al., 2025](#)).

Amenities, including prices, stalls, places of worship/mosques, the number of toilets, garbage cans, gazebos, equipment rentals, information boards, and Campground Tourism halls, show an average visitor satisfaction value of 2.80, indicating that visitors are generally satisfied with the facilities provided. However, in the 5th statement regarding toilet comfort, an average of 2.42 indicates that visitors feel dissatisfied, in line with research conducted by [Risqi \(2025\)](#), which suggests that the comfort must be reconsidered because it has not met the visitors' expectations. This is because the facilities at the Sukamantri Campground are poorly maintained, especially in the bathrooms, which still lack proper maintenance, have a non-ergonomic design, and exhibit hygiene issues. This finding aligns with research conducted by [Cheng et al. \(2022\)](#), although it has been categorized as satisfactory; tourist attraction officers need to pay further attention to the condition of these facilities. [Chen et al. \(2023\)](#) highlight the crucial role of facilities in enhancing visitor satisfaction. Visitors who are satisfied with the facilities available will have a positive experience, making it more likely to recommend the destination to others. This needs to be considered by the management, and improvements are needed in the future to achieve harmony between visitor expectations and the performance provided by the manager. Toilet facilities can refer to the Indonesian National Standard (SNI), which states that the toilet floor must be waterproof and non-slip, and the dividing wall between the cubicles should be positioned at least 20 cm above the floor. It must have good air circulation because the humidity level of the wet toilet is 40–50%. In addition, lighting of at least 200 lumens, doors made of waterproof material, flat and waterproof ceilings, and the use of automatic water taps or rotary levers are also part of the comfort standards that need to be met.

Ancillary services include information centres, friendly officers, accurate information from officers, security posts, environmental cleanliness, insurance, cleaning services, officer assistance, an alert attitude among officers, and information on social media. Additional services provided by Sukamantri

Campground have an average visitor satisfaction score of 3.23, indicating that visitors are generally satisfied with these services. According to Barman et al. (2024), visitor satisfaction is one of the key factors that determine overall visitor satisfaction. According to Phelan et al. (2020), the service of officers who are very informative and interactive in conveying information about tourist attractions is one of the factors that determine visitor satisfaction. Sugiarto and Utari (2024) suggest that officers who possess adequate knowledge, communicate effectively, and are skilled in providing information will increase the comfort and satisfaction of visitors. This satisfaction is reflected in the clarity of information obtained by visitors and the performance of the officers. The clarity of this information makes it easier for visitors to determine the types of services they can receive while traveling. In addition, the existence of insurance shows the manager's readiness to handle risks, which has a positive impact on the sense of security and satisfaction of visitors. In general, the results of the visitor satisfaction recapitulation at the Sukamantri Campground, focusing on attractions, accessibility, amenities, and ancillary services, indicate a satisfaction rating of 3.13, indicating that visitors are generally satisfied with these aspects.

4. Conclusion

This study demonstrates that the Sukamantri Campground within Mount Halimun Salak National Park has successfully implemented the 4A framework—Attractions, Accessibility, Amenities, and Ancillary—to manage its ecotourism potential. Visitor satisfaction analysis indicates a generally positive perception, with high satisfaction scores for attractions (3.29), accessibility (3.20), and ancillary (3.23), while amenities (2.80) represent the weakest dimension that requires further improvement. The overall satisfaction index of 3.13 places Sukamantri Campground in the “satisfied” category. Despite these positive outcomes, several critical challenges remain, particularly regarding facility maintenance, sanitation, and service quality. Upgrading amenities—especially improving toilet conditions and supporting infrastructure—should be prioritized to enhance visitor experience and maintain competitiveness. Furthermore, digital-based promotion, increased collaboration with local communities, and the integration of sustainability principles into management strategies are essential to strengthen ecotourism development. The findings emphasize that incorporating the 4A model into forest-based tourism management provides valuable insights for balancing recreation, visitor satisfaction, and environmental sustainability. By addressing current weaknesses and optimizing strengths, Sukamantri Campground has the potential to serve as a model for sustainable forest recreation management in Indonesia and beyond.

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