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ANALYSIS OF THE PRIORITY FACTORS INFLUENCING TOURISTS' INTEREST IN VISITING YOGYAKARTA USING THE AHP METHOD

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Abstract

This study investigates the priority factors influencing tourists' interest in visiting the Special Region of Yogyakarta (DIY), Indonesia, using the Analytical Hierarchy Process (AHP). The research aims to identify the relative importance of the four key tourism dimensions (attraction, accessibility, amenities, and ancillary Services) and their corresponding sub-criteria to support evidence-based tourism development and infrastructure planning. Primary data were collected through pairwise comparison questionnaires distributed to 151 domestic tourists who had visited DIY within the previous year. Respondents were selected using purposive sampling, and individual judgments were aggregated using the geometric mean method before conducting the AHP analysis. Priority weights were calculated through eigenvector analysis, while the reliability of the pairwise comparisons was evaluated using the Consistency Ratio (CR), with all matrices satisfying the acceptable threshold (CR < 0.10). The results indicate that Accessibility is the most influential factor affecting tourists' intention to visit DIY (0.32), followed closely by Attraction (0.31), while Amenities (0.19) and Ancillary Services (0.18) play complementary roles. At the sub-criterion level, transportation access emerged as the highest priority within Accessibility, cultural uniqueness was the most influential attraction factor, facility cleanliness ranked highest among Amenities, and tourism information was identified as the most important Ancillary Service. These findings demonstrate that improving regional connectivity should be complemented by preserving cultural identity, maintaining high-quality public facilities, and strengthening digital tourism information services. The study provides practical recommendations for tourism authorities and policymakers to prioritize infrastructure investment, cultural preservation, sanitation management, and integrated information systems to enhance destination competitiveness and improve the overall tourist experience in Yogyakarta.

Keywords: *Analytical Hierarchy Process, Visitor Interest, Tourists, Yogyakarta, Tourist Destinations, Factor Priorities*

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INTRODUCTION

The Special Region of Yogyakarta (DIY) is one of Indonesia's premier tourist destinations, combining a rich cultural heritage, natural beauty, and modern tourism infrastructure [1]. Malioboro, Prambanan Temple, the Yogyakarta Palace, Parangtritis Beach, and the slopes of Mount Merapi are the main attractions that draw millions of domestic and

international tourists every year (BPS DIY, 2024). According to the Central Statistics Agency of the Special Region of Yogyakarta (BPS DIY) in 2024, there were 28,030,739 domestic tourist trips and 7,167 international tourist trips to the Special Region of Yogyakarta. The high number of tourists visits each year indicates that the Special Region of Yogyakarta possesses significant competitiveness within the national tourism industry. In an effort to sustainably improve the quality and competitiveness of tourism in DIY, a deep understanding of the factors influencing tourists' decisions in choosing a destination is necessary [2]. A priority-based approach enables destination managers and policymakers to allocate resources more efficiently and effectively [3]. This study uses the 4A framework in tourism proposed by Cooper et al. (1993)—namely, Attraction, Accessibility, Amenities, and Ancillary Services as the primary criteria for measuring factors influencing visitor interest [4].

Accessibility and amenities are directly linked to regional infrastructure development; road infrastructure, transportation networks, public facilities, and local service systems are crucial factors that determine the comfort and efficiency of tourists' travel [5]. The urgency of this research is increasing as improved regional connectivity through transportation infrastructure development is projected to change tourist mobility patterns toward the Special Region of Yogyakarta (DIY). The construction of the Solo–Yogyakarta–Yogyakarta International Airport (YIA) Toll Road and the Yogyakarta–Bawen Toll Road is expected to shorten travel times from major tourist source regions, such as Jakarta, Semarang, and Surabaya, thereby making travel to tourist destinations more efficient [6].

According to the Ministry of Public Works and People's Housing (PUPR), the construction of these two toll road sections is part of an effort to strengthen connectivity in national strategic regions while supporting the development of the tourism sector in the Joglosemar region. This situation indicates that the success of a tourist destination is not determined solely by its tourist attractions but is also influenced by other interrelated supporting factors [7]. Therefore, the development of tourist destinations requires an approach that considers all 4A components in an integrated manner to enhance travel comfort while supporting increased tourist interest. The Analytical Hierarchy Process (AHP) method was applied to quantify and rank the relative importance of each factor based on tourists' perceptions [8]. The objectives of this study are: (1) to identify the characteristics of tourists visiting DIY; (2) to determine the priority weights of each 4A criterion; and (3) to formulate the most influential sub-criteria within each dimension to support the development of the tourism area and improve regional accessibility [9].

RESEARCH METHODOLOGY

Data Collection Methods

Primary data were collected through an online questionnaire distributed to tourists who were currently visiting or had recently visited tourist destinations in DIY. The questionnaire consisted of two sections: (1) respondent profile, and (2) AHP pairwise comparison matrix using the 1–9 Saaty scale for each pair of main criteria and sub-criteria.

Sampling Technique

This study employed a purposive sampling method. Respondents were selected based on specific criteria, namely tourists who were currently visiting or had visited tourist destinations in the Special Region of Yogyakarta (DIY) within the last one year. This approach was chosen to ensure that respondents possessed sufficient experience and understanding to

evaluate tourism attributes using pairwise comparisons in the AHP framework. Purposive sampling is commonly applied in decision-making studies because it prioritizes respondents who have direct knowledge of the evaluated phenomena rather than relying solely on random selection.

Respondent Criteria and Sample Size Justification

The respondents consisted of domestic tourists aged at least 17 years who had independently planned or participated in tourism activities in DIY. The study involved 151 respondents. In AHP studies, the emphasis is placed on the consistency and quality of judgments rather than on large sample sizes. Previous studies have shown that samples ranging from 50 to 200 respondents are adequate for obtaining stable aggregate preferences when geometric mean aggregation is employed. Therefore, the participation of 151 respondents is considered sufficient to represent tourists' perceptions regarding factors influencing their intention to visit Yogyakarta [10].

Geometric Mean Aggregation

Since the study involved multiple respondents, individual pairwise comparison values were aggregated using the geometric mean method. The geometric mean is recommended in AHP because it preserves the reciprocal property of comparison matrices and provides a representative collective judgment. The aggregation formula is expressed as:

$$GM = (\prod_{i=1}^{n} x_i)^{\frac{1}{n}} \qquad (1)$$

Where x_i represents the assessment given by respondent i, and n denotes the total number of respondents.

Pairwise Comparison Matrix Construction

The aggregated geometric mean values were then arranged into pairwise comparison matrices. Each element a_{ij}represented the relative importance of criterion i compared with criterion j, while reciprocal relationships were maintained according to:

$$a_{ji} = \frac{1}{a_{ij}} \qquad (2)$$

The diagonal elements of the matrix were assigned a value of one because each criterion has equal importance when compared with itself.

AHP Analysis Procedure

The analysis was conducted using the ten standard steps of the AHP: (1) defining criteria; (2) grouping data; (3) calculating the geometric mean of all respondent ratings; (4) compiling a combined pairwise comparison matrix; (5) normalizing the matrix; (6) calculating the eigenvector (priority weights); (7) calculation of the weight sum vector; (8) determination of λmax; (9) calculation of the Consistency Index (CI = (λmax − n) / (n − 1)); and (10) calculation of the Consistency Ratio (CR = CI / RI) [11].

Table 1. Research Stages Using the Analytical Hierarchy Process (AHP) Method

Stage	Description
1	Defining the research objectives and decision hierarchy
2	Determining the main criteria and sub-criteria based on the 4A tourism framework
3	Selecting respondents using purposive sampling
4	Designing and validating the pairwise comparison questionnaire
5	Collecting data from 151 tourists visiting or having visited DIY
6	Aggregating respondents' judgments using the geometric mean method
7	Constructing the combined pairwise comparison matrix
8	Normalizing the matrix and calculating priority vectors (eigenvectors)
9	Computing λmax, Consistency Index (CI), and Consistency Ratio (CR)
10	Interpreting the priority weights and formulating policy implications

The research procedure presented in Table 1 illustrates the systematic implementation of the AHP method in this study. The process began with defining the research objectives and establishing the decision hierarchy based on the 4A tourism framework. Subsequently, data were collected through pairwise comparison questionnaires administered to selected respondents. The collected judgments were aggregated using the geometric mean approach to obtain a unified comparison matrix. The priority weights were then derived through matrix normalization and eigenvector calculations, followed by consistency testing using the Consistency Index (CI) and Consistency Ratio (CR) to ensure the reliability of the respondents' assessments.

RESULTS AND DISCUSSION

Respondent Characteristics

This study successfully gathered data from 151 tourist respondents. The demographic profile showed a predominance of female tourists (115 people, 76.2%), those in the 17–25 age group (130 people, 86.1%), and those who were high school or college students (122 people, 80.8%). The tourists were predominantly from West Java (30%), Central Java (23%), and Jakarta (20%). The results are presented in Table 2, Figure 1 and Figure 2.

Table 2. Demographic Characteristics of Respondents

Variable	Category	n	%
Gender	Female	115	76,2
	Male	33	21,9
Age	17–25 years	130	86,1
	26–35 years	11	7,3
	36–45 years	3	2,0
	>45 years	4	2,6
Occupation	Student	122	80,8
	Private-sector employee	14	9,3
	Freelancer	4	2,6
	Other	7	4,6
Trip Duration	2–3 hari	72	47,7

>3 days	52	34,4
1 days	22	14,6
<1 days	2	1,3

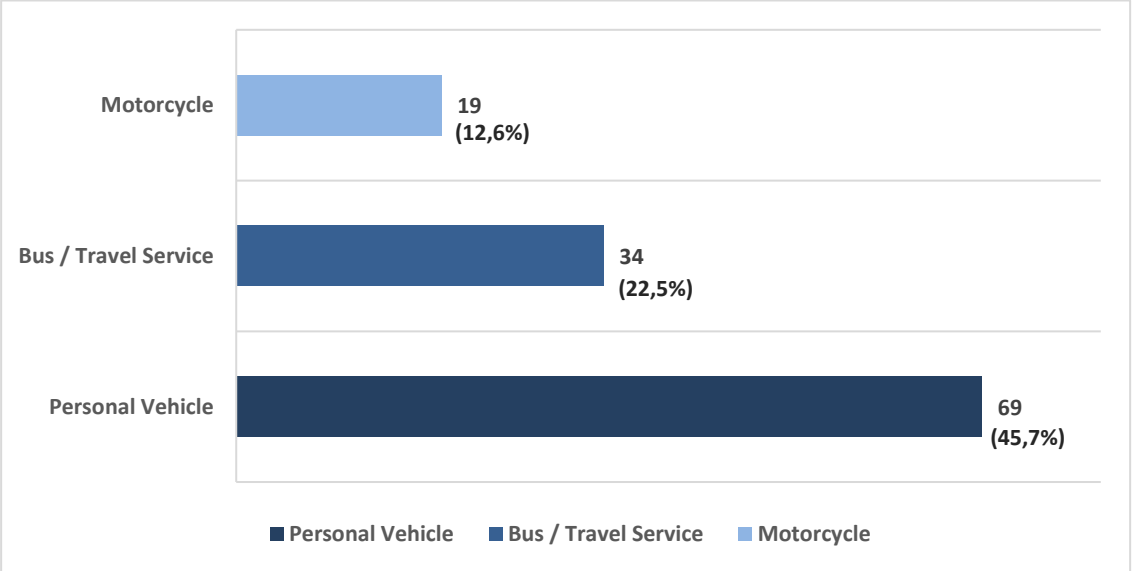

Figure 1. Distribution of Tourists by Mode of Transportation

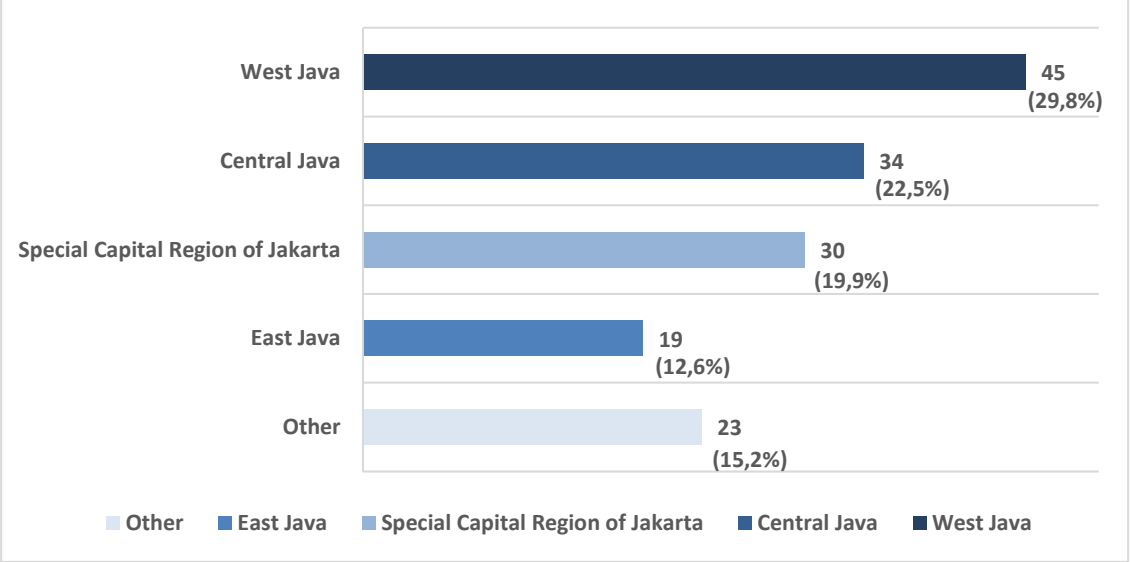

Figure 2. Chart Respondents' Place of Residence

Combined Matrix of Primary Criteria

The combined pairwise comparison matrix for the main criteria was compiled from the geometric mean of all respondents. The results of normalizing the matrix yielded the eigenvector weights for each criterion, which are presented in Table 3 and Figure 3.

Table 3. Combined Pairwise Comparison Matrix and Priority Weights of Main Criteria

Criteria	Attraction	Accesibility	Amenities	Ancillary Serv.	Weight (EV)	Rank
Attraction	1,000	0,588	0,552	0,629	0,163	3
Accesibility	1,701	1,000	0,595	0,645	0,218	2
Amenities	1,812	1,680	1,000	0,805	0,301	**1**
Ancillary Services	1,591	1,550	1,242	1,000	0,318	—

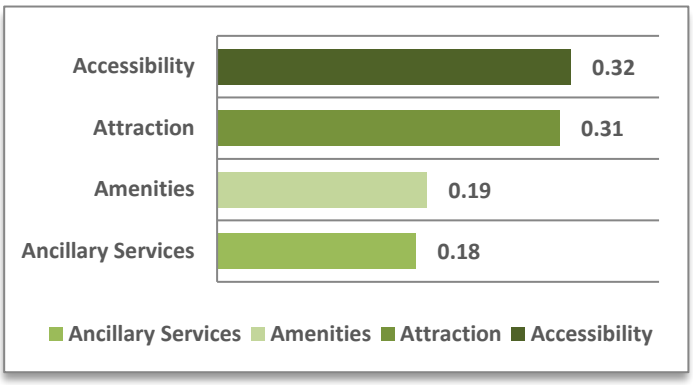

Figure 3. Priority weights for the main criteria in AHP

Sub-Criteria Weights

At the sub-criterion level, the AHP calculation is performed separately for each dimension. All sub-criterion matrices also passed the consistency test as presented in Table 4 and Figure 4.

Table 4. Summary of Sub-Criteria Priority Weights Across All Dimensions

Main Criteria	Sub-Criteria	Local Weight	Global Weight**	Priority
Attraction (0,31)	Unique Local Culture	**0,436**	0,135	**1**
	Beauty of the Destination	0,304	0,094	2
	Photo Spots	0,260	0,081	3
Accesibility (0,32)	Transportation Access	**0,307**	0,067	**1**
	Road Conditions	0,294	0,064	2
	Travel Time	0,199	0,043	3
	Navigation	0,201	0,044	4
Amenities (0,19)	Cleanliness of Facilities	**0,324**	0,097	**1**
	Public Restrooms	0,308	0,093	2
	Parking Area	0,190	0,057	3
	Dining Options	0,178	0,054	4
Ancillary Services (0,18)	Tourist Information	**0,424**	0,135	**1**
	Management Service	0,295	0,094	2
	Destination Safety	0,281	0,089	3

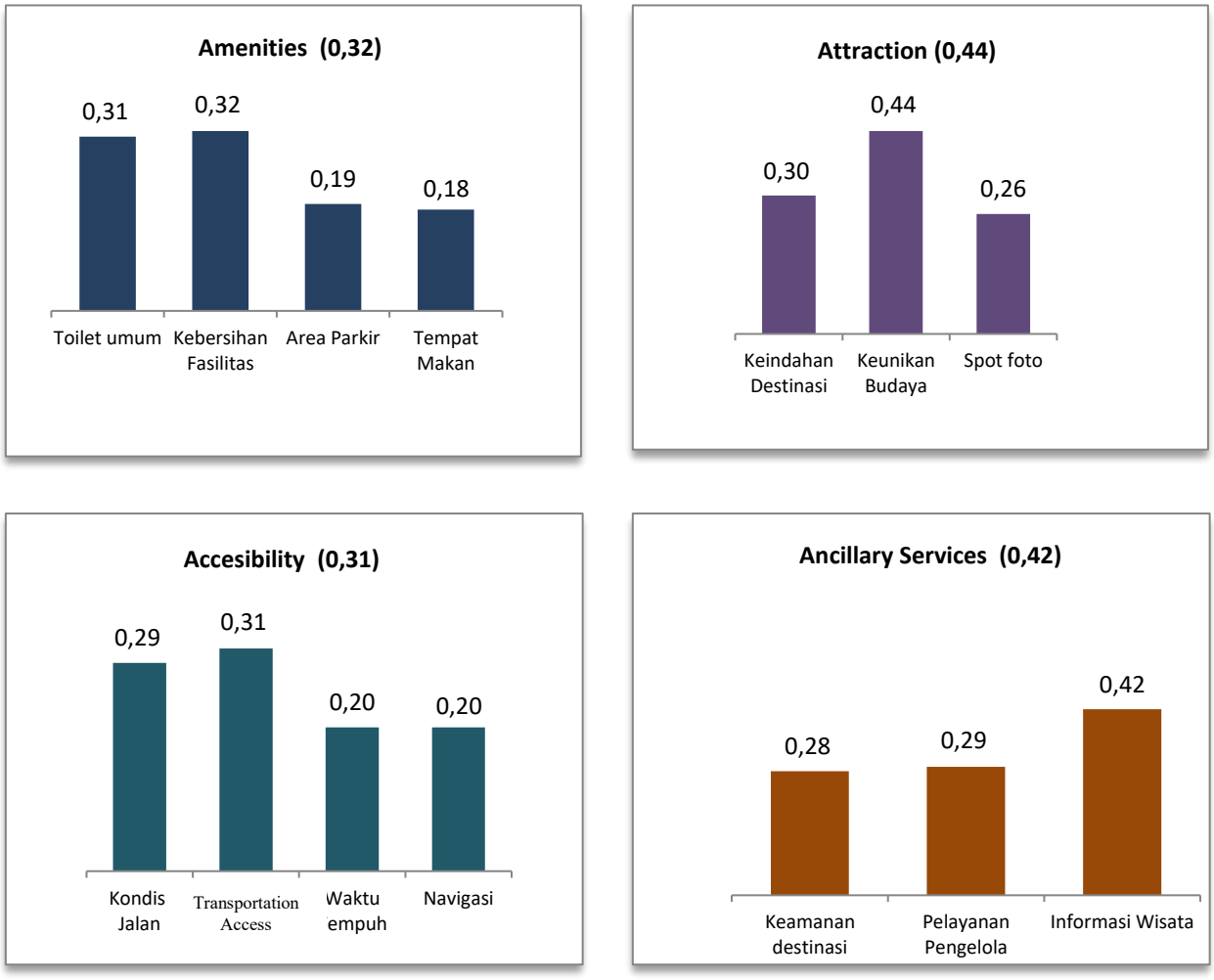

Figure 4. Weights of the sub-criteria within each dimension of the main criteria

Consistency Test

The acceptance criterion for AHP is a CR value of ≤ 0.10 for each comparison matrix. The results of the consistency test for all matrices are presented in Table 4 and Figure 5. All matrices were found to be consistent, meaning that the respondents' evaluations are reliable and the priority weights are valid.

Table 4. The results of the Consistency Test for All Matrices

Comparison Matrix	n	λmaks	CI	RI	CR	Status
Main Criteria	4	4,042	0,014	0,900	0,016	**Consistent**
Attraction (sub-kriteria)	3	3,067	0,033	0,580	0,057	**Consistent**
Accesibility (sub-kriteria)	4	4,042	0,014	0,900	0,016	**Consistent**
Amenities (sub-kriteria)	4	4,058	0,019	0,900	0,021	**Consistent**
Ancillary Services (sub-kriteria)	3	3,071	0,036	0,580	0,061	**Consistent**

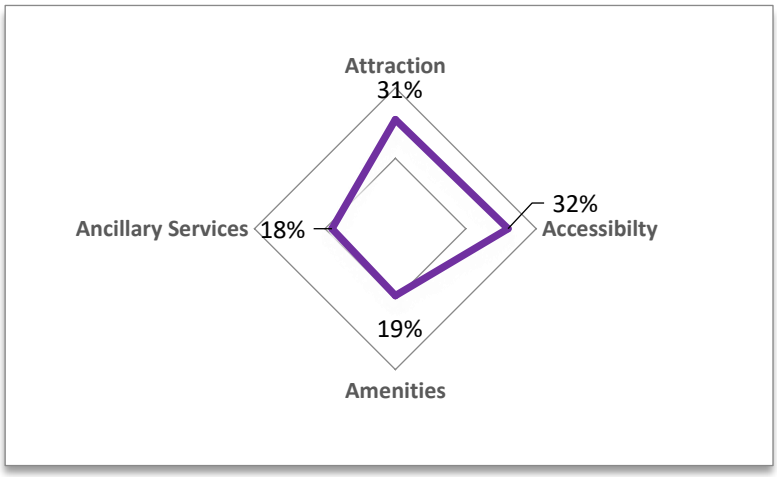

Figure 5. Radar chart comparing the weights of the main criteria

Discussion

Dominance in Accessibility and Attraction

The AHP results show that accessibility received the highest priority weight of 0.32, slightly higher than attraction at 0.31. The relatively small difference in weights indicates that both factors have nearly equal levels of importance in influencing tourists' interest in visiting. This finding should not be interpreted to mean that the construction of toll roads directly makes accessibility the most dominant factor; rather, it indicates that improved regional connectivity via toll roads is one of the considerations tourists take into account when planning their trips. According to [12], accessibility is the ability of a transportation system to facilitate access to activities and destinations, which is influenced by various aspects such as road network quality, travel time, transportation mode options, and inter-regional connectivity and is therefore not determined solely by the presence of a single type of infrastructure, such as a toll road. This interpretation aligns with the characteristics of the respondents, who were predominantly young tourists from outside the DIY region (West Java, Central Java, and DKI Jakarta), with 46% using private vehicles. For this group of tourists, toll roads play a role in accelerating travel to the DIY region; however, once they exit the toll road, the decision on how to reach their destination still depends on the quality of transportation access and road conditions as indicated by the AHP results, which show weights of 0.31 and 0.29, respectively. This suggests that the travel experience is shaped by the entire travel chain (door-to-destination accessibility), not just by travel on the main road network. This perspective aligns with [13], who emphasize the importance of interconnectivity among transportation systems in creating effective travel access, as well as Van Wee et al. (2014), who state that the benefits of new transportation infrastructure development will be optimal if supported by a high-quality local transportation network capable of enhancing accessibility all the way to the final destination. On the other hand, the weight of "attraction" which differs by 0.01 from "accessibility" indicates that accessibility serves as a supporting factor that facilitates travel, whereas attraction is a driving factor that motivates tourist visits. This finding is consistent with the concept proposed by [14], who state that a destination's success depends on the integration of ease of access and the quality of the attractions offered.

The finding that accessibility received the highest weight aligns which shows that ease of mobility is a key factor in determining user preferences for transportation services. However, in the context of DIY, the role of accessibility has distinct characteristics because it is supported

by the development of strategic national infrastructure, such as the Solo Yogyakarta YIA Toll Road and the Yogyakarta–Bawen Toll Road. This infrastructure expands the reach of tourists from the main feeder regions on the island of Java, thereby improving the efficiency of travel to tourist destinations. Thus, accessibility in DIY is influenced not only by the condition of the local road network but also by the integration of an ever-expanding regional transportation system.

Cultural Uniqueness as the Main Attraction

In the "Attraction" dimension, the uniqueness of local culture dominates with a weight of 0.44, surpassing the destination's physical beauty (0.30) and its potential as a photo spot (0.26). The cultural profile of Yogyakarta compiled explains that Yogyakarta is the center of Javanese art and culture that still maintains a royal system, batik traditions, and performing arts, and boasts hundreds of cultural heritage sites that serve as tourist attractions. Which affirms Yogyakarta's status as a "history city," where the royal palace, batik, performing arts, traditional cuisine, and cultural heritage sites such as Prambanan and Borobudur serve as the primary motivators for visits—rather than merely visual beauty or popularity on social media. These findings also reinforce the concept of "destination identity," which states that the uniqueness of local culture is the primary distinguishing factor among tourist destinations. Unlike other tourist regions that rely more on natural beauty or man-made attractions, DIY possesses a strong cultural identity through the presence of the Yogyakarta Palace, the batik tradition, traditional arts, and various cultural heritage sites. These factors make the tourist experience in DIY authentic and difficult for other regions to replicate, thereby providing a more sustainable appeal in the long term.

Tourism Information as the Most Influential Sub-Criterion in Ancillary Services

An interesting finding emerged in the "Ancillary Services" dimension, where tourism information received the highest weight (0.42), surpassing management services (0.29) and security (0.28). Given that the respondents were predominantly young people accustomed to accessing information through digital platforms, the availability of accurate, easily accessible, and up-to-date information including through travel apps, social media, and navigation systems constitutes a highly significant added value. This finding is supported by research by [15] which indicates that social media plays a crucial role as a primary source of information, shapes a destination's image, and influences tourists' intentions and decisions to visit. These findings differ from several previous studies that identified safety or the quality of management as the top priority for tourism support services. The characteristics of the respondents in this study who were predominantly in the 17–25 age group indicate a shift in tourist behavior toward the use of digital technology. Young tourists tend to rely on social media, navigation apps, and online travel platforms when planning their travel activities. Therefore, providing accurate and easily accessible tourism information is essential for enhancing the visitor experience in DIY.

Cleanliness as a Priority Amenity

In the Amenities dimension, facility cleanliness received the highest weight (0.32), slightly above the availability of public restrooms (0.31). Together, these two sub-criteria account for more than 63% of the Amenities dimension's weight. This finding is supported by research by [16], which shows that basic sanitation is a fundamental prerequisite that cannot be overlooked in the management of modern tourist destinations. The priority placed on facility cleanliness reflects tourists' growing awareness of comfort and environmental health at their

destinations. These findings are consistent with various post-pandemic tourism studies that identify sanitation and cleanliness as key indicators of tourism service quality. In the context of DIY, which receives millions of visitors each year, managing the cleanliness of public facilities is both a challenge and a strategic necessity for maintaining tourist satisfaction and loyalty.

CONCLUSION

This study successfully identified and ranked the factors determining tourists' interest in visiting DIY using the AHP method with 151 respondents. The main conclusions that can be drawn are as follows. First, Accessibility is the criterion with the highest weight (0.32), with transportation access as the most important sub-criterion, reflecting the need for easy mobility among tourists from outside DIY. Second, Attraction ranked second (0.31), dominated by the uniqueness of local culture, which is DIY's comparative advantage. Third, Amenities (0.19) and Ancillary Services (0.18) had lower weights but remained significant, with facility cleanliness and tourist information serving as their respective priority sub-criteria. Policy implications of these findings include: (1) prioritizing investment in transportation infrastructure and inter-destination connectivity within DIY; (2) strengthening programs for the preservation and promotion of local culture as a strategic differentiator; (3) improving cleanliness and sanitation standards across all tourist destinations; and (4) developing an integrated digital tourism information ecosystem to meet the needs of younger generations of tourists.

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