

Article

Sustainable Tourism Industry in Indonesia through Mapping Natural Tourism Potential: Taxonomy Approach

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Abstract: Rembang Regency is located on the north coast of Java Island, Central Java Province, Indonesia, which has many beaches ideal for tourism activities. Even though it has the charm of beaches, natural tourist destinations are still the primary choice compared to cultural and artificial sites. However, limited studies exist regarding standard indicators for assessing natural tourism potential in Rembang Regency, which is essential for identifying potential tourist locations. This research focuses on grouping indicators of natural tourism potential based on six main aspects: attractions, amenities, accommodation, activity, accessibility, and ancillary services, environment in tourist areas, and human resources considerations. A taxonomic model will be utilized to develop a procedure for determining natural tourism potential, including indicator weighing via a hierarchical analysis. The findings will yield a taxonomy model aiding information and knowledge management, fostering information sharing and utilization. Moreover, the established procedures will facilitate an accurate and efficient determination of natural tourism potential. This research aims to contribute to sustainable natural tourism management in Rembang Regency, preserving nature while enhancing the tourist experience.

Keywords: indicator grouping; hierarchical analysis; procedure; tourism potential assessment; taxonomic model



Citation: Rizaldi, A.S.; Rumanti, A.A.; Andrawina, L. Sustainable Tourism Industry in Indonesia through Mapping Natural Tourism Potential: Taxonomy Approach. *Sustainability* **2024**, *16*, 4201. <https://doi.org/10.3390/su16104201>

Academic Editor: Bruno Barbosa Sousa

Received: 3 April 2024
Revised: 11 May 2024
Accepted: 13 May 2024
Published: 16 May 2024



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1. Introduction

Indonesia's economy greatly relies on the tourism sector, which significantly contributes to the country's foreign exchange earnings [1]. Through tourism development initiatives, economic growth can be stimulated, leading to improved welfare among the population [1]. Based on Indonesian national statistical data until September 2023, the tourism foreign exchange value in Indonesia reached USD 10.46 billion, while the contribution to the tourism GDP was estimated at 3.8 percent [2]. Apart from that, the added value of the creative economy reached IDR 1050 trillion, with a creative export value of USD 17.38 billion. In addition, the number of domestic tourist trips reached 688.78 million trips by October 2023 [2]. This research shows that the domestic tourist movement exceeded the figure in 2019 before the pandemic, indicating that the Indonesian tourism industry has recovered very strongly [2]. The Ministry of Tourism utilizes social media to promote tourism in Indonesia, which has a positive impact with increased knowledge about tourist attractions in various regions [3]. However, many places are still not well known by tourists, including tourism in Rembang Regency, located on the north coast of Java Island, Indonesia, adjacent to East Java Province. Rembang Regency has many beaches and the potential for natural, cultural, and artificial tourism [3].

The number of domestic tourists visiting Rembang is shown in Figure 1, while foreign tourists are shown in Figure 2. From these data, it can be seen that there has been a decline in visits to Rembang Regency. In 2017, there were 23 foreign tourists and 987,193 domestic tourists [4]. However, in 2018, there was an increase in visits from both domestic and

foreign tourists, which was associated with improved accessibility facilities by the Rembang Regency Government [5]. In 2019, there was a decline in visits due to the arrangement of the heritage city, which resulted in the closure of several tourist destinations. The impact of the COVID-19 pandemic was felt at the end of 2020 to 2021, causing a significant decline in visits [6]. In 2021, despite only receiving 25% of the total visits, the Rembang District Government prepared for the new normal by implementing health protocols at tourist sites [7]. Data on foreign tourist arrivals in 2021 show no visits due to restrictions on foreigners entering into Indonesia [7]. In 2022, the decline in visits occurred due to a lack of facilities such as roads and parking areas and damaged road infrastructure in Rembang, which reduced tourist interest [8]. In addition, accessibility issues, facilities, attractions, and activities in tourism destinations also need to be improved and developed according to the Rembang Regency Government [9].

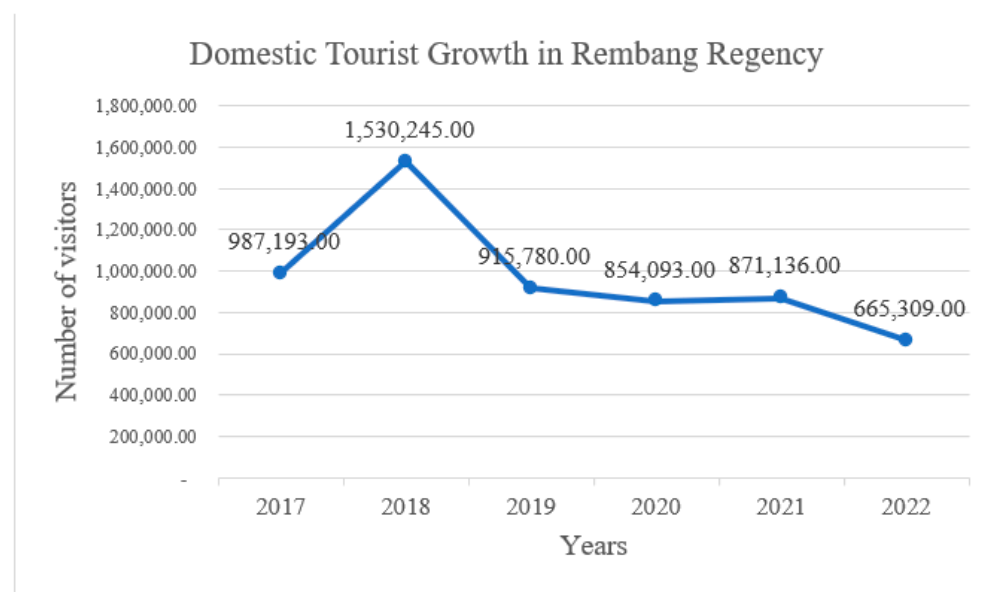


Figure 1. Domestic tourist growth data of Rembang Regency, 2017–2022 [4].

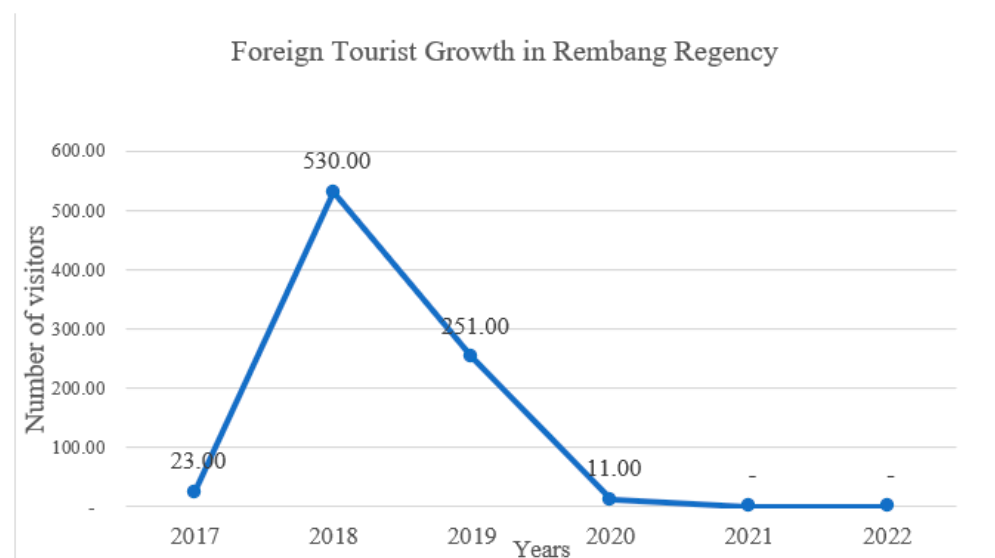


Figure 2. Foreign tourist growth data of Rembang Regency, 2017–2022 [4].

Economic income derived from tourist activities is determined mainly by the management of tourist attractions, tourism accessibility, public infrastructure, public facilities, and tourism facilities. The better the management of attractions, facilities, and accessibility, the

more it affects the time tourists spend in tourist destinations and the income they receive from tourists [10,11]. According to [10], there are six components of tourism, namely attraction, amenities, accommodation, activity, accessibilities, and ancillary services (6A). 6A is a tourism development component consisting of the following: (1) Attraction is all elements that can attract visitors to the tourism area. Attraction is the first aspect that makes tourists interested in visiting the attraction. (2) Amenities refer to all the facilities and infrastructure visitors need at the tourist destination. (3) Accessibilities are elements related to the availability of various means of transportation and security aspects that have a significant role in ensuring that tourists' trips run smoothly. (4) Accommodation is places to stay often known as hotels with various facilities. (5) Activity relates to activities at the destination that provide experiences for visitors. (6) Ancillary services are a component that is assistance provided by organizations, governments, destination managers, or local governments in carrying out tourism activities [10,12].

The tourism component in each natural destination must meet the 6A standard to increase consumer satisfaction. These impacts increase consumer satisfaction if the tourism component is fulfilled. Therefore, tourist destinations must improve and maintain consumer satisfaction so that they want to revisit the tourist attraction [13]. Environmental factors and human resources are essential in determining the potential for natural tourism in Rembang Regency. The environment in tourist areas must be protected and not damaged [14]. Apart from that, tourism development requires competent human resources [15].

Based on the statement of the Culture and Tourism Office of Rembang Regency, the selection of natural tourism potential in Rembang Regency is currently only based on the attractiveness of tourist sites. Indicators are critical in determining the potential of natural tourism because they can help the Culture and Tourism Office of Rembang Regency evaluate and develop existing potential. If indicators are used appropriately, they can become essential management tools or performance measures that can provide important information for managers and other stakeholders in the tourism sector [16]. Good indicators can provide timely information to address pressing issues and help guide the sustainable development of a destination [16].

In line with the strategy pursued by the Department of Culture and Tourism in the 2019–2025 period, namely achieving the vision that has been set, including improving the quality of tourism attractions and attractions or events, developing leading tourism destination objects, and developing potential new tourism objects, creating local culture becomes a tourist attraction. In the current condition of developing natural tourism potential in Rembang Regency, there are difficulties in placing and disseminating knowledge regarding determining indicators, as seen from the difficulty of obtaining information regarding indicators in determining natural tourism potential in Rembang Regency. Currently, it has not been documented. There is a continuous renewal of information and knowledge in the scope of deciding natural tourism potential, so missing knowledge often occurs or does not have or loses access to the knowledge needed to solve problems or achieve specific goals. According to the Department of Culture and Tourism of Rembang Regency, currently, there are no documented procedures for assessing tourism potential. The selection of potential sites has been primarily based on available resources and land ownership, which are general criteria. Therefore, this study aims to identify indicators for assessing natural tourism potential and develop a detailed procedure for proper selection. However, there has not been a classification mapping of these indicators using a taxonomic model in previous research.

The taxonomic model classifies hierarchical principles and uses basic facet categories adapted to the conditions and needs of the company, especially users [17]. The indicators are mapped by applying the taxonomic model introduced by Lambe, namely Enterprise Taxonomies. According to [18], taxonomies are maps that find helpful things and Enterprise Taxonomies involve namely creating a consistent way for employees to use and complete information and knowledge. The Enterprise Taxonomy creates a consistent way for employees to develop and use information shared within the organizational environment [18].

This study will use the taxonomy to facilitate sharing and access to information, especially in the Culture and Tourism Office of Rembang Regency.

The taxonomy applied in the Organizational Innovation Taxonomy Model Research by [17] aims to develop a taxonomy model as part of a knowledge management system based on business activities carried out by SMEs to handle management problems and the utilization of technical competency information and knowledge in SMEs. The method applied in this research uses a taxonomy model, which is expected to provide a consistent framework for employees in creating and using information and knowledge to facilitate sharing and access in the SME environment. This research will help in grouping indicators for determining natural tourism potential, such as attraction, amenities, accommodation, activity, accessibility, ancillary services, environment, and human resources, to facilitate the use of knowledge. Meanwhile, the Key Performance Indicator (KPI) approach explained by [19] aims to increase understanding of the potential for development in the field of nature-based health tourism with the support of medical evidence, thereby helping regions exploit this potential. In this research, taxonomy is used as an indicator mapping tool, mapping indicators and weighing each indicator using the analytical hierarchy process (AHP) method. In a study [20] regarding the use of an AHP-based weighted analysis to assess the impact of tourism on socio-economic development in coastal areas using the nine selected criteria, the results will guide planning and monitoring tourism activities for sustainable development in similar areas.

The classification and weighing will aid in tourism development, especially within the Sustainable Development Goals framework, specifically addressing point nine concerning tourism development reliant on good public and private infrastructure. This is pivotal in the research as it can facilitate quality infrastructure development and enhance access to industry and small-scale enterprises, particularly in natural tourism within the Rembang District. The eleventh point in this study aims to create an environmentally friendly and sustainable environment, ensuring that nature-based tourism can be developed while maintaining environmental sustainability [21].

Based on data on the decline in tourist visits in Rembang Regency, there is a research gap regarding assessing tourism potential in Rembang. This needs to be considered, considering the significant contribution of tourism to the Indonesian economy [1]. Tourism revenue depends on tourist attractions' management, accessibility, infrastructure, facilities, and tourism services [10,11]. According to research, tourism has six primary components: attractions, amenities, accommodations, activity, accessibility, and ancillary services (6A) [10]. These components are essential to attract visitors and increase tourism revenue. Although various efforts have been made to improve facilities and accessibility, it is still necessary to develop indicators that can help evaluate tourism potential more comprehensively. Therefore, this study aims to identify appropriate indicators for nature tourism potential and establish a detailed procedure for their selection.

This research highlights the importance of adequately managing attractions, amenities, accommodations, activity, accessibility, and ancillary services, together with the environment in tourist areas and human resources, directly influencing tourist satisfaction and economic outcomes. By identifying and classifying indicators for natural tourism potential, this research aims to provide a comprehensive framework for evaluating and improving tourism destinations, especially in Rembang Regency. In addition, this study introduces innovative methodologies, such as taxonomic modeling, to effectively map and weigh tourism indicators, which will later be used as a procedure. This approach provides valuable insights for policymakers and practitioners in the tourism development and management decision-making process. Overall, the research fills an essential gap in understanding tourism potential assessment and management practices in Indonesia, particularly in Rembang Regency. Apart from that, standardized procedures also help preserve the local environment and culture, maintaining the sustainability of natural tourism development [22–24].

2. Materials and Methods

2.1. Study Area

Rembang Regency is one of the administrative regions of the Central Java Province administrative region. The area of Rembang Regency is 3.1% of the area of Central Java Province. Rembang Regency is a coastal area on the north coast of Java Island in the eastern part of Central Java and borders East Java. Regionally, Rembang Regency tends to develop towards the west and east, which shows the strength of the route to the east and regional transportation links along the north coast of Java. The linear form of the district also develops towards the south, indicating a close relationship between Rembang Regency and the surrounding areas, especially Tuban, Blora, and Pati. This condition is certainly a geographical advantage and attraction [9].

Rembang Regency has various tourist destinations, including religious tourism, cultural tourism, and natural tourism. The number of tourist attractions in Rembang Regency is recorded as eight superior tourist attractions, namely Kartini Beach Recreation Park, RA Kartini Museum, RA Kartini Grave, Wates White Sand Beach, Karang Jahe Beach, Binangun Beach, Pasujudan Sunan Bonang, and Old Town Heritage [9].

Several tourism affairs authorities are the responsibility of the district government as listed in the appendix of Law Number 23 of 2014, namely (1) management of district/city tourism attractions; (2) management of district/city tourism strategic areas; (3) management of district/city tourism destinations; (4) the determination of district/city tourism business registration marks; (5) domestic and foreign tourism marketing of attractions, destinations, and district/city tourism strategic areas; (6) the provision of infrastructure (creative zones/creative spaces/creative cities) as a space for expression for creative people in district/city regions; and (7) the implementation of capacity building of tourism human resources and the creative economy at the primary level. Tourism development is increasingly important because it expands employment opportunities and the growth of economic centers [9].

Nature tourism is a tourism segment directly related to the sustainable use of natural resources [25]. This type of tourism provides recipient communities with the means to improve quality of life and seeks to promote sustainable development. This tourism sector can be grouped according to the interests of tourists in four modalities: adventure tourism, ecotourism, geo-tourism, and flora and fauna wildlife tourism [26].

2.2. Methodology

This research uses a mixed methods approach, combining both qualitative and quantitative methods. Qualitative research involves investigating natural environments, applying an inductive data analysis, and prioritizing defining over-generalizations [27]. The unit of analysis is focused on the organizational unit responsible for tourism management in Rembang Regency, namely the Culture and Tourism Office. Qualitative data were collected from primary sources through participant observation, interviews to seek preliminary information and for data collection, discussions in the data collection process with the Rembang Regency Culture and Tourism Office, and documentation. The criteria for selecting respondents in the interviews are those with expertise in tourism, especially those who occupy essential positions in decision making related to nature tourism development. This ensures that the assessments come from individuals who deeply understand the decision-making process and have strategic insights relevant to the development of natural tourism in Rembang. So, in this study, the relevant respondent is the head of the department. As a leader at the department level, the head of the department has an important role in setting the strategic direction and policies related to tourism development and the field of tourism destination development because they have specialized knowledge and experience in managing tourism destinations and are very familiar with the challenges and opportunities in the local tourism industry.

Quantitative methods will be used to calculate the weight of each indicator using the analytical hierarchy process. A mixed methods approach requires meaningful integration

of data collection, assessment, and interpretation techniques. The term “mixed” is very important in mixing methodologies to assimilate data properly in research methodology. One study may use mixed methods to understand relationships and inconsistencies between qualitative and quantitative data [28].

Figure 3 displays the steps for solving problems in classifying indicators. At the start of the research, data were collected through meetings with project sponsors and stakeholders, project objectives were determined, a determination approach was designed, a communication plan was prepared, and governance was planned, and then continued with data processing using exit management principles and an analysis of taxonomic aspects. After classification using taxonomy, weighing is carried out using the analytical hierarchy process (AHP), and finally, a further analysis is carried out.

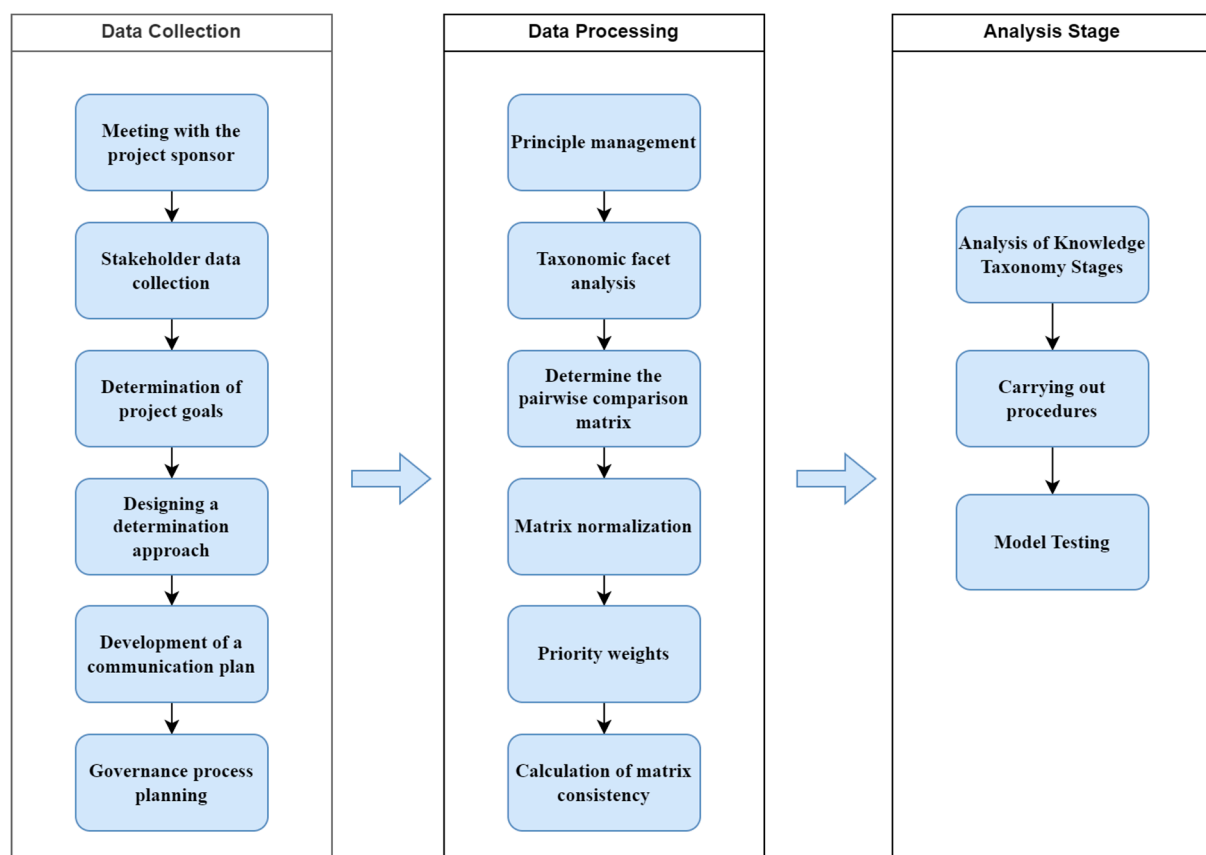


Figure 3. Problem solving steps.

2.2.1. Data Collection

Data collection in this study was conducted by interviews with related parties from the Rembang Regency Culture and Tourism Office. The data used in this study are primary and secondary. Preliminary data were obtained in this study through interviews and discussions with heads of departments and representatives from the tourism destination sector to obtain the necessary data. The data obtained are from knowledge of organizations and problems in the Culture and Tourism Office of Rembang Regency. The secondary data received are a brief organizational description, organizational structure, and indicators of natural tourism potential in determining tourist locations.

The first step is to meet a sponsor. Sponsors at this stage are parties with an interest or stakeholders related to the problem being discussed or faced [18]. The initial stage of designing the taxonomy model involved a meeting with the project sponsor, the Rembang District Culture and Tourism Office, and the relevant divisional coordinators. This meeting aimed to understand the needs and problems that the Rembang Culture and Tourism

Office faced. The project sponsor, consisting of the Head of the Office and the Tourism Destination Division, has an important role in decision making regarding the determination of natural tourism potential. The design process involved several face-to-face meetings at the Rembang Culture and Tourism Office and field observations. The output of these meetings was the determination of the scope of the taxonomy project, the identification of indicators, and the extraction of necessary information and knowledge. In addition, in the design of this taxonomy, there are several symptoms or signs of fundamental problems faced by the Office of Culture and Tourism of Rembang Regency; namely, the difficulty in placing and disseminating knowledge about indicators of determining the potential of natural tourism in Rembang Regency is the main sign, and information related to these indicators is challenging to find and not well documented. There is some information about these indicators at the Office of Culture and Tourism of Rembang Regency, but it is not yet structured. The knowledge and information possessed by each individual is also an essential factor. Therefore, a common-ground taxonomy is needed to manage this knowledge. Although the basic taxonomy already exists, it still requires improvement, especially in managing technology assets. This can be conducted through continuous negotiation and improvement to increase the effectiveness of knowledge management [18].

Step two is identifying relevant stakeholders [18]. Stakeholders are parties who are authorized to make decisions on the problems faced. At this stage, engagement will also be carried out with stakeholders in the company; the map created in the first stage will be checked by holding meetings with stakeholders. Meetings with project sponsors involve parties who directly assist in this research. The party sponsoring the project is the head of the agency and several coordinators in the field of tourism destinations. In this stage, an explanation is given to the project sponsor about the benefits, opportunities, threats, obstacles, and efforts required by the organization. The results obtained at this stage are the collection of business activities, the elaboration of the job descriptions of each field, and the explanation of the main actions of each area.

The third step is refining purpose. This stage describes the size and completeness of the common issues and themes from the taxonomy [18], which will be made based on the map for determining natural tourism potential. The map illustrates the reason and purpose for creating a taxonomy and the recommended taxonomy type. Clear objectives regarding the company's taxonomy will be identified at this stage. Screening is performed by determining the purpose of conducting research. The goal in designing the taxonomy model is to create a knowledge taxonomy model as an activity in knowledge management to increase effectiveness and efficiency at the Culture and Tourism Office of Rembang Regency. It is hoped that this research will further develop knowledge management activities within the company, which are essential.

The fourth step is designing the approach. The approach used in designing a taxonomic model for determining natural tourism potential is described by Patrick Lambe (2007) in 8 stages of 12 stages [18]. The taxonomy that will be built uses a combination approach because, after identification, the conditions in the field show that there is a need for a combination of types between common-ground taxonomy types. In contrast, the taxonomy built will adopt the concept of facet and hierarchical taxonomies (a specific form of a tree). The chosen taxonomy has some particular characteristics that include introverted orientation, as it is focused on internal company use without requiring categories for external parties; a heterogeneous nature, given the diverse content for various purposes that require the negotiation of common standards; a generic nature, where the taxonomy can be used by a wide population despite its large and varied content; explicit, as most of the content is documented even though it is not yet detailed or organized; focused on specific tasks, especially in supporting the determination of natural tourism potential by mapping indicators of determining the potential; and mature, because the existing knowledge sources in the Rembang Culture and Tourism Office are stable and have clear organizational principles, making it easier to design taxonomies. The design of the taxonomy model was adjusted to the needs and limitations, with appropriate coverage and depth. Data, informa-

tion, and knowledge were collected through several methods, including discussions and interviews with relevant divisions or sections; studies of documents, activity guidelines, and organizational structures; and field studies and observations of knowledge information management systems, document storage, knowledge sharing systems, and other relevant elements. These methods help to ensure that the taxonomy includes the correct information and is appropriate to the needs and conditions of the organization.

The fifth step is to build a communication plan. A taxonomy mode is something that takes time and effort. The design process has many stages, so good, clear, and consistent communication is needed [18]. It is important to define a clear and consistent communication structure to build a communication plan in taxonomy model design. In the Rembang Regency Culture and Tourism Office case study, determining the audience is crucial to ensure effective communication. Based on the case study of the Rembang Regency Culture and Tourism Office, the audience has been defined with roles and timeframes for feedback. First, the sponsor, the Head of the Office, is responsible for supporting the validation of project objectives, providing support when stakeholders experience difficulties, and assisting in the collection of resources. The timeframe for giving feedback to the sponsor was eight months. Next, the taxonomy team, consisting of the Head of the Division and researchers, was tasked with collecting material for the draft taxonomy, managing the long-term administration of the taxonomy, and communicating with taxonomy users. The feedback timeframe for the taxonomy team was adjusted to the project implementation period. Then, key stakeholders, also led by the Head of the Division, describe how the knowledge and information will be used, with a feedback period of two months. Finally, the taxonomy users, i.e., the Head of Division and staff, will adopt and use the taxonomy, with a feedback window of one month. Thus, this communication structure is expected to optimize the interaction between the various parties involved in designing the taxonomy.

The sixth step is the governance process. The governance process referred to here is how to control the design of this taxonomy [18]. It involves the determination of control holders or special committees that will act as supervisors and control holders of this taxonomy draft. The governance process stage is the stage for determining how to control this taxonomy design. At this stage, a controller who will act as a supervisor and a controller who will serve as a holder of the taxonomic design that has been made will be selected. The design is only a general concept for sections essential in determining natural tourism potentials in the Rembang Regency Culture and Tourism Office, such as the head of the service and the head of the tourism destination section.

2.2.2. Data Processing

The first step in conducting data processing is organizing principles. The taxonomy design will collect as much data as possible to obtain knowledge and information [18]. In the Principle Management stage, the taxonomy design is more focused on the business activities of the Culture and Tourism Office of Rembang Regency to support the determination of natural tourism potential. The first step is mapping, which includes mapping the input–output knowledge assets of all business activities in a detailed table. Next, a competency expert map was created to map the knowledge sources in the agency, focusing on the expertise possessed by various positions. Finally, an indicator map was used to determine indicators of natural tourism potential based on observations, interviews, and document studies. In addition to mapping, observations were also made with the primary purpose of examining natural tourism locations and patterns in determining natural tourism potential. These observations also revealed several facts, such as the lack of written procedures to help implement the indicators of natural tourism potential and the lack of adequate infrastructure and information systems. The existing infrastructure only includes document files, while information exchange is more inclined to face-to-face meetings and manual documentation. In addition, difficulties in finding information, inconsistencies in content, and lack of structure in document placement indicate the need for a more structured and organized system, such as a taxonomy model.

The final step in designing the taxonomic model for this research is the facet analysis stage. The facet analysis is the core stage in the grouping of designed information and knowledge [18]. Grouping is conducted by placing data into classes according to the category and content [17]. The analysis carried out in this stage is carried out based on determining the group that is carried out. The resulting facet concept is expected to be based on the actual conditions of the company and provide convenience for its users [18]. The categories and subcategories within each facet must lead to the desired goal. Common facets are people and groups, things and parts, activities and processes, location, time, and subject discipline. In designing this taxonomic model, the basis for the facet analysis used as a reference in this study is the concept put forward by Straits Knowledge because it is considered the most representative of the existing conditions [17,18]. In the current condition, the Culture and Tourism Office of Rembang Regency has a lack of knowledge management in the activity cycle between units or divisions, especially in knowledge about indicators of determining the potential of natural tourism; therefore, to determine indicators of assessing the potential of natural tourism, it is necessary to see conditions based on activities in the organization seen from the activities carried out by each unit/division.

A facet analysis plays a key role in the development of a knowledge taxonomy because it is the stage that defines a structured grouping of information and knowledge in a design model [17]. These aspects form a classification of indicators for determining natural tourism potential, taking reference points from each of the 6A indicators such as attractions, amenities, accommodation, activity, accessibility, and ancillary services, environment in tourist areas, and human resources. By carrying out this classification, it is hoped that the taxonomy model can be applied effectively to facilitate the search for and access to relevant knowledge in disseminating natural tourism potential. A facet analysis is carried out by breaking down knowledge into specific classes, which are organized in four sequential levels, forming a solid framework for navigation and information retrieval in the context of determining natural tourism potential.

2.2.3. Weight Calculation

Calculating indicator weights will use the analytical hierarchy process (AHP) [29] with the first step, namely determining a pairwise comparison matrix. After creating the hierarchical model, a pairwise comparison matrix will be selected from the given weights. This stage compares each paired element with the criteria obtained from the taxonomic model. The second step is to normalize by calculating the sum of the values for each column and dividing the importance of the columns, which will later obtain the results of the normalized matrix from the sum of the columns. The third step is to look for priority weights by conducting calculations to receive the priority weight results obtained from the sum of all rows for each criterion divided by the number of criteria. The fourth step is to check consistency. At this stage, consistency will be calculated by calculating the Consistency Index and Consistency Ratio, which will then obtain a CR value of ≤ 0.1 , which is said to be consistent. If $CR > 0.1$, then it is not consistent [30].

2.2.4. Analysis Stage

At this stage, a taxonomic analysis and data processing will be carried out with the aims and objectives of the steps made. The second step involves creating procedures to classify attractions, amenities, accommodations, activity, accessibilities, ancillary services, environment in tourist areas, and human resources indicators. The third stage is testing, including the verification and validation of the model, involving internal stakeholders, namely representatives from the tourism destination sector (Rembang Culture and Tourism Office), and external stakeholders, namely an expert in the field of natural tourism.

Verification will be carried out by checking the suitability of the model and the needs that have been defined at the beginning. The beginning of development defined the requirements and whether the existing models within those needs were met. This research has fulfilled the availability of stakeholder map designs and business activities, documen-

tation and writing of information on indicators of determining natural tourism potential, input–output maps, taxonomic models with a structured classification basis, and literature studies for each indicator in the procedure.

The validation carried out is validation with internal parties carried out by meeting with stakeholders in the field of tourism destinations representing the Cultural and Tourism Office of Rembang Regency, which states that the proposed model can be used in determining the potential of natural tourism in the future and accordance with the circumstances. In addition to internal party validation, validation is carried out with external parties and a tourism expert who is considered well acquainted with tourism in Rembang Regency in general and specifically. The validation process with external parties involves looking at the results of knowledge classification modeling indicators determining the potential of natural tourism to assist the Rembang Regency Culture and Tourism Office.

3. Results

A facet analysis is the most critical phase of data taxonomy because this phase is the essence of the information and grouping of information planned in the design model. The Grouping Process is conducted by grouping information based on categories and content. The analysis in this phase focuses on determining the basis for the group to be carried out. The resulting facet concept is expected to be based on the actual conditions of the company and provide convenience for its users. The categories and subcategories within each facet must lead to the desired goal. This taxonomy aims to build a taxonomic model of common-ground types so that determining facets underlies structuring and creating a joint base of information and knowledge. According to Lambe (2007), there are several ways to perform a facet analysis and determine the basis of facets [18]. In designing this taxonomic model, the concept put forward by Straits Knowledge is used as the basis for the facet analysis, which is used as a reference in this study because it is considered the most representative of the existing conditions but does not rule out the possibility of using a combination with other concepts.

3.1. Preliminary Facet Analysis

In Figure 4 is an indicator of tourism potential, which is the initial facet analysis material at the Department of Culture and Tourism.

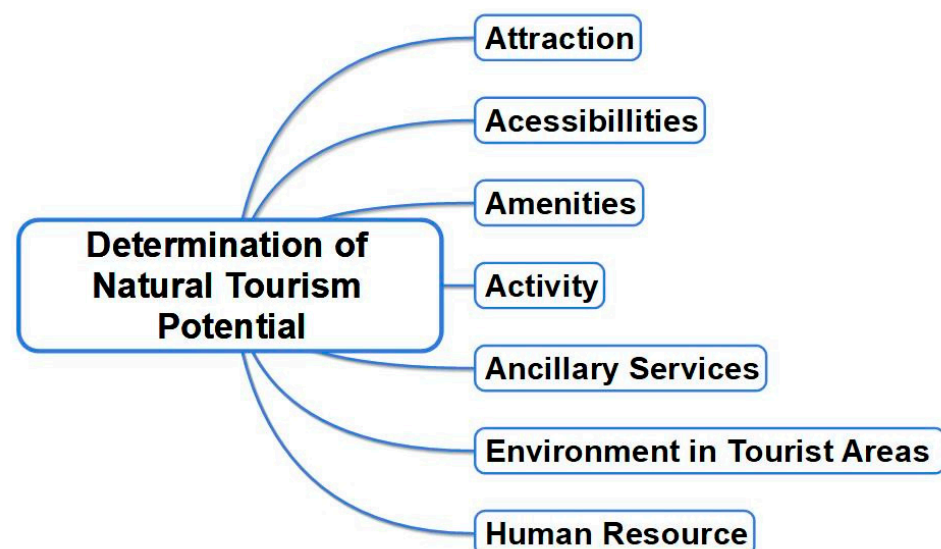


Figure 4. Initial facet analysis of natural tourism potential indicators.

In Figure 5, we focus on and detail the flow of the facet analysis carried out on the design of the taxonomy model.

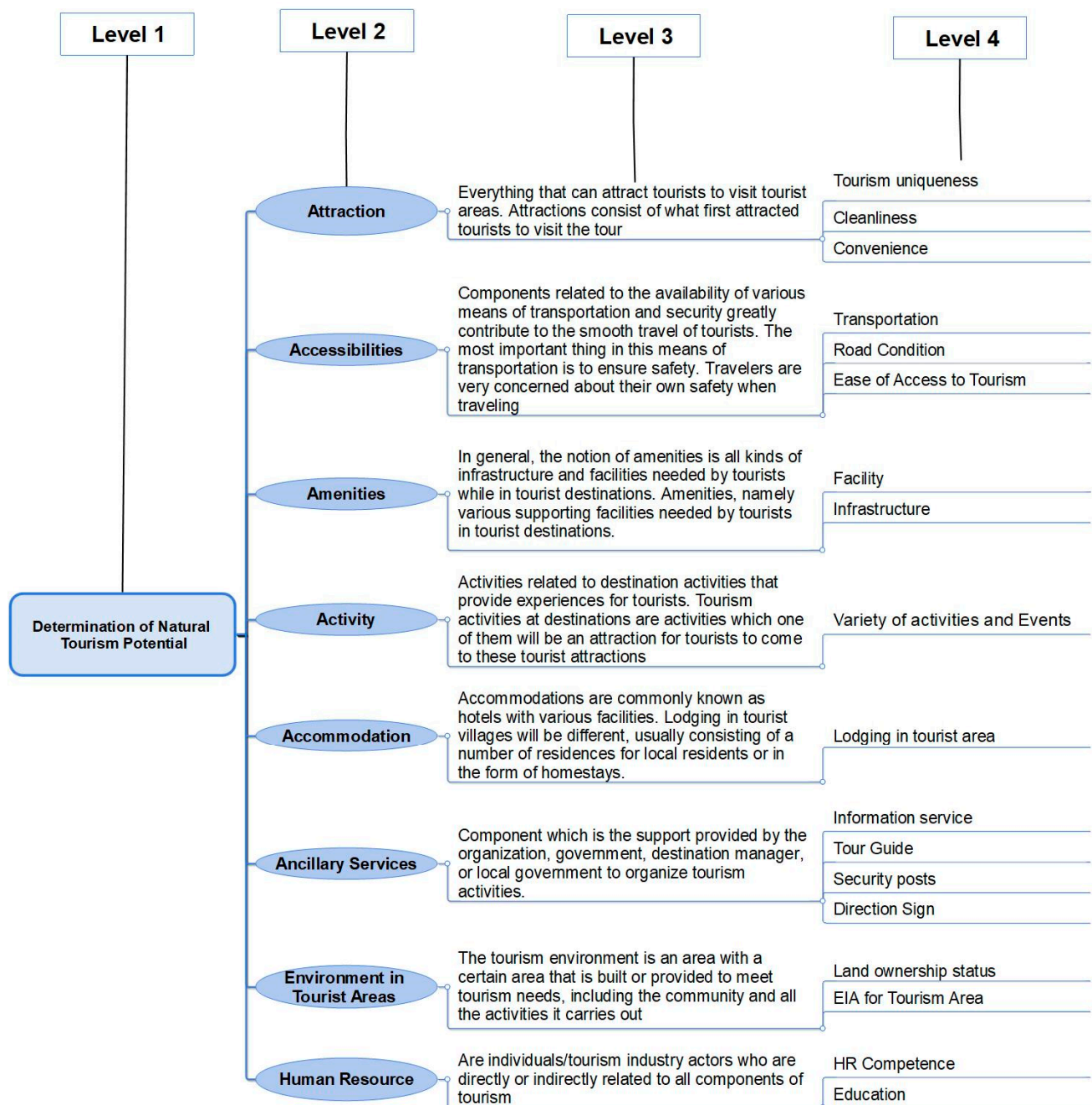


Figure 5. Knowledge taxonomy of indicators for determining nature tourism potential.

To simplify the explanation being taken in, it will be described in the form of a basic table. The facet analysis was carried out by the Culture and Tourism Office of Rembang Regency. The basis for determining facets in the process of determining indicators is in Table 1.

Table 1. Determining Facets in the Process of Determining Natural Tourism Potential.

Level	Basic Determination of Facets
1	Tourism is the object of research
2	The main components in tourism development
3	The definition of the principal component
4	Components in determining the potential of nature tourism

Level 1: At this level is the main object of research. The basic levels are then divided into more detailed components.

Level 2: Dividing the main components in determining the potential for natural tourism, this mapping is conducted by direct interviews with the Department of Tourism and Culture.

Level 3: At this level is the definition of each component of tourism development.

Level 4: Division and classification are carried out based on the type of main components that work in the Culture and Tourism Office of Rembang Regency. The division is based on existing categories so that it becomes the focus of the activities carried out by each component of tourism development.

In Figure 6 is an example of a facet analysis of amenities indicators.

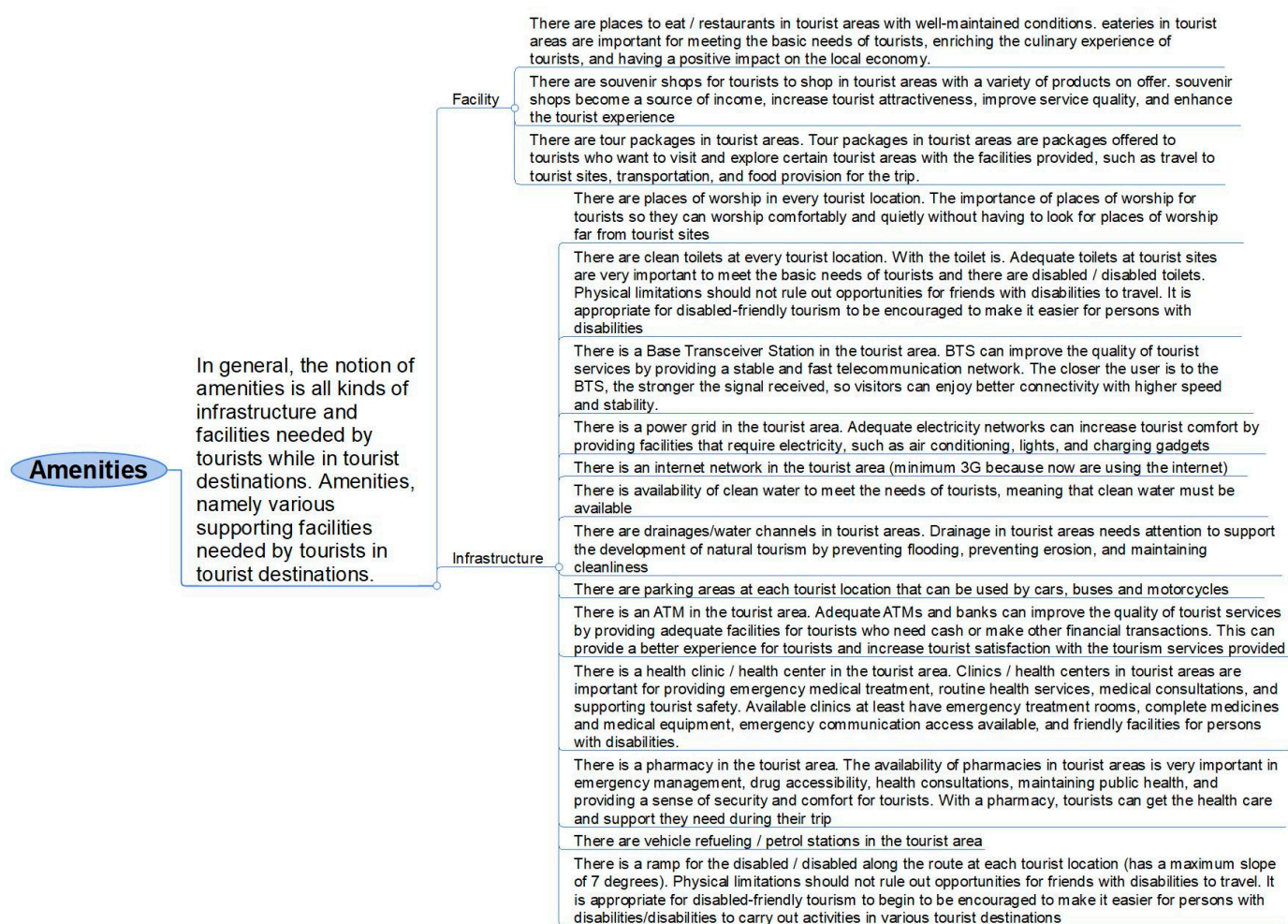


Figure 6. Knowledge taxonomy of amenities indicators.

3.2. Taxonomic Mapping

Figure 7 shows the overall mapping result based on eight indicators: attraction, amenities, accommodation, activity, accessibilities, ancillary services, environment in tourist areas, and human resources. Taxonomic mapping will later be implemented using procedures by including all components of tourism development so that it can be easily used by the Rembang Regency Culture and Tourism Office. The classification of determining natural tourism potential with eight indicators is as follows:

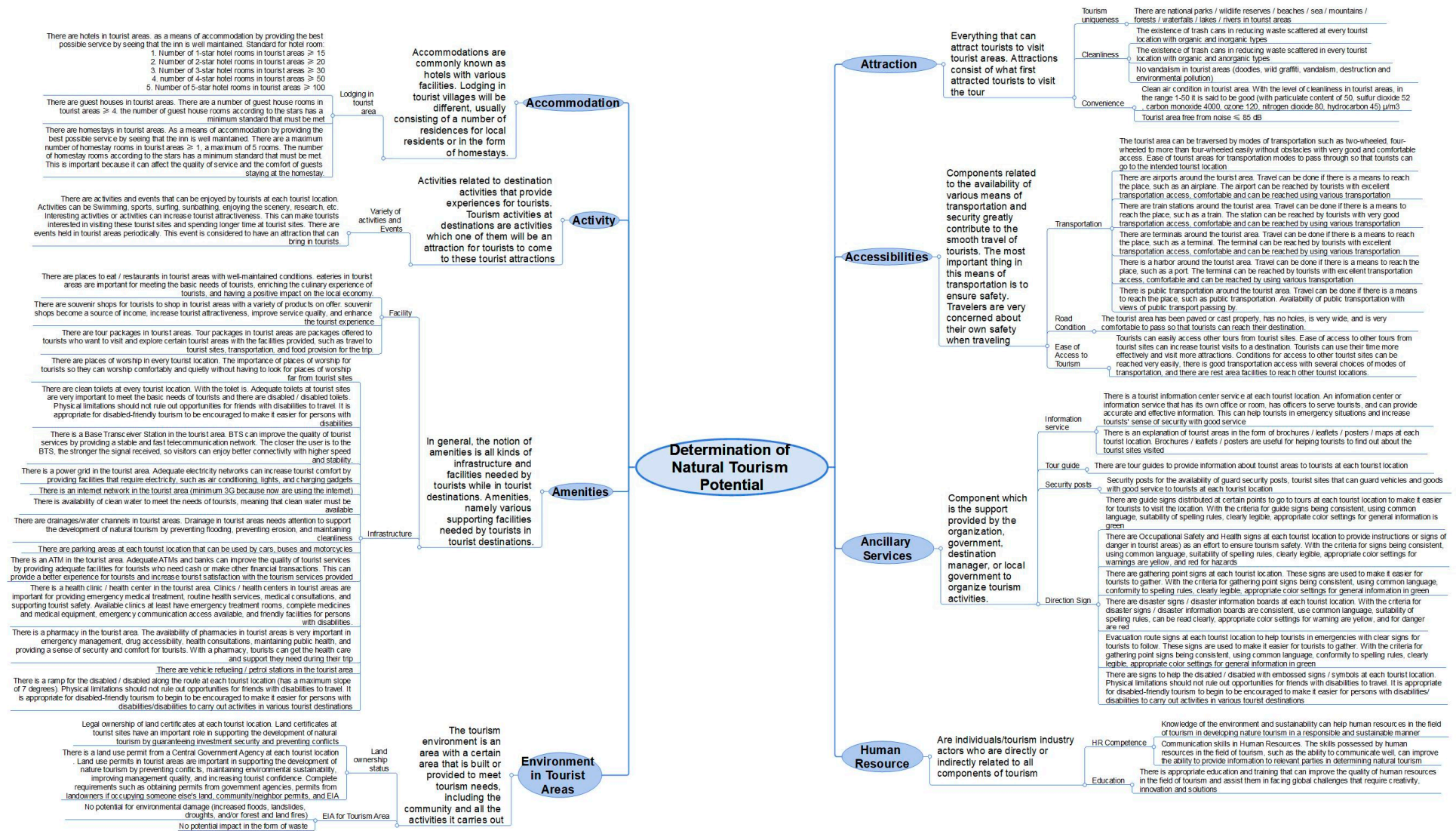


Figure 7. Taxonomy mapping of knowledge for determining natural tourism indicators in Rembang Regency.

Table 2 shows the results of the taxonomic mapping for the attraction component.

Table 2. Taxonomy Mapping of Knowledge for Attraction.

Component	Indicator	Description
Attraction	Tourism Uniqueness	<p>There is a national park in the tourist area with a wide enough area coverage so that it can support ecological processes with the uniqueness that exists</p> <ul style="list-style-type: none"> - There is a diversity of wildlife - There is a unique diversity of plants - Has unique ecosystems such as rainforests, grasslands, savannas, or water - There is cultural and historical uniqueness; there are historical relics, archaeological sites, or cultural heritage associated with the wildlife reserve
		<p>There is a wildlife reserve in the tourist area</p> <ul style="list-style-type: none"> - There is a diversity of wildlife, which includes rare or endangered species - There is a unique diversity of plants - Has unique ecosystems such as rainforests, grasslands, savannas, or water - There is cultural and historical uniqueness; there are historical relics, archaeological sites, or cultural heritage associated with the wildlife reserve
		<p>There is a beach in the tourist area</p> <ul style="list-style-type: none"> - The type and color of the sand seems to have the uniqueness of white sand - There are mangrove forests - There are plants that are unique to tourism such as the many pine trees - There is historical or cultural value
		<p>There is a sea in the tourist area with natural beauty such as the diversity of flora and fauna</p> <ul style="list-style-type: none"> - With a variety of fish - With a variety of sea coral - There are sea plants - There is historical and cultural value
		<p>There is a mountain in the tourist area</p> <ul style="list-style-type: none"> - There are landscapes that surround it such as rivers, waterfalls, and craters - There are plant species that live in mountainous environments - There are animal species that live in the mountainous environment - There is historical or cultural value
		<p>There is a cave in the tourist area</p> <ul style="list-style-type: none"> - There are lots of stalactites - There is a lot of salagnite - There is clear travetine - There is historical value
		<p>There is a waterfall in the tourist area</p> <ul style="list-style-type: none"> - There is a uniqueness in the shape and size of the waterfalls as some waterfalls are tall and steep, while others are wider and flow calmly - There is stunning natural beauty around, such as green and fresh forests, unique and natural rocks, and clear river water - There is a diversity of plants, animals, and organisms that inhabit the environment. This includes epiphytic plants that grow on rocks or cliffs, fish that swim in waterfalls, birds that nest near them, and insects that live in the moist environment around waterfalls - There is historical or cultural value

Table 2. Cont.

Component	Indicator	Description
Attraction	Tourism Uniqueness	There is a lake in the tourist area <ul style="list-style-type: none"> - Unique water color such as clear blue/green/red water - There are views that surround it such as hills, mountains, and forests - Each lake has a unique ecosystem with distinctive plant and animal life. Some lakes even have endemic species that are not found elsewhere. Tourists can explore and learn about the ecosystem of the lake, such as coastal vegetation, wildlife, and ecological interactions that occur around the lake - There is historical or cultural value
		There is a river in the tourist area <ul style="list-style-type: none"> - Clear river water - There are landscapes that surround it such as hills, mountains, and forests - There are aquatic plants, fish, water birds, reptiles, insects, and small mammals that can be found around the river - There is historical or cultural value
	Cleanliness	The existence of trash cans in reducing waste scattered in every tourist location with organic and anorganic types [31]
	Convenience	Vandalism in tourist areas (doodles, wild graffiti, vandalism, destruction, and environmental pollution) [32]. If there is vandalism, there are actions taken such as education or socialization, prevention in the form of supervision, and restoration actions to restore damaged tourist objects [33]
		Clean air condition in tourist area. With the level of cleanliness in tourist areas in the range 1–50, it is said to be good (with particulate content of 50, sulfur dioxide 52, carbon monoxide 4000, ozone 120, nitrogen dioxide 80, and hydrocarbon 45), μ/m^3 [33]
		Tourist area free from noise ≤ 85 dB [34]. Noise needs to be considered at the location so as not to cause inconvenience or interfere with communication [35]

Table 3 shows the results of the taxonomy mapping for the accommodation component.

Table 3. Taxonomy Mapping of Knowledge for Accommodation.

Component	Indicator	Description
Accommodation		There are hotels in tourist areas as a means of accommodation by providing the best possible service by seeing that the inn is well maintained. Standards for hotel rooms [36]: <ol style="list-style-type: none"> 1. Number of 1-star hotel rooms in tourist areas ≥ 15 2. Number of 2-star hotel rooms in tourist areas ≥ 20 3. Number of 3-star hotel rooms in tourist areas ≥ 30 4. Number of 4-star hotel rooms in tourist areas ≥ 50 5. Number of 5-star hotel rooms in tourist areas ≥ 100
	Lodging	There are guest houses in tourist areas. There is a number of guest house rooms in tourist areas, ≥ 4 . The number of guest house rooms according to the stars has a minimum standard that must be met [37]
		There are homestays in tourist areas as a means of accommodation by providing the best possible service by seeing that the inn is well maintained. There is a maximum number of homestay rooms in tourist areas, ≥ 1 , and a maximum of 5 rooms. The number of homestay rooms according to the stars has a minimum standard that must be met. This is important because it can affect the quality of service and the comfort of guests staying at the homestay [38]

Table 4 shows the results of the taxonomy mapping for the accessibilities component.

Table 4. Taxonomy Mapping of Knowledge for Accessibilities.

Component	Indicator	Description
Accessibilities	Transportation	The tourist area can be traversed by modes of transportation such as two-wheeled and four-wheeled to more than four-wheeled easily without obstacles with excellent and comfortable access. Ease of tourist areas for transportation modes to pass through so that tourists can go to the intended tourist location [39]
		There are airports around the tourist area. Travel can be carried out if there is a means to reach the place, such as an airplane [39]. Tourists with excellent transportation access can reach the airport, being comfortable, and it can be achieved using various transportation
		There are train stations around the tourist area. Travel can be carried out if there is a means to reach the place, such as a train [39]. Tourists with excellent transportation access can reach the station, which is comfortable, and it can be achieved using various transportation
		There are terminals around the tourist area. Travel can be carried out if there is a means to reach the place, such as a terminal [39]. The terminal can be reached by tourists with excellent transportation access, being comfortable, and it can be reached by using various transportation
		There is a harbor around the tourist area. Travel can be carried out if there is a means to reach the place, such as a port [39]. The terminal can be reached by tourists with excellent transportation access, being comfortable, and it can be reached by using various transportation
	Road conditions	There is public transportation around the tourist area. Travel can be carried out if there is a means to reach the place, such as public transportation [39]. Availability of public transportation with views of public transport passing by
	Ease of tourist access	The tourist area has been paved or cast properly, has no holes, is very wide, and is very comfortable to pass so that tourists can reach their destination [40,41]
		Tourists can easily access other tours from tourist sites. Ease of access to other tours from tourist sites can increase tourist visits to a destination. Tourists can use their time more effectively and visit more attractions [42]. Conditions for access to other tourist sites can be reached very easily; there is good transportation access with several choices of modes of transportation, and there are rest area facilities to reach other tourist locations

Table 5 shows the results of taxonomy mapping for the amenities component.

Table 5. Taxonomy Mapping of Knowledge for Amenities.

Component	Indicator	Description
Amenities	Facility	There are places to eat/restaurants in tourist areas with well-maintained conditions [43]. Eateries in tourist areas are important for meeting the basic needs of tourists, enriching the culinary experience of tourists, and having a positive impact on the local economy
		There are souvenir shops for tourists to shop in tourist areas with a variety of products on offer [43]. Souvenir shops become a source of income, increase tourist attractiveness, improve service quality, and enhance the tourist experience [44]
		There are tour packages in tourist areas [39]. Tour packages in tourist areas are packages offered to tourists who want to visit and explore certain tourist areas with the facilities provided, such as travel to tourist sites, transportation, and the provision of food for travel

Table 5. Cont.

Component	Indicator	Description
Infrastructure		There are places of worship in every tourist location. The importance of places of worship for tourists so they can worship comfortably and quietly without having to look for places of worship that are far from tourist sites [45]
		There are clean toilets at every tourist location [31]. Adequate toilets at tourist sites are very important to meet the basic needs of tourists and there are toilets for people with disabilities. Physical limitations should not rule out opportunities for friends with disabilities to travel. It is appropriate for disabled-friendly tourism to begin to be encouraged to make it easier for persons with disabilities to carry out activities in various tourist destinations [46]
		There is a Base Transceiver Station in the tourist area [32]. BTS can improve the quality of tourist services by providing a stable and fast telecommunication network. The closer the user is to the BTS, the stronger the signal received, so visitors can enjoy better connectivity with higher speed and stability
		There is a power grid in the tourist area [47]. Adequate electricity networks can increase tourist comfort by providing facilities that require electricity, such as air conditioning, lights, and charging gadgets
		There is an internet network in the tourist area (minimum 3G because now you are using the internet) [32]
		There is availability of clean water to meet the needs of tourists, meaning that clean water must be available [48]
		There are drainages/water channels in tourist areas [32]. Drainage in tourist areas needs attention to support the development of natural tourism by preventing flooding, preventing erosion, and maintaining cleanliness
		There are parking areas at each tourist location that can be used by cars, buses, and motorbikes [49]
		There is an ATM in the tourist area. Adequate ATMs and banks can improve the quality of tourist services by providing adequate facilities for tourists who need cash or to make other financial transactions. This can provide a better experience for tourists and increase tourist satisfaction with the tourism services provided [43]
		There is a health clinic/health center in the tourist area. Clinics/health centers in tourist areas are important to provide emergency medical treatment, routine health services, and medical consultations, and support tourist safety [50]. Available clinics at least have emergency treatment rooms, complete medicines and medical equipment, emergency communication access available, and friendly facilities for persons with disabilities
		There is a pharmacy in the tourist area [39]. The availability of pharmacies in tourist areas is very important in emergency management, drug accessibility, health consultations, maintaining public health, and providing a sense of security and comfort for tourists. With a pharmacy, tourists can receive the health care and support they need during their trip
		There are vehicle refueling/petrol stations in the tourist area. Adequate gas stations can improve the quality of tourist services by providing adequate fuel for tourist vehicles [51]
		There is a ramp for the disabled along the route at each tourist location (has a maximum slope of 7 degrees). Physical limitations should not rule out opportunities for friends with disabilities to travel. It is appropriate for disabled-friendly tourism to begin to be encouraged to make it easier for persons with disabilities to carry out activities in various tourist destinations [46]

Table 6 shows the results of the taxonomy mapping for the activity component.

Table 6. Taxonomy Mapping of Knowledge for Activity.

Component	Indicator	Description
Activity	Variety of activities and events	There are activities and events that can be enjoyed by tourists at each tourist location. Activities can be swimming, sports, surfing, sunbathing, enjoying the scenery, research, etc. [32]. Interesting activities or activities can increase tourist attractiveness [52]. This can make tourists interested in visiting these tourist sites and spending longer time at tourist sites. There are events held in tourist areas periodically. This event is considered to have an attraction that can bring in tourists [53]

Table 7 shows the results of the taxonomy mapping for the ancillary services component.

Table 7. Taxonomy Mapping of Knowledge for Ancillary Services.

Component	Indicator	Description
Ancillary Services	Information services	There is a tourist information center service at each tourist location. An information center or information service that has its own office or room, has officers to serve tourists, and can provide accurate and effective information. This can help tourists in emergency situations and increase tourists' sense of security with good service [43]
		There is an explanation of tourist areas in the form of brochures/leaflets/posters/maps at each tourist location. Brochures/leaflets/posters are useful for helping tourists to find out about the tourist sites visited [39]
	Tour guide	There are tour guides to provide information about tourist areas to tourists at each tourist location [39]
	Security posts	Security posts for the availability of guard security posts and tourist sites that can guard vehicles and goods with good service to tourists at each tourist location [23]
		There are guide signs distributed at certain points to go to tours at each tourist location to make it easier for tourists to visit the location [23], with the criteria for guide signs being consistent, using common language, suitability of spelling rules, clearly legible, and appropriate color settings for general information are green
		There are Occupational Safety and Health signs at each tourist location to provide instructions or signs of danger in tourist areas as an effort to ensure tourism safety [54], with the criteria for signs being consistent, using common language, suitability of spelling rules, clearly legible, and appropriate color settings for warnings are yellow, and red for hazards
	Direction sign	There are gathering point signs at each tourist location [55]. These signs are used to make it easier for tourists to gather, with the criteria for gathering point signs being consistent, using common language, conformity to spelling rules, clearly legible, and appropriate color settings for general information in green
		There are disaster signs/disaster information boards at each tourist location [55], with the criteria for disaster signs/disaster information boards being consistent, use common language, suitability of spelling rules, can be read clearly, and appropriate color settings for warning are yellow, and for danger are red
		Evacuation route signs at each tourist location to help tourists in emergencies with clear signs for tourists to follow [55]. These signs are used to make it easier for tourists to gather, with the criteria for gathering point signs being consistent, using common language, conformity to spelling rules, clearly legible, and appropriate color settings for general information in green
		There are signs to help the disabled with embossed signs/symbols at each tourist location. Physical limitations should not rule out opportunities for friends with disabilities to travel. It is appropriate for disabled-friendly tourism to begin to be encouraged to make it easier for persons with disabilities to carry out activities in various tourist destinations [46]

Table 8 shows the results of the taxonomy mapping for the environment in tourist areas component.

Table 8. Taxonomy Mapping of Knowledge for Environment in Tourist Areas.

Component	Indicator	Description
Environment in Tourist Areas		Legal ownership of land certificates at each tourist location [55]. Land certificates at tourist sites have an important role in supporting the development of natural tourism by guaranteeing investment security and preventing conflicts.
	Land Ownership Status	There is a land use permit from a Central Government Agency at each tourist location [56]. Land use permits in tourist areas are essential in supporting the development of nature tourism by preventing conflicts, maintaining environmental sustainability, improving management quality, and increasing tourist confidence. Complete requirements such as obtaining permits from government agencies, permits from landowners if occupying someone else's land, community/neighbor permits, and EIA.
	EIA for Tourism Area	No potential for environmental damage (increased floods, landslides, droughts, and/or forest and land fires) [57]. No potential impact in the form of waste [56].

Table 9 shows the results of taxonomy mapping for the human resources component.

Table 9. Taxonomy Mapping of Knowledge for Human Resources.

Component	Indicator	Description
Human Resources (HR)	HR Competency	Knowledge of the environment and sustainability can help human resources in the field of tourism in developing nature tourism in a responsible and sustainable manner [14,48,58].
		Communication skills in human resources [59]. The skills possessed by human resources in the field of tourism, such as the ability to communicate well, can improve the ability to provide information to relevant parties in determining natural tourism.
	Education	There is appropriate education and training that can improve the quality of human resources in the field of tourism and assist them in facing global challenges that require creativity, innovation, and solutions [60].

3.3. Weighing Calculation Results

In this phase, pairwise comparisons are made based on the results of filling out the interest questionnaire using the AHP method. Table 10 reflects the pairwise comparison matrix for each indicator based on the knowledge of tourism sector practitioners, while Table 11 reflects the comparison matrix based on the knowledge of the Rembang Regency Culture and Tourism Office.

The examples in Table 10 can be used to calculate pairwise comparisons in matrix calculations:

$$\bar{\alpha}_{jk} = \frac{\alpha_{jk}}{\sum_{l=1}^m \alpha_{lk}}$$

$$\text{Indicator } A11 = \frac{1.00}{38.00} = 0.03$$

In Table 12 is the result of priority weight values obtained from respondents, one namely a tourism expert and two, namely the Culture and Tourism Office of Rembang Regency.

To calculate the priority vector, it can be calculated with an example for respondent 1 as follows:

$$w_j = \frac{\sum_{l=1}^n \bar{\alpha}_{jk}}{n}$$

$$\text{Indicator } A11 = \frac{0.17}{8} = 0.02$$

Table 10. Pairwise Comparison Matrix by Respondent 1.

Indicator	Attraction	Accessibilities	Amenities	Activity	Accommodation	Ancillary Services	Environment in Tourist Areas	Human Resource
Attraction	1.00	0.14	0.33	0.33	0.33	0.33	0.11	0.11
Accessibilities	7.00	1.00	5.00	3.00	3.00	5.00	0.33	0.20
Amenities	3.00	0.20	1.00	0.33	0.20	3.00	0.14	0.11
Activity	3.00	0.33	3.00	1.00	3.00	3.00	0.14	0.20
Accommodation	3.00	0.33	5.00	0.33	1.00	3.00	0.14	0.14
Ancillary Services	3.00	0.20	0.33	0.33	0.33	1.00	0.11	0.11
Environment in Tourism	9.00	3.00	7.00	7.00	7.00	9.00	1.00	0.33
Human Resource	9.00	5.00	9.00	5.00	7.00	9.00	3.00	1.00
Total	38.00	10.21	30.67	17.33	21.87	33.33	4.98	2.21

Table 11. Pairwise Comparison Matrix by Respondent 2.

Indicator	Attraction	Accessibilities	Amenities	Activity	Accommodation	Ancillary Services	Environment in Tourist Areas	Human Resource
Attraction	1.00	0.14	0.33	0.33	0.33	0.33	0.14	0.11
Accessibilities	7.00	1.00	5.00	3.00	3.00	7.00	0.33	0.33
Amenities	3.00	0.20	1.00	0.20	0.20	3.00	0.14	0.11
Activity	3.00	0.33	5.00	1.00	3.00	3.00	0.33	0.11
Accommodation	3.00	0.33	5.00	0.33	1.00	3.00	0.20	0.11
Ancillary Services	3.00	0.14	0.33	0.33	0.33	1.00	0.11	0.11
Environment in Tourist Areas	7.00	3.00	7.00	3.00	5.00	9.00	1.00	0.33
Human Resource	9.00	3.00	9.00	9.00	9.00	9.00	3.00	1.00
Total	36.00	8.15	32.67	17.20	21.87	35.33	5.26	2.22

Table 12. Weight Calculation.

Indicator	Respondent	
	1	2
Attraction	0.02	0.02
Accessibilities	0.13	0.15
Amenities	0.04	0.04
Activity	0.08	0.08
Accommodation	0.07	0.06
Ancillary Services	0.03	0.03
Environment in Tourist Areas	0.26	0.22
Human Resource	0.37	0.39

In Table 13 is the result of the consistency value of the two responses and in Table 14 is the result of overall consistency based on respondents 1 and 2.

After determining the model for determining indicators of natural tourism potential in Rembang Regency, the next step is to weigh the two calculations. The first calculation aims to assess the possibility of tourism potential that already exists in Rembang, while the second calculation is used to determine indicators of tourism potential that are not yet available in Rembang Regency or as new tourism potential. This weighing indicator uses the analytical hierarchy process (AHP) method, which is based on the knowledge of tourism sector activists as respondent 1 and the Rembang Regency Culture and Tourism Office as respondent 2. The results of indicator weighing using AHP can be seen in Table 15.

Table 13. Calculating Consistency.

Indicator	Respondent 1		Respondent 2	
	Matrix \times Priority	Consistency	Matrix \times Priority	Consistency
Attraction	0.02	0.18	0.19	8.66
Accessibilities	0.13	1.23	1.37	9.17
Amenities	0.04	0.34	0.33	8.28
Activity	0.08	0.71	0.80	9.57
Accommodation	0.07	0.59	0.59	9.14
Ancillary Services	0.03	0.25	0.25	8.12
Environment in Tourist Areas	0.26	2.53	2.08	9.39
Human Resource	0.37	3.50	3.67	9.46

Table 14. Consistency Value.

Value	Respondent 1	Respondent 2
λ_{\max}	8.95	8.97
Consistency Index (CI)	0.14	0.14
Random Index (RI)	1.41	1.41
Consistency Ratio (CR)	0.10	0.10

Table 15. Weight Results for Each Indicator.

Indicator	Weight of Indicators for Determining Tourism Potential in Current Conditions	Weight of Indicator for Determining New Tourism Potential
Attraction	0.022	0.205
Accessibilities	0.141	0.100
Amenities	0.041	0.031
Activity	0.080	0.063
Accommodation	0.065	0.054
Ancillary Services	0.031	0.022
Environment in Tourist Areas	0.242	0.149
Human Resource	0.379	0.376

3.4. Procedure for Determining Natural Tourism Potential

By conducting taxonomic modeling of indicators and then calculating the weight of each indicator, the results are obtained to consider indicators as a step or procedure in determining the potential of natural tourism. The results obtained for determining the potential of nature tourism for existing nature tourism in Rembang Regency are based on the results of the most significant weight being human resources, followed by environment in tourist areas, accessibilities, activity, accommodation, amenities, ancillary services, and attraction.

The human resources (HR) indicator is the first consideration because it drives the tourism development readiness infrastructure. Human resources (HR) is an essential resource in the tourism sector. HR is a success factor in achieving performance [61,62]. Tourism human resources are government institutions, namely the Culture and Tourism Office of Rembang Regency, around the tourism area. Second, environmental indicators in the tourism area should be considered. After preparing human resources who are ready to face the sustainability of tourism, it is then necessary to look at the state or condition of the tourism environment in terms of land ownership, development permits, and environmental impacts so that this does not cause conflicts and risks that affect the existence of tourism [14,48]. Third, consider the accessibility indicator as tourist access to visit the destination. If there is no access, tourists will not be able to see the destination, which impacts the number of tourists, reducing income and tourism potential in the area [40,41,63]. Fourth, consider activity indicators. This indicator is regarded as attracting tourists, increasing tourist attraction, improving tourist experience, and improving the local economy [64].

Fifth, consider the accommodation indicator. This indicator is considered because the availability of adequate lodging can affect the length of time tourists visit. If limited accommodation is available, it may be difficult for tourists to find accommodation that suits their needs and they may decide to leave the destination sooner [41,65]. Sixth, consider the amenities indicator. This indicator is considered because adequate facilities and infrastructure can support tourism services and improve the services provided to tourists [66]. Seventh, consider ancillary services indicators. This indicator is considered after amenities because it is a supporting service that can improve comfort, safety, service quality, and tourist attraction, and support sustainable tourism development [67]. Finally, consider the attraction indicator. Attractions can be based on natural resources that have the form of natural physical characteristics and beauty. Almost every tourist destination has unique attractions that are different from each other [68].

The previous explanation is a balance of indicators used to determine the steps of natural tourism potential for natural tourism that already exists but needs to be developed. In addition, there are steps to consider the determination of natural tourism potential for natural tourism that does not yet exist but has the potential to become tourism in Rembang Regency, which is still based on the most significant weight in the calculation using AHP. The difference in the order or weight of the determination of tourism potential that already exists with the determination of tourism potential that does not yet exist involves the most significant weight being human resources, followed by attraction, environment in tourist areas, accessibilities, activity, accommodation, amenities, and ancillary services.

Attraction is the second consideration after human resources because there is still a need to explore the potential of natural resources that have the form of natural physical characteristics and beauty. Attractions need to be determined in determining tourism that is not yet available, which becomes new tourism potential. Tourist attractions are also often considered the main driver of the tourism system, as they can stimulate interest in traveling to a destination and increase visitor satisfaction [68]. The existence of indicators in determining the potential of natural tourism has essential benefits in directing tourism development, improving the tourist experience, improving the local economy, and exploring existing tourism potential.

3.5. Use of Procedures

The usage procedure will be performed by classifying based on scores 1 to 4 [67]. The grouping of categories based on superior, mainstay, development, and potential types, as well as assessment, is carried out in two parts: the evaluation of human resources and indicators of the environment in tourist areas, attractions, amenities, accessibilities, activity, accommodation, and ancillary services. The indicator rating table can be seen in Appendix A. The classification for determining tourism potential is as follows:

1. In the superior category, nature tourism is a tourism object with a main attraction and has been widely recognized. It is usually well developed and has complete facilities, good infrastructure, quality accommodation, supporting facilities, and various activities. The value range for HR is 3–12, and the score for the combined indicators of the tourism environment, attractions, amenities, accessibilities, activity, accommodation, and ancillary services is 145–192.
2. Nature tourism in the mainstay category is tourism that has less good or comprehensive facilities than superior tourism and still needs improvement. The value range for HR is 3–12, and the score for the combined indicators of the tourism environment, attractions, amenities, accessibilities, activity, accommodation, and ancillary services is 97–144.
3. Nature tourism in the development category is planned to be developed into a mainstay tourist object. Still, it requires investment and efforts to build infrastructure, accessibility, and supporting facilities because they are still limited. The value range for HR is 3–12, and the score for the combined indicators of the tourism environment,

attractions, amenities, accessibilities, activity, accommodation, and ancillary services is 49–96.

4. Nature tourism is in the category of tourism that has the potential to be developed as a tourist object. This tourism object can be said to be a new tourist object, so it is not yet well known by the public, and as a component of tourism, it is still minimal. The value range for HR is 3–12, and the score for the combined indicators of the tourism environment, attractions, amenities, accessibilities, activity, accommodation, and ancillary services is 48.

4. Discussion

4.1. Interpretations of Findings

This research highlights the importance of proper management of the various aspects that influence tourist satisfaction and the economic impact of tourism, such as attractions, facilities, accommodation, activities, accessibility, and ancillary services, as well as the influencing aspects of the environment and human resources. The purpose of this research is to classify the indicators of natural tourism potential in Rembang Regency so that they have standards and design procedures to assist in determining tourism potential in each natural tourism location so that they can have standards.

From this study, there are eight classifications of indicators obtained with attraction, namely tourism attraction, which is influenced by natural resources with physical characteristics and beauty, being an essential element in attracting tourists. Each tourism destination has a unique attraction that distinguishes it from other destinations [12]. The cleanliness and beauty of the environment around tourist destinations is an important factor that affects the tourist experience [69,70]. These needs include the beauty, distinctiveness, cleanliness, and comfort of tourist sites [69]. These needs include tourist sites' beauty, distinctiveness, cleanliness, and comfort [71]. Public awareness about the importance of keeping the environment clean is needed to create a pleasant and sustainable tourism experience. The findings show that its natural beauty and physical characteristics influence the attractiveness of nature tourism. In the context of Rembang Regency, unique natural beauty and environmental cleanliness are important factors that attract tourists. This can be explained by the richness of nature and local wisdom in protecting the environment as an important part of local culture.

Amenities are the various supporting facilities needed by tourists in tourist destinations. These include facilities such as accommodation, food and beverages, entertainment, shopping, and other services such as banks, hospitals, security, and insurance [72]. These facilities are designed to meet the needs and wants of visitors according to the identified market segmentation. Amenities include other services such as travel agencies, restaurants, and souvenir shops [10]. The importance of amenities in tourist destinations is to provide a comfortable experience, considering basic needs such as food, drinking water, sanitation facilities, and many more. Therefore, the tourism industry is responsible for providing attractive and adequate facilities and ensuring that they are sufficient for the number of tourists expected to arrive [12]. The importance of amenities in tourist destinations is to provide a comfortable experience, considering basic needs such as food, drinking water, sanitation facilities, and many more. Therefore, the tourism industry is responsible for providing attractive and adequate facilities and ensuring that they are sufficient for the number of tourists expected to arrive [10]. Land, air, and sea transportation facilities should be provided to facilitate tourist mobility [73]. It is also essential to consider the strategic location of tourist accommodation so that it can be accessed quickly and comfortably by tourists, considering the factors of comfort and convenience [74]. Long distance is not a problem if it can be reached in a short time and at an affordable cost because convenience is a critical factor in determining the proximity of a location. In the amenity component, it can be seen that the development of tourism facilities, such as dining and shopping attractions, can be influenced by the needs and preferences of tourists and local cultural characteristics.

For example, developing restaurants or cafes with local food menus can enhance the tourist experience while supporting the local economy and promoting the region's culinary heritage.

Accommodation is commonly known as hotels with various facilities. Lodging in a tourist village will be different, usually consisting of some of the locals' residences or homestays [10]. The importance of accommodation in the hospitality industry is highlighted in that the hospitality accommodation sector accounts for the majority of employment and revenue in the travel and tourism industry [75]. The accommodation component contributes to jobs and income in the travel and tourism industry. Thus, the development of accommodation that matches local characteristics not only supports the needs of tourists but also contributes significantly to the local economy and the overall development of the tourism industry in Rembang Regency.

Activities in tourist destinations provide tourist experiences and are often the main attraction for visiting a tourist spot. These diverse activities include shopping, nature, culture, agriculture, historical exploration, rare animal observation, water sports, and health activities. These activities can increase the attractiveness of tourist attractions and make the tourist experience more memorable [76]. In addition, the organization of events is also considered to attract domestic and foreign tourists, so it becomes an essential aspect in developing tourism destinations [77]. Findings on the activities component with various tourism activities offered in the area, such as nature, culture, and sports, can reflect local cultural heritage and traditions. By promoting activities that are in line with local cultural values, tourism destinations can respect and strengthen local cultural heritage.

Ancillary services are supports provided by various parties such as organizations, governments, destination managers, or local governments in organizing tourism activities [67]. This includes government policies and support for the implementation of tourism activities. Ancillary services include tourism support facilities such as destination management institutions, tourist information centers that help tourists obtain information about tourist attractions, security posts to guard tourists' belongings, and tour guides who guide tourists in the tourist destination area [12,14]. The findings on the ancillary services component, with support from the government and various organizations in providing additional services such as tourism information, tourist information centers, and security of tourism areas, not only enhance the tourist experience but also offer economic opportunities for local communities. For example, tour services provided by local guides help generate additional income for locals involved in the tourism industry.

The environment in tourist areas refers to the environmental conditions within tourism destinations, covering environmental sustainability, hygiene, natural sustainability, and biodiversity. One of the key indicators used to assess the environmental impact of a tourism project or activity is an Environmental Impact Assessment (EIA), which identifies, predicts, and evaluates potential effects on the surrounding environment [78]. This helps in planning and managing the environmental impacts of tourism activities to ensure sustainable tourism practices. Land ownership is also an essential indicator of the environment in tourist areas, involving land rights and management around tourism destinations [79]. Understanding land ownership around tourism destinations allows authorities to implement appropriate policies to safeguard the environment and ensure tourism sustainability. Findings on the environmental component of the tourism area are as follows: by maintaining a clean and sustainable environment and protecting biodiversity, local communities can utilize natural resources as a source of income and cultural heritage.

Human resources (HR) in the context of tourism refers to individuals or actors in the tourism industry who have a direct or indirect role and relationship with various aspects and components of the tourism industry [80,81]. HR competencies include individuals' skills, knowledge, and abilities to carry out their duties and responsibilities in the tourism industry. At the same time, the education level refers to the level of formal education possessed by individuals in the tourism industry [82]. By having qualified and well-educated human resources, the tourism industry can function effectively and sustainably and provide a satisfying experience for tourists. The findings on the HR component are that with this indicator, qualified human resources in the tourism industry bring significant economic benefits to local communities. Through a deep understanding of the industry, individuals in the community can obtain better jobs and higher

incomes. Those who are skilled and educated in this field also have the opportunity to start their businesses, such as tour guide services or food stalls, which contribute to local economic growth.

With the indicators, we can weigh them using AHP. The results obtained are for existing tourism potential that needs to be developed; the highest weight is given to human resources (HR), which indicates the readiness of tourism development infrastructure. This is followed by environment in tourist areas, accessibilities, activity, accommodation, amenities, ancillary services, and attraction. The emphasis on human resources indicates the importance of workforce preparation in driving sustainable tourism development. Meanwhile, for tourism potential that does not yet exist, the highest weight is still given to human resources (HR), followed by attraction, environment in tourism areas, accessibility, activity, accommodation, amenities, and ancillary services. However, the difference lies in emphasizing attractiveness as the second priority after human resources (HR). This is because it is necessary to explore the potential of natural resources with physical characteristics and natural beauty that can attract tourists. Thus, although the main weight is on human resources for both types of tourism potential, the emphasis on other indicators changes depending on the presence or absence of tourism. This allows for developing strategies that suit local conditions and tourism potential.

After obtaining the indicator weights, a procedure was developed (see Appendix A) for assessing the potential of natural tourism by considering various factors, including the quality of human resources, tourism environment, natural attractions, facilities, accessibility, activities, accommodation, and additional services. Based on the established criteria, natural tourism potential was classified into four categories: superior, excellent, development, and potential. By being classified into four different categories, the benefits are very significant in managing and developing natural tourism potential. This classification allows tourism managers to plan for more effective management. For example, related parties can focus on maintaining and improving existing facilities by knowing that a natural tourism object is included in the “superior” category. Meanwhile, tourism objects in the “development” category require further investment in infrastructure and tourism promotion. This classification also helps in more appropriate resource allocation. By knowing which category each natural tourism object belongs to, tourism managers can allocate resources, be it budget, labor, or time, more efficiently and effectively. For example, natural tourism objects in the “potential” category may require more attention and investment than those already in the “superior” category.

It also helps in increasing the attractiveness and competitiveness of tourism destinations. By knowing the status and potential of natural tourism objects in different categories, relevant parties can plan appropriate marketing and promotion strategies to attract new tourists. Thus, this classification helps manage nature tourism potential more efficiently, enables sustainable tourism development, and provides maximum benefits to local communities and the environment.

4.2. Theoretical Implications

The theoretical implication of this research is its contribution to the theoretical understanding of the tourism sector, especially in determining the potential of natural tourism through mapping indicators based on 6A indicators, namely attraction, amenities, accommodation, activity, accessibility, and ancillary services, as well as the environment in the tourist area and human resources. This research produces a procedure, a series of structured and organized steps or actions designed to achieve certain goals. This procedure has several benefits in determining tourism potential. First, it can assist in the decision-making process and development of tourist destinations by providing a structured framework. Second, it can improve understanding of the key factors affecting nature tourism potential. Third, it can help identify areas where resources and development efforts can be directed to achieve optimal results. Thus, the theoretical implication of this study is that it enriches and deepens our understanding of how to identify and develop nature tourism potential, as well as providing a conceptual foundation for further research in this area. The indicators of this research provide a deeper understanding of the key factors influencing nature tourism potential and how to integrate them into the tourism development process in a more structured and effective manner.

4.3. Managerial Implications

The managerial implication of this research is that based on the results of the indicators that are mapped and become procedures based on the assessment category, if tourism is included in the superior category, the government can maintain the quality of facilities, infrastructure, hotels, and other supporting facilities to be able to provide satisfaction to tourist visitors. If tourism is included in the mainstay category, improvements must be made to facilities that do not meet the standards. If tourism is included in the development category, the government needs to put more effort into developing infrastructure, accessibility, and facilities so that visitors can feel comfortable visiting tourist sites. Suppose tourism has the potential to be developed into a tourist attraction. In that case, the government needs to build accessibility and infrastructure and promote it because, in this category, visitors still do not know about tourist sites.

Involving stakeholders in creating indicators to determine tourism potential into procedures enables a collaborative process with parties responsible for tourism development by applying open innovation dynamics such as open collaboration, introduction, knowledge exchange, cooperation, use of technology, adaptation, community involvement, and service improvement that can strengthen the determination of natural tourism potential and encourage the sustainability and competitiveness of tourism destinations. This implies that the government and related parties can take appropriate actions to manage and develop nature tourism potential effectively and sustainably.

5. Conclusions

A taxonomic model has been designed to classify indicators for determining natural tourism potential: attraction, amenities, accommodation, activity, accessibility, and ancillary services, as well as environment in tourist areas and human resources. The classification of indicators of natural tourism potential is needed to carry out taxonomy regarding determining natural tourism potential. After the model classification, weighing will be carried out using an analytical hierarchy process to see which indicators have the most correct weights. In this research, procedures were designed to determine areas with the potential for natural tourism so that they have standardization tailored to the needs of tourist locations. The results obtained are in the form of procedures. As in any other research, some limitations may be overcome in future research. Based on the results of the research that has been conducted, several opportunities can still be developed for further research. One of the main limitations of this study is the limited number of respondents. The representation of the Culture and Tourism Office of Rembang Regency only comes from a few individuals. The research design could be improved by involving more stakeholders to increase broader representation. In addition, there are also limitations in accessing information due to its incompleteness. Finding relevant data was difficult due to incomplete documentation. Furthermore, in data collection, time constraints are a limiting factor in enriching the indicators for determining the potential of nature tourism. Therefore, expanding the research location could be an excellent step to overcome these limitations.

Suggestions for future researchers are that before implementing this design model, it is recommended that organizations communicate the benefits and importance of knowledge management and knowledge taxonomy to every employee and department involved. For further research, the designed model can be used to move to the next stage of taxonomy system development. Comprehensive knowledge management for the Culture and Tourism Office of Rembang Regency and procedural assessment can be carried out based on primary and secondary data needs for each tourist location. This can help categorize tourist destinations that have low potential. In addition, this research can be developed by expanding tourist sites to consider more indicators in tourism development, especially nature tourism.

Author Contributions: Conceptualization, A.S.R. and A.A.R.; methodology, A.S.R.; software, A.S.R.; validation, A.S.R., A.A.R. and L.A.; formal analysis, A.S.R., A.A.R. and L.A.; data curation, A.S.R.; writing—original draft preparation, A.S.R.; writing—review and editing, A.S.R., A.A.R. and L.A.; visualization, A.S.R.; supervision, A.A.R. and L.A.; project administration, A.S.R.; funding acquisition, A.A.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Approval for this research is not required by the regulations of Law of the Republic of Indonesia Number 14 of 2008 concerning Public Information Openness because the data taken in this research are data that the public can know regarding information relating to the Agency Public, and information regarding the activities and performance of related Public Bodies.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data and the questionnaire used in the study are available to other authors who require access to this material.

Acknowledgments: Telkom University and the Enterprise System and Solution Lab supported the implementation of this research by providing time and opportunity to collect data in Rembang Regency, Central Java, Indonesia. We would like to express our gratitude to the Rembang Regency Tourism Office and the management of tourist attractions in the area for their cooperation and support in providing the information needed to continue this research.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Procedure for Determining Natural Tourism Potential, Human Resources Indicators.

Indicator	Criteria	Description	Score
HR Competency	Knowledge	Knowledge of the environment and sustainability can help human resources in the field of tourism in developing nature tourism in a responsible and sustainable manner [14,48,58].	<p>4: HR has in-depth and broad knowledge about the environment and sustainability and can become a leader in the development of responsible and sustainable nature tourism with various innovations and the latest solutions</p> <p>3: Human resources have good knowledge about the environment and sustainability and can adequately implement responsible and sustainable natural tourism development practices</p> <p>2: HR has a sufficient understanding of the environment and sustainability but still requires improvement in implementing responsible and sustainable natural tourism development practices</p> <p>1: HR has limited or minimal knowledge about the environment and sustainability in the context of responsible and sustainable nature tourism development</p>
	Communication skills	Communication skills in human resources [59]. The skills possessed by human resources in the field of tourism, such as the ability to communicate well, can improve the ability to provide information to relevant parties in determining natural tourism.	<p>4: Human resources in the field of tourism have adequate skills in communicating and providing information to relevant parties in determining nature tourism. They have excellent communication skills and can provide precise information to related parties</p> <p>3: Human resources in the field of tourism have adequate skills in communicating and providing information to relevant parties in determining nature tourism. They can communicate well and provide clear information to related parties</p> <p>2: Human resources in the field of tourism have adequate skills in communicating and providing information to relevant parties in determining nature tourism. However, there are still deficiencies in the ability to communicate and provide appropriate information to related parties</p> <p>1: Human resources in the field of tourism need to improve their skills in communicating and providing information to related parties in determining nature tourism. Poor communication skills; difficulty in providing clear and precise information to related parties</p>

Indicator	Criteria	Description	Score
Education	Education and training	There is appropriate education and training that can improve the quality of human resources in the field of tourism and assist them in facing global challenges that require creativity, innovation, and solutions [60].	<p>4: There is adequate education and training to improve the quality of human resources in the tourism sector. There is a strong focus on meeting global challenges by developing creativity, innovation, and practical solutions</p> <p>3: There is adequate education and training to improve the quality of human resources in the tourism sector. Efforts are made to help them face global challenges by encouraging creativity, innovation, and solutions</p> <p>2: The education and training provided are limited and only cover some aspects needed to improve the quality of human resources in the tourism sector. There needs to be a clear focus on facing global challenges that require creativity, innovation, and solutions</p> <p>1: No education and training are organized to improve the quality of human resources in the tourism sector. There is no effort to help them face global challenges that require creativity, innovation, and solutions</p>

Procedure for Determining Natural Tourism Potential, Environment in Tourist Areas.

Indicator	Criteria	Description	Score
Land Ownership Status	Legal ownership of land certificates at each tourist location	Legal ownership of land certificates at each tourist location [55]. Land certificates at tourist sites have an important role in supporting the development of natural tourism by guaranteeing investment security and preventing conflicts	<p>4: There is an excellent legal title to the land for tourism. Land use certificates cover all used land as well as unused land</p> <p>3: There is legal ownership of land certificates for tourism. Land use certificates cover land that is used only, but land that has yet to be used as a tourism expansion can be processed by fulfilling certain conditions</p> <p>2: Several valid land certificates exist, but only for the land used</p> <p>1: There needs to be a legal land title for tourism. No land use certificate covers land that is used or land that has not been used</p>
	There is a land use permit	There is a land use permit from a Central Government Agency at each tourist location [56]. Land use permits in tourist areas are essential in supporting the development of nature tourism by preventing conflicts, maintaining environmental sustainability, improving management quality, and increasing tourist confidence. Complete requirements such as obtaining permits from government agencies, permits from landowners if occupying someone else's land, community/neighbor permits, and EIA	<p>4: There is a complete and eligible land use permit for tourism. Permits include all necessary permits, including permits from government agencies, permits from land owners, community/neighbor permits, and EIA</p> <p>3: There is a land use permit, but one needs to be added to qualify for tourism</p> <p>2: There are limited complete and eligible land use permits for tourism. Permissions do not cover all required permissions</p> <p>1: There needs to be a complete and eligible land use permit for tourism. Permits do not include licenses from government agencies, permits from landowners, community/neighbor permits, and EIA</p>
EIA for Tourism Area	No potential for environmental damage	No potential for environmental damage (increased floods, landslides, droughts, and/or forest and land fires) [57]	<p>4: The tourism area has no potential for significant environmental damage. No, or very rarely, damage in tourist areas. There is an effective and proactive management system for dealing with these risks</p> <p>3: The risk of damage to tourism areas can be adequately controlled. There are preventive and mitigation measures taken to reduce environmental damage</p> <p>2: There were several incidents of damage in the tourist area. Despite efforts to reduce the damage, there are still significant risks</p> <p>1: The level of environmental damage is very high. There is regular and severe damage in the tourist area. No attempt was made to prevent or mitigate the damage</p>

Indicator	Criteria	Description	Score
	No potential impact in the form of waste	No potential impact in the form of waste [56]	<p>4: The tourist area has a minimal waste impact. There is an effective and innovative waste management system, such as waste reduction policies, recycling programs, and active community participation in keeping the environment clean</p> <p>3: Waste management in tourist areas has been carried out quite well. There are adequate waste management facilities and systems, such as trash cans available in various locations, waste segregation, and waste reduction programs</p> <p>2: There are several problems related to waste handling in tourist areas. Despite efforts to manage waste, there still needs to be adequate landfills or an increase in effective waste management facilities</p> <p>1: The tourism area needs help with waste handling. There is an uncontrolled accumulation of waste and no effective waste management system. Trash is scattered around the tourist area and has the potential to pollute the environment</p>

Procedure for Determining Natural Tourism Potential, Accessibilities Indicators.

Indicator	Criteria	Description	Score
Transportation	The tourist area can be traversed by various modes of transportation	The tourist area can be traversed by modes of transportation such as two-wheeled, four-wheeled, and more than four-wheeled easily without obstacles with excellent and comfortable access. Ease of tourist areas for transportation modes to pass through so that tourists can go to the intended tourist location [39].	<p>4: The tourist area is effortless to pass through by this mode of transportation with excellent access and is convenient for vehicle users.</p> <p>3: Tourist areas can be adequately traversed using modes of transportation with smooth access and minimal obstacles.</p> <p>2: The tourist area can be traversed by any mode of transportation, but access is limited. There are certain obstacles.</p> <p>1: The tourist area is impassable by any mode of transportation, or access is very limited and difficult.</p>
	There are airports around the tourist area	There are airports around the tourist area. Travel can be carried out if there is a means to reach the place, such as an airplane [39]. Tourists with excellent transportation access can reach the airport, which is comfortable, and it can be achieved using various transportation.	<p>4: There is excellent and convenient transportation access to airports in tourist areas so tourists can easily reach them. It can be achieved using local public transportation such as buses or by using a taxi or private vehicle with a short travel time.</p> <p>3: There is adequate transportation access to airports in tourist areas so that tourists can easily reach them. Public transportation such as bus, tram, or train connecting may be required to reach the location. This distance may require a slightly longer travel time.</p> <p>2: There is transportation access to the airport in tourist areas, but there are still obstacles or difficulties. With limited transportation access in the use of public transportation such as connecting trains, express buses, or taxi services.</p> <p>1: There must be adequate transportation access to airports in tourist areas, making it difficult for tourists to reach them.</p>
	There are train stations around the tourist area	There are train stations around the tourist area. Travel can be carried out if there is a means to reach the place, such as a train [39]. Tourists with excellent transportation access can reach the station, which is comfortable, and it can be achieved using various transportation.	<p>4: There is excellent and convenient transportation access to train stations in tourist areas so tourists can quickly reach them. It can be achieved using local public transportation such as buses or by using a taxi or private vehicle with a short travel time.</p> <p>3: There is adequate transportation access to train stations in tourist areas so tourists can easily reach them. Public transportation such as bus, tram, or train connecting may be required to reach the location. This distance may require a slightly longer travel time.</p> <p>2: There is transportation access to the train station in the tourist area, but there are still obstacles or difficulties in reaching it. With limited transportation access in the use of public transportation such as connecting trains, express buses, or taxi services.</p> <p>1: There must be adequate transportation access to train stations in tourist areas, making it difficult for tourists to reach them.</p>

Indicator	Criteria	Description	Score
Transportation	There are terminals around the tourist area	There are terminals around the tourist area. Travel can be carried out if there is a means to reach the place, such as a terminal [39]. The terminal can be reached by tourists with excellent transportation access, being comfortable, and it can be reached by using various transportation.	<p>4: There is excellent and convenient transportation access to terminals in tourist areas so tourists can easily reach them. It can be achieved using local public transportation such as buses or by using a taxi or private vehicle with a short travel time.</p> <p>3: There is adequate transportation access to terminals in tourist areas so that tourists can easily reach them. Public transportation such as bus, tram, or train connecting may be required to reach the location. This distance may require a slightly longer travel time.</p> <p>2: There is transportation access to the terminal in the tourist area, but there are still obstacles or difficulties in reaching it. With limited transportation access in the use of public transportation such as connecting trains, express buses, or taxi services.</p> <p>1: There needs to be adequate transportation access to terminals in tourist areas, making it difficult for tourists to reach them.</p>
	There are sea ports around the tourist area	There is a harbor around the tourist area. Travel can be carried out if there is a means to reach the place, such as a port [39]. The terminal can be reached by tourists with excellent transportation access, being comfortable, and it can be reached by using various transportation.	<p>4: There is excellent and convenient transportation access to ports in tourist areas so tourists can easily reach them. It can be achieved using local public transportation such as buses or by using a taxi or private vehicle with a short travel time.</p> <p>3: There is adequate transportation access to ports in tourist areas so that tourists can easily reach them. Public transportation such as bus, tram, or train connecting may be required to reach the location. This distance may require a slightly longer travel time.</p> <p>2: There is transportation access to the port in the tourist area, but there are still obstacles or difficulties in reaching it. With limited transportation access in the use of public transportation such as connecting trains, express buses, or taxi services.</p> <p>1: There is no adequate transportation access to ports in tourist areas, making it difficult for tourists to reach them.</p>
	There is public transportation to the tourist area	There is public transportation around the tourist area. Travel can be carried out if there is a means to reach the place, such as public transportation [39]. Availability of public transportation with views of public transport passing by.	<p>4: There are many public transports available, and they pass frequently.</p> <p>3: Sufficiently available public transport and frequent passing.</p> <p>2: Public transportation is limited and rarely passes.</p> <p>1: There is no public transport.</p>
Road Conditions	Ease of road access	The tourist area has been paved or cast properly, has no holes, is very wide, and is very comfortable to pass so that tourists can reach their destination [40,41].	<p>4: The road to the tourist location is in excellent condition, has been paved or appropriately cast, has no potholes, is very wide, and is very comfortable to travel at high speed.</p> <p>3: The road to the tourist location is in good condition, has been paved or cast, has no potholes, and is wide enough so that it can be passed comfortably and relatively quickly.</p> <p>2: The road to the tourist location needs to be in better condition. Some parts may not be asphalted or have potholes, but they can still be traversed even with a few obstacles.</p> <p>1: The road to the tourist site needs to be in better condition, unpaved, potholed, narrow, or inadequate, making it difficult to pass and taking a long time.</p>

Indicator	Criteria	Description	Score
Ease of Tourist Access	Tourists can easily access other tours from tourist sites	Tourists can easily access other tours from tourist sites. Ease of access to other tours from tourist sites can increase tourist visits to a destination. Tourists can use their time more effectively and visit more attractions [42]. Conditions for access to other tourist sites can be reached very easily; there is good transportation access with several choices of modes of transportation, and there are rest area facilities to reach other tourist locations.	<p>4: Tourists can very easily access other tours from tourist sites. There is excellent transport access, with various options and short travel times. There is also an adequate and comfortable rest area as a place to rest on the way to tourist sites.</p> <p>3: Tourists can easily access other tours from tourist sites. Excellent and adequate transportation access enables a comfortable and efficient trip. Several rest areas are also available to rest on the way to tourist sites.</p> <p>2: Tourists need help accessing other tours from tourist sites. Although it is still possible to reach other tourist locations, there are some obstacles or limitations in the available transportation access. There are several public rest areas, but they are not sufficient.</p> <p>1: Tourists need help accessing other tours from tourist sites. Adequate transportation access is not available, and significant obstacles exist to reach other tourist sites. There is no rest area open for rest.</p>

Procedure for Determining Natural Tourism Potential, Activity Indicators.

Indicator	Criteria	Description	Score
Variety of activities and events	Activities and events that can be enjoyed by tourists at each tourist location	There are activities and events that can be enjoyed by tourists at each tourist location. Activities can be swimming, sports, surfing, sunbathing, enjoying the scenery, research, etc. [32]. Interesting activities or activities can increase tourist attractiveness [52]. This can make tourists interested in visiting these tourist sites and spending longer time at tourist sites. There are events held in tourist areas periodically. This event is considered to have an attraction that can bring in tourists [53].	<p>4: There are >4 activities and events that can be enjoyed by tourists at each tourist location (such as swimming, sports, surfing, sunbathing, enjoying the scenery, research, etc.)</p> <p>3: There are 3–4 activities and events that can be enjoyed by tourists at each tourist location (such as swimming, sports, surfing, sunbathing, enjoying the scenery, research, etc.)</p> <p>2: There are two activities and events that can be enjoyed by tourists at each tourist location (such as swimming, sports, surfing, sunbathing, enjoying the scenery, research, etc.)</p> <p>1: There is one activity that can be enjoyed by tourists in each tourist location (such as swimming, sports, surfing, sunbathing, enjoying the scenery, research, etc.)</p>

Procedure for Determining Natural Tourism Potential of Accommodation Indicators

Indicator	Criteria	Description	Score
Lodging	Hotels in tourist areas	<p>There are hotels in tourist areas as a means of accommodation by providing the best possible service by seeing that the inn is well maintained. Standards for hotel rooms [36]:</p> <p>1. Number of 1-star hotel rooms in tourist areas ≥ 15</p> <p>2. Number of 2-star hotel rooms in tourist areas ≥ 20</p> <p>3. Number of 3-star hotel rooms in tourist areas ≥ 30</p> <p>4. Number of 4-star hotel rooms in tourist areas ≥ 50</p> <p>5. Number of 5-star hotel rooms in tourist areas ≥ 100</p>	<p>4: There are many choices of hotels in the tourist area, with sufficient rooms to meet star hotel standards. Travelers have many options in choosing hotels according to their preferences and quality standards, with adequate variation in the number of rooms available.</p> <p>3: There are several hotel options in the tourist area, with sufficient rooms to meet hotel star standards. Tourists have several options in terms of hotel choices and an adequate number of rooms to meet the needs of tourists.</p> <p>2: There are several hotel options in the tourist area, but the number of available rooms still needs to be increased and meet hotel star standards. Travelers have limited options and the needs of travelers may have to be accommodated with limited availability.</p> <p>1: There are no or very few hotel options in the tourist area, with the number of rooms far below star hotel standards. Travelers have few or no options to choose a hotel according to their preferences and quality standards.</p>

Indicator	Criteria	Description	Score
Lodging	Guest house in tourist area	There are guest houses in tourist areas. There are a number of guest house rooms in tourist areas, ≥ 4 . the number of guest house rooms according to the stars has a minimum standard that must be met [37]	<p>4: There are many choices of guest houses in the tourist area, with a sufficient number of rooms for guest house standards. Tourists have many options in choosing a guest house that suits their preferences and quality standards, with adequate variation in terms of the number of rooms available.</p> <p>3: There are several choices of guest houses in the tourist area, with sufficient rooms to meet guest house standards. Tourists have several options in terms of the selection of guest houses and an adequate number of rooms to meet the needs of tourists.</p> <p>2: There are several choices of guest houses in the tourist area, but the number of rooms available still needs to be increased and meet guest house standards. Tourists have limited options and the needs of tourists may have to be accommodated with limited availability.</p> <p>1: There are no or very few guest house options in the tourist area, with the number of rooms far below guest house standards. Travelers have little or no options to choose a guest house according to their preferences and quality standards.</p>
	Homestay in a tourist area	There are homestays in tourist areas as a means of accommodation by providing the best possible service by seeing that the inn is well maintained. There is a maximum number of homestay rooms in tourist areas, ≥ 1 and a maximum of 5 rooms. The number of homestay rooms according to the stars has a minimum standard that must be met. This is important because it can affect the quality of service and the comfort of guests staying at the homestay [38]	<p>4: There are many homestay options in the tourist area, with sufficient rooms for homestay standards. Travelers have many options in choosing homestays that suit their preferences and quality standards, with adequate variation in terms of the number of rooms available.</p> <p>3: There are several homestay options in the tourist area, with enough rooms to meet homestay standards. Tourists have several options in terms of homestay choices and an adequate number of rooms to meet the needs of tourists.</p> <p>2: There are several homestay options in the tourist area, but the number of rooms available still needs to be increased and meet homestay standards. Travelers have limited options and the needs of travelers may have to be accommodated with limited availability.</p> <p>1: There are no or very few homestay options in the tourist area, with the number of rooms far below homestay standards. Travelers have few or no options to choose a homestay that suits their preferences and quality standards.</p>

Procedure for Determining Natural Tourism Potential, Amenities Indicators.

Indicator	Criteria	Description	Score
Facility	Places to eat/restaurants in tourist areas	There are places to eat/restaurants in tourist areas with well-maintained conditions [43]. Eateries in tourist areas are important for meeting the basic needs of tourists, enriching the culinary experience of tourists, and having a positive impact on the local economy.	<p>4: There are many choices of places to eat/restaurants in tourist areas. Tourists can choose a place to eat that suits their tastes and needs. The variety of the menu and the quality of the food offered is quite adequate.</p> <p>3: There are many dining options/restaurants in tourist areas. Tourists have various menu choices and types of food, making it possible to choose according to tourist preferences.</p> <p>2: There are several choices of places to eat/restaurants in tourist areas, but the number still needs to be increased. Travelers may have to overcome limitations in the variety of menus or the quality of food offered.</p> <p>1: No or very few dining options/restaurants in tourist areas. Tourists need help finding places to eat that suit their preferences and needs.</p>

Indicator	Criteria	Description	Score
Infrastructure	Souvenir shop in tourist area	There are souvenir shops for tourists to shop in tourist areas with a variety of products on offer [43]. Souvenir shops become a source of income, increase tourist attractiveness, improve service quality, and enhance the tourist experience [44].	<p>4: Many souvenir shops in tourist areas have a wide selection of products. Tourists have many options for choosing souvenirs according to their tastes and needs.</p> <p>3: There are a fair number of souvenir shops in tourist areas. Tourists have several choices of souvenir products that are pretty diverse, although there are still some limitations.</p> <p>2: There are several souvenir shops in tourist areas, but the number still needs to be increased. The choice of souvenir products is limited and needs to be more diverse.</p> <p>1: There are very few or no souvenir shops in tourist areas. The choice of souvenir products is minimal and does not meet tourist expectations.</p>
	Provider of tour packages in tourist areas	There are tour packages in tourist areas [39]. Tour packages in tourist areas are packages offered to tourists who want to visit and explore certain tourist areas with the facilities provided, such as travel to tourist sites, transportation, and the provision of food for travel.	<p>4: There are many choices of attractive and varied tour packages in tourist areas, which include trips to several tourist sites, transportation to visit destinations, and food provision during the trip.</p> <p>3: Several tour package options include trips to several tourist sites, transportation to visit destinations, and food provision during the trip.</p> <p>2: There are few or limited tour packages available in tourist areas, which include trips to several tourist sites, transportation to visit destinations, or provision of food during the trip.</p> <p>1: There are no tour packages available in tourist areas that include trips to several tourist sites, transportation to visit destinations, or provision of food during the trip.</p>
	Places of worship in every tourist location	There are places of worship in every tourist location. The importance of places of worship for tourists so they can worship comfortably and quietly without having to look for places of worship that are far from tourist sites [45].	<p>4: There are adequate places of worship at each tourist location. Tourists have easy access and proper facilities for worship.</p> <p>3: There are several places of worship in tourist sites that are sufficient to meet the needs of tourists. Facilities for places of worship are adequate, although there are still some limitations.</p> <p>2: There are several prayer rooms at tourist sites, but the number of facilities is limited. Tourists may experience difficulties in finding a suitable and comfortable prayer room.</p> <p>1: There are several prayer rooms at tourist sites, but the number of facilities is limited. Tourists may experience difficulties in finding a suitable and comfortable prayer room.</p>
	Toilets at every tourist location	There are clean toilets at every tourist location [31]. Adequate toilets at tourist sites are very important to meet the basic needs of tourists and there are toilets for people with disabilities. Physical limitations should not rule out opportunities for friends with disabilities to travel. It is appropriate for disabled-friendly tourism to begin to be encouraged to make it easier for persons with disabilities to carry out activities in various tourist destinations [46].	<p>4: Each tourist location has clean and adequate toilets. Toilet facilities are well maintained, and equipped with clean water, soap, toilet paper, and other supporting facilities. In addition to public toilets, there are toilets for the disabled.</p> <p>3: There are several toilets at tourist sites that are clean and sufficient to meet the needs of tourists. However, there is still room for improvement and improvement in facilities.</p> <p>2: There are several toilets at tourist sites, but the conditions must be cleaner and adequate.</p> <p>1: There are no toilets at tourist sites, and the conditions could be cleaner and more adequate. Tourists experience difficulties in finding proper toilet facilities.</p>

Indicator	Criteria	Description	Score
Infrastructure	Base Transceiver Station in tourist area	There is a Base Transceiver Station in the tourist area [32]. BTS can improve the quality of tourist services by providing a stable and fast telecommunication network. The closer the user is to the BTS, the stronger the signal received, so visitors can enjoy better connectivity with higher speed and stability.	4: There is a Base Transceiver Station in the tourist area (with a permit distance of 50 m from the location). 3: There is a Base Transceiver Station in the area (with a permit distance of 100 m from the location). 2: There is a Base Transceiver Station in a tourist area (with a permit distance ≥ 100 m from the location). 1: There is a Base Transceiver Station in the tourist area (with a distance ≥ 200 m).
	Electrical network in tourist areas	There is a power grid in the tourist area [47]. Adequate electricity networks can increase tourist comfort by providing facilities that require electricity, such as air conditioning, lights, and charging gadgets.	4: There is a highly available power grid in tourist areas. All tourist areas are connected to the electricity grid, and complete and safe electrical facilities are available throughout the area. 3: There is an adequate power grid in tourist areas. The majority of tourist areas have been connected to the electricity network so that sufficient electricity facilities are available for the needs of visitors and tour managers. 2: There is a limited power grid in tourist areas. Only a tiny part of the area is connected to the electricity network, so there are very few facilities or electricity points available. 1: There is no electricity network available in the tourist area. There is no electricity supply connected to the site, and there are no electricity facilities that can be used by visitors or tour operators.
	Internet network in tourist areas	There is an internet network in the tourist area (minimum 3G because now you are using the internet) [32].	4: There is an internet network in tourist areas (with a 4G network with a speed of 100 Mbps). 3: There is an internet network in tourist areas (with a 4G/3G network with a speed of 2 Mbps–100 Mbps). 2: There is an internet network in the tourist area (with a 3G network with a speed of 2 Mbps). 1: There is an internet network in the tourist area (with a 3G network with a speed of 65 Kbps–2 Mbps).
	Availability of clean water in tourist areas	There is availability of clean water to meet the needs of tourists, meaning that clean water must be available [48].	4: There is availability of clean water in tourist areas (can be used directly). 3: There is availability of clean water in tourist areas (requires simple treatment). 2: There is availability of clean water in tourist areas (requires chemicals). 1: Water availability is not feasible.
	Drainage/water channels in tourist areas	There are drainages/water channels in tourist areas [32]. Drainage in tourist areas needs attention to support the development of natural tourism by preventing flooding, preventing erosion, and maintaining cleanliness.	4: The tourism area has an excellent drainage system. Drainage is well designed and combined with regular maintenance efforts. There are no significant waterlogging or disposal problems. 3: There is adequate drainage in most tourist areas. Some areas still have a waterlogging problem, but the drainage/drains are in good condition overall. 2: There are several drainages/waterways in the tourist area, but there are still some areas that are prone to waterlogging or sub-optimal discharge, and an increase in the maintenance and repair of channels is required. 1: There needs to be more drainage in the tourism area. This can lead to stagnant water or irregular discharge, inconveniencing visitors, and potential hygiene problems.
	Parking area at each tourist location	There are parking areas at each tourist location that can be used by cars, buses, and motorbikes [49].	4: There are parking areas at each tourist location (cars, buses, and motorcycles can be parked). 3: There is a parking area at each tourist location (only cars and motorbikes). 2: There are parking areas at each tourist location, quite narrow but easy to park (only motorbikes or two wheels). 1: Not available.

Indicator	Criteria	Description	Score
Infrastructure	ATM in tourist area	There is an ATM in the tourist area. Adequate ATMs and banks can improve the quality of tourist services by providing adequate facilities for tourists who need cash or to make other financial transactions. This can provide a better experience for tourists and increase tourist satisfaction with the tourism services provided [43].	<p>4: There are many choices of ATMs available around the tourist area. Visitors have easy access to various ATMs with a complete range of services.</p> <p>3: There are several ATM options available around the tourist area. Visitors can easily find several ATMs to carry out financial transactions.</p> <p>2: Several ATMs are available around the tourist area, but the number is limited. There are only one or two ATMs that visitors around the tourist area can access.</p> <p>1: No ATM available in the tourist area. Visitors cannot find ATMs around tourist areas to make financial transactions.</p>
	Health clinics/puskesmas in tourist areas	There is a health clinic/health center in the tourist area. Clinics/health centers in tourist areas are important to provide emergency medical treatment, routine health services, and medical consultations, and support tourist safety [50]. Available clinics at least have emergency treatment rooms, complete medicines and medical equipment, emergency communication access available, and friendly facilities for persons with disabilities.	<p>4: A health clinic or health center around the tourist area provides a complete range of health services. There is an emergency treatment room, adequate medicines and medical equipment, fast access to emergency communications, and friendly facilities for persons with disabilities.</p> <p>3: A health clinic or health center around the tourist area provides a relatively complete range of health services. There is an emergency treatment room and adequate medicines and medical equipment, access to emergency communications is available, and access for persons with disabilities has been well cared for.</p> <p>2: There is a health clinic or health center around the tourist area, but the health services are limited. Some services may be incomplete, medicines and medical equipment are limited, and accessibility for persons with disabilities is limited.</p> <p>1: There are no health clinics or puskesmas around the tourist area. Travelers experience difficulties in obtaining necessary health services, and access to emergency care is limited or non-existent.</p>
	Pharmacy in tourist area	There is a pharmacy in the tourist area [39]. The availability of pharmacies in tourist areas is very important in emergency management, drug accessibility, health consultations, maintaining public health, and providing a sense of security and comfort for tourists. With a pharmacy, tourists can receive the health care and support they need during their trip.	<p>4: There are pharmacies available around the tourist area with effortless access. Visitors can easily find a pharmacy with a complete and varied stock of medicines, including drugs that are commonly used and particular medicines that may be needed.</p> <p>3: Several pharmacies around the tourist area can be accessed relatively quickly. The drug stock provided is quite complete and varied, although there may be some limitations in certain types of drugs.</p> <p>2: There are several pharmacies around the tourist area, but access is limited. Visitors may face difficulties in finding available pharmacies, and complete drug stocks may not always be guaranteed.</p> <p>1: There are no pharmacies around the tourist area. Visitors experience difficulties in obtaining necessary medicines, and access to nearby pharmacies is limited or non-existent.</p>
	There are vehicle refueling/petrol stations in the tourist area	There are vehicle refueling/petrol stations in the tourist area. Adequate gas stations can improve the quality of tourist services by providing adequate fuel for tourist vehicles [51].	<p>4: There are many choices of petrol stations available around the tourist area. Visitors have easy access to various fueling stations, which have sufficient fuel stocks and adequate facilities.</p> <p>3: There are several gas station options available around the tourist area. Visitors can easily find several gas stations to fill up their vehicles.</p> <p>2: There are vehicle refueling facilities around the tourist area, but the number is limited. There are only one or two gas stations that visitors around the tourist area can access.</p> <p>1: There are no vehicle refueling facilities in tourist areas. Visitors must leave the tourist area to find the nearest fueling station.</p>

Indicator	Criteria	Description	Score
Infrastructure	Ramps for the disabled along the path at each tourist location	There is a ramp for the disabled along the route at each tourist location (has a maximum slope of 7 degrees). Physical limitations should not rule out opportunities for friends with disabilities to travel. It is appropriate for disabled-friendly tourism to begin to be encouraged to make it easier for persons with disabilities to carry out activities in various tourist destinations [46].	4: There is a special ramp for the disabled on all routes at the tourist location, meeting the standard of a maximum slope of 7 degrees for optimal accessibility. 3: There are special ramps for the disabled on most of the trails at the tourist site, covering the main areas visited by visitors. 2: There are several special ramps for the disabled on the route at the tourist location, but they do not cover the entire route. 1: There is no special ramp for the disabled on the route at the tourist location.

Procedure for Determining Natural Tourism Potential of Ancillary Services Indicators.

Indicator	Criteria	Description	Score
Information services	Tourist information center services at each tourist location	There is a tourist information center service at each tourist location. An information center or information service that has its own office or room, has officers to serve tourists, and can provide accurate and effective information. This can help tourists in emergency situations and increase tourists' sense of security with good service [43]	4: There is an excellent information center service at the tourist location, with adequate offices or rooms and professional and friendly staff to serve tourists. The information provided is very accurate and effective, with a fast response, and helps in meeting the needs of tourists 3: There is an information center service at the tourist site, with adequate rooms or offices and sufficient staff to serve tourists. The information provided tends to be accurate and effective, but there may be some limitations in terms of availability and speed of service 2: There is an information center service at the tourist location, but with limited space or offices and only a few officers serving tourists. The information provided may not always be accurate and effective due to limited resources available 1: There is no information center service in the tourist area. Travelers cannot access accurate and effective information through dedicated offices or rooms and no staff is available to provide assistance
	Explanation of tourist sites in the form of brochures/leaflets/posters/maps at each tourist location	There is an explanation of tourist areas in the form of brochures/leaflets/posters/maps at each tourist location. Brochures/leaflets/posters are useful for helping tourists to find out about the tourist sites visited [39]	4: There is an explanation of tourist areas in the form of brochures, leaflets, posters, or maps at each tourist location, providing complete and detailed information about tourist sites, including attractions, facilities, and routes that can be followed 3: There is an explanation of tourist areas in the form of brochures, leaflets, posters, or maps at most tourist sites, including basic information about the tourist sites 2: There are several explanations of tourist areas in the form of brochures, leaflets, posters, or maps at several tourist sites, but they do not cover all tourist sites 1: There is no explanation of the tourist area in the form of brochures, leaflets, posters, or maps at the tourist location
	Tour guide at each tourist location	There are tour guides to provide information about tourist areas to tourists at each tourist location [39]	4: There are tour guides available at each tourist location, which provide tourists with comprehensive information about the tourist area, including history, culture, and attractions 3: There are tour guides available at each tourist location, which provide tourists with basic information about the tourist area 2: There are tour guides, but they are not always available at the tourist sites 1: There is no tour guide available at the tour location

Indicator	Criteria	Description	Score
Security posts	Security posts at tourist sites	Security posts for the availability of guard security posts, and tourist sites that can guard vehicles and goods with good service to tourists at each tourist location [23]	<p>4: There is an excellent guard security post at the tourist site. Guarding tourists' vehicles and belongings is carried out effectively and proactively, giving tourists a sense of security and confidence in the safety of their luggage</p> <p>3: There are adequate and consistently available guard security posts at tourist sites. Safeguarding of vehicles and goods can be carried out well, although there are still some deficiencies in terms of monitoring and security</p> <p>2: There are guard security posts at tourist sites, but with a limited number and only sometimes available. Security of vehicles and belongings can become less than optimal, leaving room for security risks</p> <p>1: There is no guard security post at the tourist location. There is no one to guard tourists' vehicles and belongings, increasing the risk of loss or theft</p>
	Direction sign	There are guide signs distributed at certain points to go to tours at each tourist location to make it easier for tourists to visit the location [23], with the criteria for guide signs being consistent, using common language, suitability of spelling rules, clearly legible, and appropriate color settings for general information are green	<p>4: There are many signs at the tourist site that meet all the criteria. Signs are consistent, use common language, follow spelling rules, are easy to read, and have appropriate color settings. These directional signs provide clear and adequate guidance for tourists</p> <p>3: There are a number of signs at the tourist site that meet most of the criteria. Signs tend to be consistent, use common language, conform to spelling rules, be legible, and have appropriate color settings</p> <p>2: There are several guide signs at tourist sites, but only a small number meet the criteria. Some signs may be consistent and use common language, but there are still deficiencies in spelling rules, clarity of writing, and color settings</p> <p>1: There are no signposts at the tourist site or the signs do not meet the criteria. Inconsistent signs, using language that is not common, and spelling is not according to the rules, it is difficult to read, and there is no appropriate color setting</p>
Direction sign	Occupational Safety and Health signs at each tourist location	There are Occupational Safety and Health signs at each tourist location to provide instructions or signs of danger in tourist areas as an effort to ensure tourism safety [54], with the criteria for signs being consistent, using common language, suitability of spelling rules, clearly legible, and appropriate color settings for warnings are yellow, and red for hazards	<p>4: Many Occupational Safety and Health signs at tourist sites meet all the criteria. Signs are consistent, use everyday language, follow spelling rules, are easy to read, and have appropriate color settings. This sign provides clear and adequate information regarding Occupational Safety and Health in tourist areas</p> <p>3: There are several Occupational Safety and Health signs at tourist sites that meet most of the criteria. Signs tend to be consistent, use everyday language, conform to spelling rules, be legible, and have appropriate color settings</p> <p>2: There are several Occupational Safety and Health signs at tourist sites, but only a few meet the criteria. Some signs may be consistent and use everyday language, but there still needs to be improvement in spelling rules, clarity of writing, and color settings for warnings</p> <p>1: No Occupational Safety and Health signs at tourist sites or signs that do not meet the criteria. Inconsistent signs, using language that is not common, and spelling not according to the rules, it is challenging to read, and no appropriate color setting</p>

Indicator	Criteria	Description	Score
Direction sign	Gathering point signs at each tourist location	There are gathering point signs at each tourist location [55]. These signs are used to make it easier for tourists to gather, with the criteria for gathering point signs being consistent, using common language, conformity to spelling rules, clearly legible, and appropriate color settings for general information in green	<p>4: There are lots of assembly point signs at tourist sites that meet all the criteria. Signs are consistent, use everyday language, follow spelling rules, are easy to read, and have appropriate color settings. These assembly point signs provide clear and adequate information regarding assembly points in tourist areas</p> <p>3: There are several assembly point signs at the tourist site that meet most of the criteria. Signs tend to be consistent, use common language, conform to spelling rules, be legible, and have appropriate color settings</p> <p>2: There are several gathering point signs at tourist sites, but only a small number meet the criteria. Some signs may be consistent and use everyday language, but there still needs to be improvement in spelling rules, clarity of writing, and color settings</p> <p>1: No assembly point signs at the tourist site exist, or the existing signs need to comply. Inconsistent signs, using rare language, and spelling not according to the rules, it is challenging to read, and no appropriate color setting</p>
	Disaster signs/disaster information boards at each tourist location	There are disaster signs/disaster information boards at each tourist location [55], with the criteria for disaster signs/disaster information boards being consistent, use common language, suitability of spelling rules, can be read clearly, and appropriate color settings for warning are yellow, and for danger are red	<p>4: Many disaster signs/disaster information boards at tourist sites meet all the criteria. Signs are consistent, use everyday language, follow spelling rules, are easy to read, and have appropriate color settings. These signs provide clear and adequate information regarding disaster information</p> <p>3: There are several disaster signs/disaster information boards at the tourist site that meet most of the criteria. Signs tend to be consistent, use everyday language, conform to spelling rules, be legible, and have appropriate color settings</p> <p>2: There are several disaster signs/disaster information boards at tourist sites, but only a few meet the criteria. Some signs may be consistent and use everyday language, but there are still deficiencies in spelling rules, clarity of writing, and color settings for warnings</p> <p>1: No disaster signs/disaster information boards at the tourist site or the existing signs need to meet the criteria. Inconsistent signs, using language that is not common, and spelling not according to the rules, it is challenging to read, and no appropriate color setting</p>
	Evacuation route signs at each tourist location	Evacuation route signs at each tourist location to help tourists in emergencies with clear signs for tourists to follow [55]. These signs are used to make it easier for tourists to gather, with the criteria for gathering point signs being consistent, using common language, conformity to spelling rules, clearly legible, and appropriate color settings for general information in green	<p>4: Many evacuation route signs at tourist sites meet all the criteria. Signs are consistent, use everyday language, follow spelling rules, are easy to read, and have appropriate color settings. These evacuation route signs provide clear and adequate information regarding gathering points in tourist areas</p> <p>3: Several evacuation route signs at tourist sites meet most criteria. Signs are consistent, use everyday language, conform to spelling rules, are legible, and have appropriate color settings</p> <p>2: There are several evacuation route signs at tourist sites, but only a few meet the criteria. Some signs may be consistent and use everyday language, but there are still deficiencies in spelling rules, clarity of writing, and color settings</p> <p>1: No evacuation route signs at tourist sites or the existing signs do not comply. Inconsistent signs, using language that is not common, and spelling not according to the rules, it is challenging to read, and there needs to be an appropriate color setting</p>

Indicator	Criteria	Description	Score
Direction sign	Signs to help the disabled with embossed signs/symbols at each tourist location	There are signs to help the disabled with embossed signs/symbols at each tourist location. Physical limitations should not rule out opportunities for friends with disabilities to travel. It is appropriate for disabled-friendly tourism to begin to be encouraged to make it easier for persons with disabilities to carry out activities in various tourist destinations [46]	4: There are complete and clear embossed signs or symbols in all tourist areas, covering all areas that require visual assistance for persons with disabilities and facilitating accessibility and navigation 3: Signs or symbols are embossed in most tourist areas, providing clear and easy-to-read visual aids for persons with disabilities 2: There is one embossed sign or symbol provided, but it does not cover all areas that require visual aids for the disabled 1: There are no embossed signs or symbols provided to assist persons with disabilities at tourist sites

Procedure for Determining Natural Tourism Potential, Attraction Indicators.

Indicator	Criteria	Description	Score
Tourism Uniqueness	Tourist areas have tourism potential such as national park/wildlife/reserves/beaches/sea/mountains/caves/waterfalls/lakes/rivers	There is a national park in the tourist area with a wide enough area coverage so that it can support ecological processes with the uniqueness that exists	
		<ul style="list-style-type: none"> - There is a diversity of wildlife - There is a unique diversity of plants - Has unique ecosystems such as rainforests, grasslands, savannas, or water - There is cultural and historical uniqueness; there are historical relics, archaeological sites, or cultural heritage associated with the wildlife reserve 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		There is a wildlife reserve in a tourist area	
		<ul style="list-style-type: none"> - There is a diversity of wildlife, which includes rare or endangered species - There is a unique diversity of plants - Has unique ecosystems such as rainforests, grasslands, savannas, or water - There is cultural and historical uniqueness; there are historical relics, archaeological sites, or cultural heritage associated with the wildlife reserve 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		There is a beach in the tourist area	
		<ul style="list-style-type: none"> - The type and color of the sand seems to have the uniqueness of white sand - There are mangrove forests - There are plants that are unique to tourism such as the many pine trees - There is historical or cultural value 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		There is a sea in the tourist area with natural beauty such as the diversity of flora and fauna	
		<ul style="list-style-type: none"> - With a variety of fish - With a variety of sea coral - There are sea plants - There is historical and cultural value 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		There is a mountain in the tourist area	
		<ul style="list-style-type: none"> - There are landscapes that surround it such as rivers, waterfalls, and craters - There are plant species that live in mountainous environments - There are animal species that live in the mountainous environment - There is historical or cultural value 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect

Indicator	Criteria	Description	Score
Tourism Uniqueness	Tourist areas have tourism potential such as national park/wildlife/reserves/beaches/sea/mountains/caves/waterfalls/lakes/rivers	There is a cave in the tourist area	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		<ul style="list-style-type: none"> - There are lots of stalactites - There is a lot of stalagnite - There is a clear travertine - There is historical value 	
		There is a waterfall in the tourist area	
		<ul style="list-style-type: none"> - There is a uniqueness in the shape and size of the waterfalls as some waterfalls are tall and steep, while others are wider and flow calmly - There is stunning natural beauty around, such as green and fresh forests, unique and natural rocks, and clear river water - There is a diversity of plants, animals, and organisms that inhabit the environment. This includes epiphytic plants that grow on rocks or cliffs, fish that swim in waterfalls, birds that nest near them, and insects that live in the moist environment around waterfalls - There is historical or cultural value 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		There is a lake in the tourist area	
		<ul style="list-style-type: none"> - Unique water color such as clear blue/green/red water - There are views that surround it such as hills, mountains, and forests - Each lake has a unique ecosystem with distinctive plant and animal life. Some lakes even have endemic species that are not found elsewhere. Tourists can explore and learn about the ecosystem of the lake, such as coastal vegetation, wildlife, and ecological interactions that occur around the lake - There is historical or cultural value 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
		There is a river in the tourist area	
		<ul style="list-style-type: none"> - Clear river water - There are landscapes that surround it such as hills, mountains, and forests - There are aquatic plants, fish, water birds, reptiles, insects, and small mammals that can be found around the river - There is historical or cultural value 	4: There are >3 unique aspects 3: There are 3 unique aspects 2: There are 2 unique aspects 1: There is 1 unique aspect
Cleanliness	Availability of trash cans at each tourist location	The existence of trash cans in reducing waste scattered in every tourist location with organic and anorganic types [31]	4: There are trash bins at every tourist point, segregated as organic and anorganic 3: There are organic and anorganic waste bins, but not at all location points 2: There is a trash can but not separated between organic and anorganic 1: There are trash cans, but only 1 or 2 small amounts and not separated between organic and anorganic

Indicator	Criteria	Description	Score
Cleanliness	Vandalism in tourist areas	Vandalism in tourist areas (doodles, wild graffiti, vandalism, destruction, and environmental pollution) [32]. If there is vandalism, there are actions taken such as education or socialization, prevention in the form of supervision, and restoration actions to restore damaged tourist objects [33]	4: There is vandalism but socialization, prevention, and restoration actions will be carried out 3: There is vandalism but socialization and restoration will only be carried out 2: There is vandalism, but only restoration will be carried out 1: There is vandalism but socialization, prevention, and restoration are not carried out
Convenience	Clean air condition in tourist area	Clean air condition in tourist area. With the level of cleanliness in tourist areas in the range 1–50, it is said to be good (with particulate content of 50, sulfur dioxide 52, carbon monoxide 4000, ozone 120, nitrogen dioxide 80, and hydrocarbon 45), μ/m^3 [33]	4: There is no influence of industrial pollution in tourist areas; in the ISPU range 1–25, it is said to be good (excellent air quality level; does not have a negative effect on humans, animals, or plants) 3: There is no influence of industrial pollution in tourist areas; in the ISPU range of 26–50, it is said to be good (excellent air quality level; does not have a negative effect on humans, animals, or plants) 2: There is no influence of industrial pollution in tourist areas; in the ISPU range of 51–75, it is said to be moderate (the level of air quality is still acceptable for human, animal, and plant health) 1: There is no influence of industrial pollution in tourist areas; in the ISPU range of 76–100, it is said to be good (air quality level is still acceptable for human, animal, and plant health)
	The tourist area is free from noise	Tourist area free from noise ≤ 85 dB [34]. Noise needs to be considered at the location so as not to cause inconvenience or interfere with communication [35]	4: The tourist area is free from noise with a value of 50–70 dB 3: Noise in tourist areas from 71 to 90 dB 2: Noise in tourist areas from >90 dB 1: Noise in tourist areas from ≥ 100 dB

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