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Valuation Of The Economic Value Of Rammang-Rammang Natural Tourism Objects Using The Travel Cost Method (TCM) And Contingent Valuation Method (CVM)

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Abstract : Valuation Of The Economic Value Of Rammang-Rammang Natural Tourism Objects Using The Travel Cost Method (TCM) And Contingent Valuation Method (CVM)

This study analyzes the valuation of the economic value of the rammang-rammang tourist attraction with Direct Use Value (use value) measured using the Travel Cost Method (TCM) and Non-use Value (Non-use value) measured using the Contingent Valuation Method (CVM) by asking about Individual Willingness to Pay. This is the main reason researchers are interested in analyzing the valuation of the economic value of Rammang-Rammang in Maros Regency. This research is quantitative research with a survey method, namely conducting field observations and direct interviews with respondents using questionnaires as a data collection tool, which is then analyzed quantitatively. This study that the Total Economic Value generated from Rammang-rammang Natural Tourism Object each year, the Value of Willingness to Pay Visitors (Willingness to pay, WTP) voluntarily to participate in maintaining the preservation of the nature of Rammang-rammang Natural Tourism Object outside the Entrance Ticket Price (HTP), describes the assessment of visitors to the environmental conditions of the tourist attraction. This value can be used as a consideration by the Management of Tourism Objects and the Regional Government in making policies and alternative steps in overcoming problems if there is a lack of funds in maintaining the preservation of nature in Rammang-rammang Natural Tourism Objects and used as a consideration in determining the Entrance Ticket Price in the future.

Keywords: Valuation, Economics Value; TCM; CVM

INTRODUCTION

Indonesia is an archipelagic country that has broad coastal areas. The coast is defined as a unique region in the condition of natural landscape; the coast is a place where land and sea meet. Apart from that, Indonesia has enormous natural wealth, large and diverse, both in the form of renewable natural resources, natural resources non-renewable nature, marine energy (tidal, wave, wind and marine thermal energy conversion), as well as marine environmental services and small islands for marine tourism, sea transportation and resources biodiversity. With the marine wealth that Indonesia has, it is wrong to have a basic capital that must be managed optimally to make it happen for welfare and community well-being (Kim and Yoon, 2022).

Natural resources can produce goods and services that can be consumed directly and indirectly. Apart from producing goods and services, natural resources can also produce environmental services, which can provide benefits in the form of beauty and tranquillity, which can be used as a source of entertainment, which is closely related to tourism. Tourism is a travel activity undertaken by a person or group of people and supported by various facilities and services provided by the community, entrepreneurs, government and local government by visiting certain places for recreation, personal development or study. The uniqueness of a tourist attraction visited within a temporary period. The tourism sector in Indonesia is a major contributor to the economic progress of the country and the people of Indonesia *(Zulvianti et al*., 2022). The tourism sector generates positive growth for a country and contributes to the output of tourism destinations. This sector provides many opportunities. Countries with fewer opportunities have grown in recent years as tourism and investment opportunities increase due to tourism (Pulido-Fernández *et al*., 2019).

Indonesia has much promising tourism potential. Tourism in Indonesia is diverse and has its beauty; there is natural, culinary, shopping, and educational tourism, which attracts foreign and domestic tourists to every destination in Indonesia. Every province in Indonesia has the potential for natural and cultural wealth, the principal capital for developing the tourism sector. South Sulawesi is one of the provinces in Indonesia that is rich in natural resources and the environment, which is supported by a natural environment in the form of mountains, seas, rivers, and forests, which can be used as natural tourist attractions. The potential for natural resources and the environment in South Sulawesi is spread across various districts and cities, one of which is Maros Regency, which has natural resources and an environment that has the natural potential

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to be preserved by making it a natural tourist attraction, so that it attracts people's interest in visiting and travelling (Surya *et al.*, 2020).

In addition to being famous for being the third largest karst cluster in the world, the Rammang-Rammang tourist area is also famous for the beauty of its river, which is located in between the towering green karst clusters, has beautiful hills with unique shapes in the form of domes, towers, cones, and stalactites and stalagmites in its karst caves which have a lot of wealth in the form of biodiversity, natural phenomena, cultural diversity and geological diversity. The karst area around the Rammang-Rammang Hamlet attracts the community's attention, especially those who like to explore karst nature (Cha *et al.*, 2020). The people of Rammang-Rammang Hamlet interpret the term Rammang-Rammang as a cloud. They think Rammang-Rammang means cloud or fog. When this village or area becomes popular among international and domestic tourists, Rammang-Rammang will become increasingly well-known to the community. This area is the choice of tourists because visiting here can enjoy the natural scenery and karst landscape, which is one of the unique places that tourists can enjoy. In other words, nature tourism and special interest tourism activities attract tourists to Rammang-Rammang.

Apart from the fantastic beauty of Kasrt, Rammang-rammang Nature Tourism also has various tourist attractions, including going along the Pute River by boat along the river surrounded by nipa trees and mangroves with green karst background. There is a Limestone Forest Park, Bulu' Barakka Cave, Bidadari Lake, Palm Cave, Guan Pasaung, Traditional Dance Performances and Various Souvenirs, which are products of the creative economy of Berua Village, which are supported by various facilities provided, such as Culinary Tourism and Cafes and Accommodation with a natural. However, the increasing number of tourists will bring bad possibilities if not considered aspects of sustainability properly, such as the widespread number of buildings, loss of land cover, degradation, waste generation, and environmental pollution, which results in less aesthetics (Nunna and Banerjee, 2022).

The existence of the Rammang-Rammang natural tourist area can be used as one of the leading tourist destinations. This is supported by the beauty of the natural panorama, and utilizing the attractions of this natural tourism certainly requires efforts to manage, develop, and increase marketing, promotion and information to the public and fulfil infrastructure to support the sustainability of this natural tourism. Readiness of social, economic, and environmental infrastructure available at tourism destinations. This study aims to analyse the readiness of supporting infrastructure at tourism destinations to achieve Sustainable Tourism Development (Dalimunthe *et al.*, 2020). This effort can be realized by knowing the economic

value of natural tourism. Economic value can be obtained through travel costs with an approach to visitors and the willingness to pay from visitors voluntarily for the natural tourism benefits obtained. Determining the value of tourism services really depends on the appraiser (visitor) so it is necessary to know the characteristics of visitors to the tourist attraction. The economic value of the Rammang Rammang Natural Tourism Object is not yet known. The large total economic value generated from the Rammang-rammang Natural Tourism Object each year, therefore the Tourism Object Management and the local government need to pay special attention to maintaining the sustainability of nature and developing the Rammang-rammang natural tourism object by improving and adding various facilities that allow visitors to enjoy the tourist object comfortably which is equivalent to the costs incurred by visitors. Estimated WTP values can be used in future benefit-transfer studies, and the findings of the econometric models can be used in developing strategies that would promote greater stakeholder acceptance and participation. The approach presented here provides another step towards a more comprehensive characterization of soil value that integrates environmental valuation and econom- ric modelling with geospatial data (Dimal and Jetten, 2021). The research questions that we have in this study are:

RQ1: How does the Travel Cost Method (TCM) estimate the direct use value of the Rammang-Rammang tourist attraction, and what factors influence visitor willingness to travel and spend for recreational purposes?

RQ2: What is the estimated non-use value of the Rammang-Rammang tourist attraction using the Contingent Valuation Method (CVM), and how do societal perceptions of preservation and conservation influence willingness to pay for its sustainability?

LITERATURE REVIEW

The importance of the fishing sector goes beyond food provisioning by generating both positive and negative externalities (Ceccacci *et al.*, 2024). The benefits of tourism and the recreational appeal of coastal areas are often invoked among the positive externalities, even if their measurement may be hampered by the lack of market information. Non-market valuation methods can thus be helpful in quantifying the societal importance of fisheries. Here, we focus on the recreational value of harbours by applying the travel cost method and analysing whether small-scale vessels represent an attractive amenity for individuals engaging in outdoor recreation. We use an existing dataset with wide EU coverage and match information on individuals' number of visits to coastal environments with fishing capacity indicators at the

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chosen recreational destination. The results suggest that the presence of small-scale capacity increases the attractiveness of coastal locations, as we estimate the loss in recreational value due to a reduction in only one artisanal vessel to be 0.05€ per visit. By monetising the welfare effects of changes in fishing capacity, these findings can justify allocating financial support to the small-scale fishery sector.

The use of nonmarket valuation in environmental policy at the US Environmental Protection Agency (EPA) (Petrolia *et al.*, 2021). We examine trends in the literature over the last forty-five years and compare those trends to how often nonmarket benefits are monetised and which methods are used in 49 recent EPA Regulatory Impact Analyses. Research grants and their focus. We conclude that the nonmarket valuation literature continues to grow but that many nonmarket benefits go unquantified and unmonetised in policy analysis. Policy applications of nonmarket studies are generally limited to a small and dated body of work. Further, we identified a range of different instruments and evaluation techniques but no clearly defined methodological framework that studies adhered to. Greater consensus is needed on the application of methodologies used to value UGBS interventions if evaluations are to remain credible and inform future investments (Tate *et al.*, 2024).

Contingent valuation (CV) is a widely used approach among stated-preference techniques for eliciting WTP if prices do not exist or do not reflect actual costs, for example, when services are covered by insurance (Steigenberger *et al.*, 2022). This review aimed to provide an overview of relevant factors determining WTP for health services to support variable selection. Methods A comprehensive systematic literature search and review of CV studies assessing determinants of WTP for health services was conducted, including 11 electronic databases. Two of the authors made independent decisions on the eligibility of studies. We extracted all determinants used and related p values for the effect sizes (e.g. reported in regression models with WTP for a health service as an outcome variable). Determinants were summarised in systematic evidence tables and structured by thematic domains. Results We identified 2082 publications, of which 202 full texts were checked for eligibility. We included 62 publications on 61 studies in the review. Across all studies, we identified 22 WTP determinants and other factors from 5 thematic domains: sociodemographic characteristics, perceived threat, perceived benefit, perceived barriers, and other information. Conclusion our review provides evidence on 22 relevant determinants of WTP for health services, which may be used for variable selection and as guidance for planning CV surveys. Endogeneity should be carefully considered before interpreting these determinants as causal factors and potential intervention targets.

The calculation results revealed a value of USD 84.538 per visitor and a value of USD 1,986,657.163 per year, indicating the high value and importance of the region (Kheyri *et al.*, 2020). The analysis showed that socio-economic variables have a significant role in the use or non-use of the resort. The obtained R2 coefficient was 0.82, indicating that around 82% of the changes in the number of visitors can be justified by the variables introduced in the model. The results also revealed the need to pay more attention to this region and formulate a tourism development plan

The economic value of UFP information by evaluating the willingness-to-pay (WTP) for the UFP monitoring and reporting system (Cho and Cho, 2023). We used the contingent valuetion method (CVM) and the one-and-one-half-bounded dichotomous choice (OOHBDC) spike model. We analysed how the respondents' socio-economic variables, as well as their cognition level of PM, affected their WTP. Therefore, we collected WTP data from 1040 Korean respondents through an online survey. The estimated mean WTP for building a UFP monitoring and reporting system is KRW 6958.55–7222.55 (USD 6.22–6.45) per household per year. We found that people who are satisfied with the current air pollutant information and generally possess relatively greater knowledge of UFPs have a higher WTP for a UFP monitoring and reporting system. We found that people are willing to pay more than current air pollution monitoring systems' actual installation and operating costs. If the collected UFP data is disclosed in an easily accessible manner, as is current air pollutant data, it will be possible to secure more public acceptance for expanding the UFP monitoring and reporting system nationwide.

Valuation of ecosystem services can be typical as use values and passive use values. However, the prevailing conventional markets provide economic instruments such as price tags to ecosystem use values but rarely on passive use values, which is limited since it does not provide comprehensive ecological values that will adequately support rational decision-making processes regarding ecological conservation. findings provide an economic value for nonuse values that can be incorporated in total economic valuation (TEV) studies locally as well as provide an impetus on payment of ecosystem services (PES) (Geng *et al.*, 2023).

METHODS

This quantitative research uses a survey method, namely conducting field observations and direct interviews with respondents using questionnaires as a data collection tool, which is then analysed quantitatively. This research was carried out in the Rammang Rammang Natural Tourism Object area, which is administratively located in Salenrang Village, Bontoa District,

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Maros Regency, South Sulawesi Province.

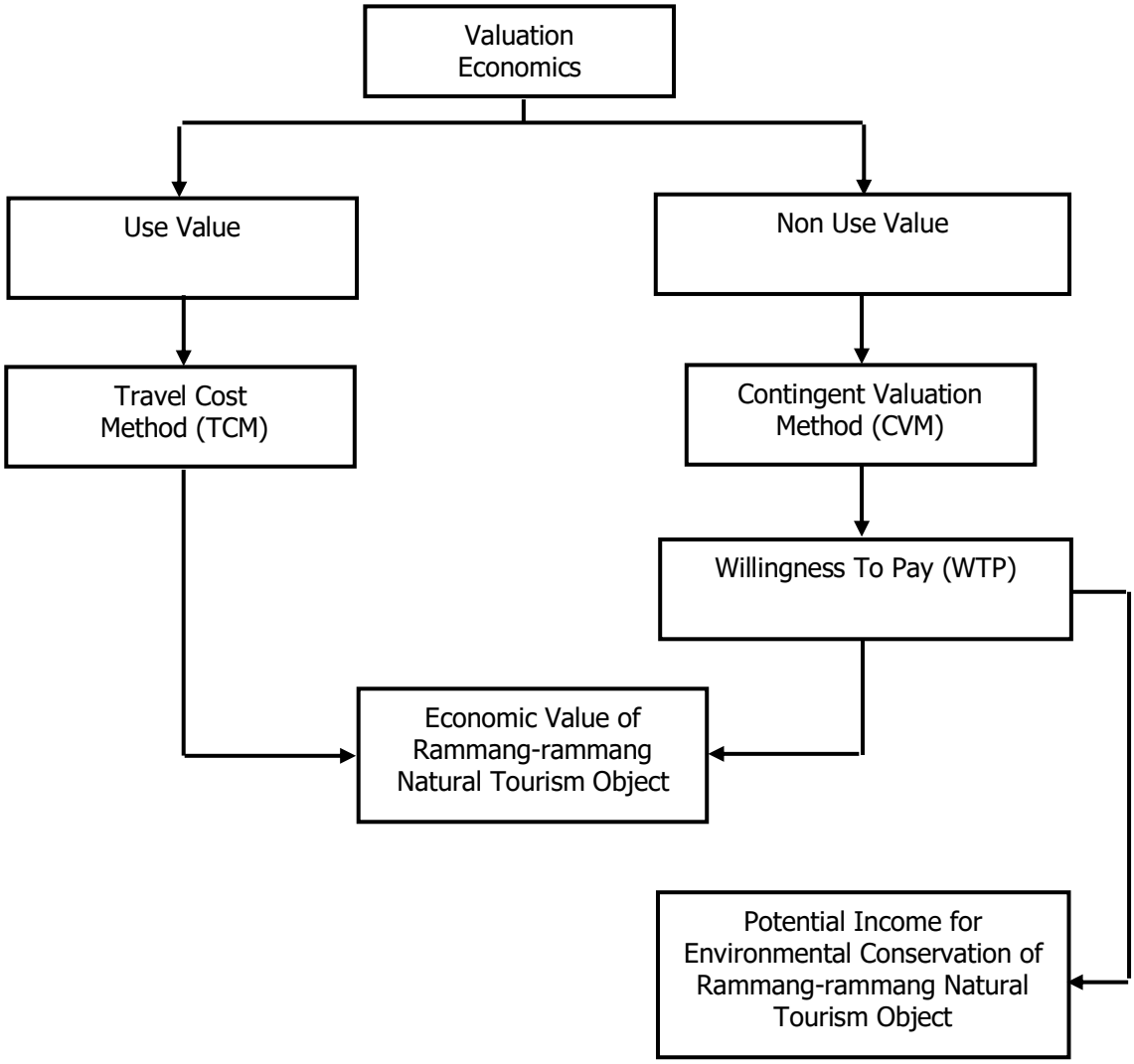

Figure 1. Conceptual Framework of Research

The choice of location was determined because this tourist attraction is one of the tourist attractions named the third-largest karst mountain area in the world. The Rammang-Rammang tourist attraction is one of the 10 National Tourism Strategic Areas (KSPN), a national tourism priority. This research will take place in October 2023. The data used in this research consists of 2 (Two) Primary Data Sources, namely direct data collected by researchers from the first source, in this case, respondents who have visited tourist attractions by filling out questionnaires prepared by researchers. Secondary Data is usually prepared in the form of documents, sourced from several government agencies and publications, and research results that have been Data analysis was carried out using the Travel Cost and willingness to pay method. The conceptual

framework in this research can be seen in the image below.

Travel costs are round-trip transportation costs from residence to tourist locations and other expenses during the trip and within the tourist area (Mardjuka, 2005).Overall calculated using the formula:

$$BPT = BT + (BKr - BKh) + Bdk + BP + BM + Bln$$

Which BPT Total Travel Costs (rupiah), BPT total Travel Costs (rupiah), BT Transportation costs,Bkr Cost of consumption at recreation areas,Bkh Daily consumption costs, Cf Documentation costs,BP Parking Fee,BM Entry Fee,Bln Other costs.

The willingness of visitors to pay or not to pay for the existence of a tourist attraction can be estimated using the following average calculation method :

$$\text{EWTP} = \frac{\sum_{I}^{N} \quad Wi}{n}$$

Which EWTP The average willingness-to-pay/Willingness to Pay (Rupiah) , Wi (The WTP value for the iii-th respondent) , n (The total number of respondents) and I (The iii-th respondent willing to pay)

RESULT AND DISCUSSION

Before reviewing the research results further, at this stage, the researcher describes the respondents who are the objects of this research. This description is an initial description of the research segment which provides empirical data on the characteristics of respondents selected using accidental sampling with 39 respondents.

Gender

In selecting the sample, no special treatment was given to men or women. The selected category of respondents are those who visit tourist attractions, selected randomly, and all populations have the right to become respondents, have the right to refuse to fill in the information required for data collection, and have the right to keep other personal identities such as name, address and telephone/cellphone number confidential. The following is a table of respondents according to gender.

Table. 1. Respondents According to Gender

Gender	Number of Respondents	Percentage (%)
Male	17	43.6
Female	22	56.4
Total	39	100%

Source: Primary data output after processing, 2024; (Juardi, 2024).

Based on the data above, of the 39 respondents selected randomly, the number of female

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respondents dominated more than male respondents. This fact shows that women have a higher tendency to travel than men.

Respondent's age

Age is seen as one of the factors that influences a person's level of intensity in visiting tourist attractions. The age of respondents is limited to those aged over 15 years because at the age of 15 years and above respondents are considered able to decide for themselves and the allocation of their income in tourism travel activities. The following is respondent data according to age level.

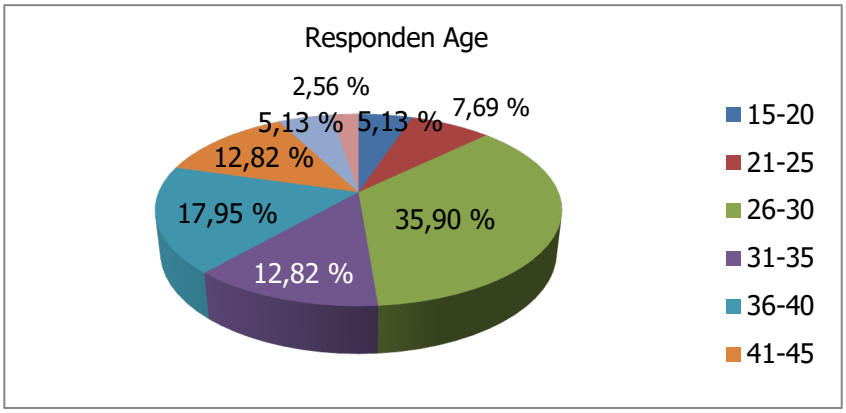

Figure 2.Diagram of respondents by age

Shows that the respondents in this study who visited the most tourist attractions were aged 26-30 years, with a percentage of 35.90 per cent of the total respondents. The lowest age of respondents was 51-55 years old, with a percentage of 2.56 percent of the total respondents. This shows the fact that the Productive Age is more dominant in visiting and enjoying tourist attractions with the family.

Level Of Education

Education is the level of formal education achieved by respondents, which is one of the determining factors for Work Productivity, which is used as an indicator in looking at the Quality of Human Resources. Respondent's education is categorised into several levels of education, starting from level elementary school (SD), Junior high School (SLTP), Senior High school (SLTA), undergraduate (S1), to postgraduate/master's programs (S2). Following are Respondent Data based on Education Level. Based on graph 2 shows that the majority of respondents who visit tourist attractions are respondents who have completed education at the Bachelor level, with a percentage of 56.41 per cent of the total respondents. This fact shows that higher levels of education are easy to receive information, have an interest in the development of tourist attractions, and are aware of the value that must be paid so that tourist attractions can be

developed and the importance of protecting the environment.

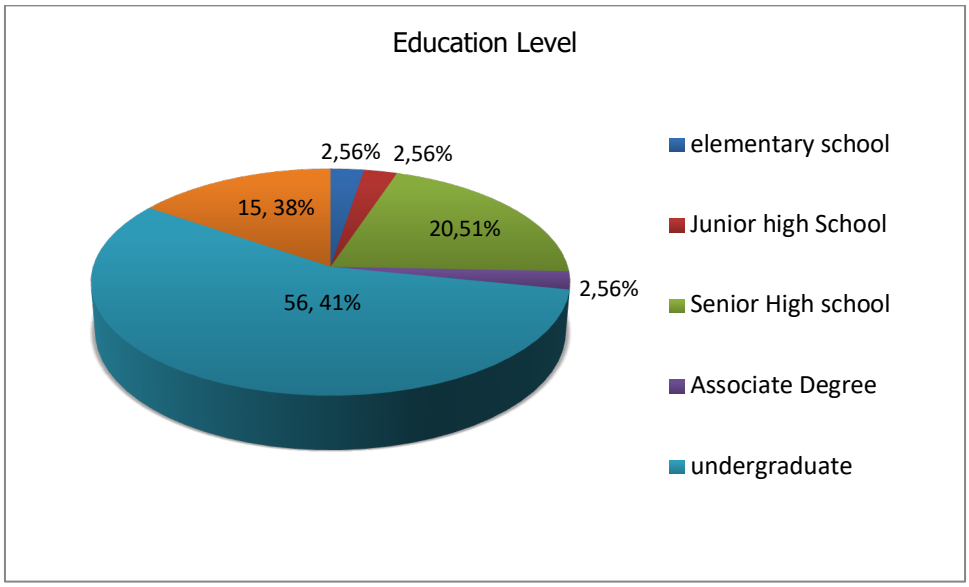

Figure 3. Diagram of respondents based on education level

Respondent's occupation

Occupation is an element in looking at the Respondent's activities and income level. Respondents' jobs were divided into 4 categories, starting from jobs as civil servants (PNS), private employees, entrepreneurs/entrepreneurs, students, and housewives. Following are Respondent Data by Occupation.

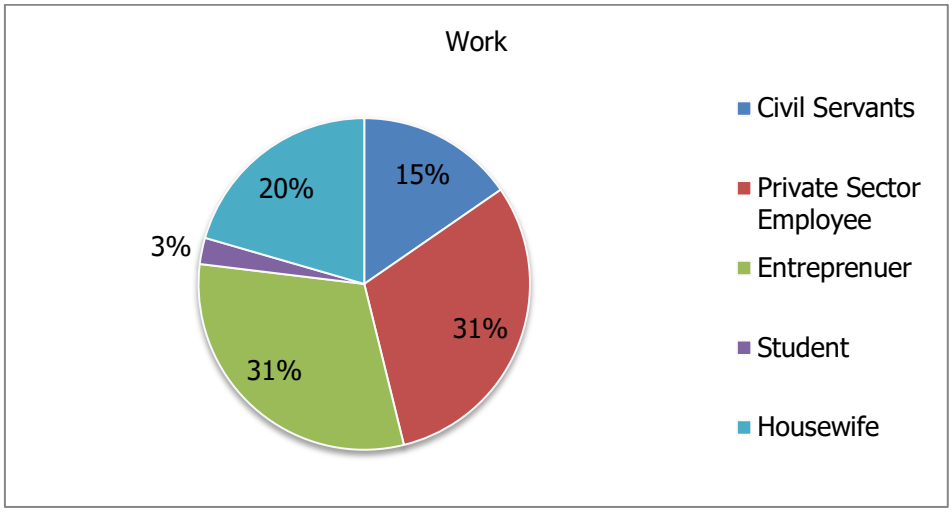

Figure 4. Respondent diagram by Occupation

Based on the data above, it shows that the relatively high occupations in visiting tourist attractions are respondents who work as private employees and entrepreneurs or entrepreneurs, with a respective percentage of 30.77 per cent of the total respondents. This shows that jobs

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outside the Civil Service (PNS) have higher intensity and have more free time to visit tourist attractions.

Respondent's income

Income is an indicator of the respondent's ability to allocate their income and spend money on visiting tourist attractions. In this research, respondents' income varied, starting from Rp. 1,000,000 to < Rp. 5,000,000,-. Following are Respondent Data based on Income Level.

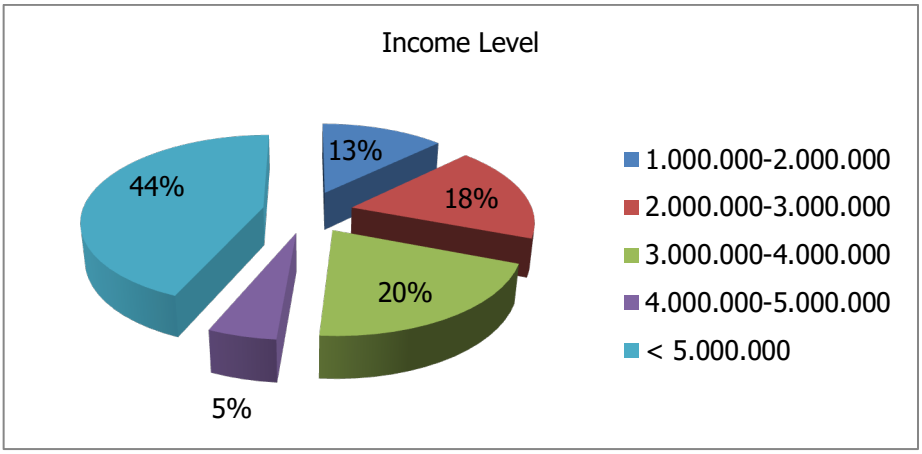

Figure 5. Respondent diagram based on income

Based on the graph above, it shows that the highest income level of respondents visiting tourist attractions is respondents with an income level of more than Rp. 5,000,000,- with a total of 17 respondents with a percentage of 43.45 percent of the total respondents. This fact shows that the higher a person's income level, the greater the opportunity to allocate his income to finance tourist trips and pay for environmental services at tourist attractions.

Respondent's Area of Origin (Domestic)

The area of origin is where the respondent lived before coming to visit the tourist attraction. This shows the distance (Km), costs incurred, and the respondent's time to visit the tourist attraction. In this research, the Area of Origin is divided into 2 (Two) Zones for Domestic Tourists, namely Zone I (One) within the Administrative Area of South Sulawesi Province, and Zone II (Two) Outside the Administrative Area of South Sulawesi Province. Below is the respondent data based on regional origin.

Table. 2. Respondents According to Region of Origin (Domestic)

Region of Origin	Number of Respondents	Percentage (%)
Zone I	23	58.97
Zone II	16	41.03
Total	39	100

Source: Primary data output after processing, 2024; (Juardi, 2024).

Based on the data above, it shows that of the 39 respondents, there were 23 respondents with a percentage of 58.97 percent of the total respondents who came from Zone I, namely from Makassar City, Parepare City, Luwu Regency, Soopeng Regency, Maros Regency, and Enrekang Regency and 16 Respondents with a percentage of 41.03 percent coming from Zone II, namely from Polman Regency, West Sulawesi Province, Palu City, Central Sulawesi Province, Samarinda City, East Kalimantan Province, Biak Numfor, Papua Province, Bima City, West Nusa Tenggara Province, Bekasi Regency, West Java Province, City Surabaya, East Java Province and Jakarta City, DKI Jakarta Province, which is the capital of the Republic of Indonesia. This fact shows that tourists who visit the Rammang-rammang Natural Tourism Object, not only come from the Administrative Area of South Sulawesi Province but tourists who visit also come from various Regencies and Cities from outside the South Sulawesi Province which makes this tourist attraction famous in Indonesia even overseas.

Tourist visits

The Number of visits category is an indicator that can briefly illustrate the number of times respondents visited the Rammang-rammang Natural Tourism Object during the last 6 years for the 2018-2023 period. The following is respondent data based on the number of visits to the Rammang-rammang Natural Tourism Object.

Table 3. Respondents According to Number of Visits 2018-2023

Number of Visits	Number of Respondents	Percentage (%)
1 Times	26	66.67
2 Times	10	25.64
3 Times	3	7.69
Total	39	100%

Source: Primary data output after processing, 2024; (Juardi, 2024)

The data above shows that respondents in this study had a varying number of visits. For Category 1 (One) Visit, there were 26 respondents with a percentage of 66.67 per cent, while Category 2 (Two) Times had 10 respondents with a percentage of 25.64 per cent. , and category 3 (Three) Times with a total of 3 respondents with a percentage of 7.69 per cent of the Total Respondents. For Category 1 (One), the visit was carried out during the Research Period.

Economic Value Valuation

The economic assessment of the Rammang-rammang Natural Tourism Object is based on the benefit aspect by determining the Economic Value, including Direct Use Value, Non-Use Value, and Total Use Value. Direct Use Value is measured using the Travel Cost Method (TCM) and Non-Use Value is measured using the Contingent Valuation Method (CVM) by asking the

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individual's willingness to pay (Willingness to Pay). Several studies were conducted using economic valuation (Kusumawardani, 2019).

Economic valuation is an effort to give a quantitative value to the goods or services produced, be it value market and non-market value (Zein, 2021). In general, economic valuation resources are an economic tool/measuring tool to estimate the value of goods and services produced. Economic valuation plays an important role in managing natural resources and the environment. If the quality of natural resources decreases, then the availability of goods or services will also decrease. By considering the economic value in environmental management such as tourism, then economic valuation is one prerequisite in making tourist attraction management plans. As for goals, The basis of economic valuation is to assist decision-making in guessing economic efficiency from various possible uses carried out (Mandela and Harini, 2021). Therefore, economic valuation indicators can be used as important indicators in raising awareness of individuals in particular and society in general regarding the extraction and management of natural resources and the environment (Barki and Rachmah, 2023).

Valuation of Direct User Economic Value (use value) using the Travel Cost Method (TCM)

The travel costs (Travel Cost Method) for each individual are different when visiting each tourist attraction. The farther the individual lives from the location of the tourist attraction, the greater the costs incurred, and vice versa. Travel costs include The sum of transportation costs, consumption costs, accommodation costs, parking costs, ticket costs, souvenir purchase costs, etc. In this research, the number of respondents whose data was taken was 39 people from various regions, both across districts and provinces, for domestic visitors. The following is data on respondents' travel costs for round-trip visits to the Rammang-rammang natural tourist attraction.

$$BPT = BT + (BKr - BKh) + Bdk + BP + BM + Month$$

In which, BPT Respondent's Travel Costs (rupiah),BT Transportation costs, Bkr Cost of consumption at recreation areas, Bkh Daily consumption costs,Cf Documentation costs, BP Parking Fee, BM Entry Fee, Month Other costs.

Based on the data, the smallest travel cost is IDR. 50,000 per visit originating from Makassar City, while the largest travel costs incurred by respondents were Rp. 3,000,000/-/ Per visit from outside South Sulawesi Province, namely Biak, Papua Province, DKI Jakarta and the Former City of West Java Province.

Table 4.Respondent's Round Trip Travel Costs to Rammang-rammang Natural Tourism Object (Rupiah)

Respondent	Place of Origin	(Travel Cost)	Respondent	Place of Origin	(Travel Cost)
1	Enrekang	1.000.000	24	Polman	1.000.000
2	Maros	400.000	25	Palu	1.500.000
3	Pare-pare	200.000	26	Samarinda	2.000.000
4	Luwu	1.000.000	27	Biak-Papua	3.000.000
5	Maros	300.000	28	Bima	2.500.000
6	Soppeng	500.000	29	Surabaya	2.500.000
7	Makassar	400.000	30	Surabaya	2.500.000
8	Makassar	350.000	31	Jakarta	3.000.000
9	Makassar	150.000	32	Jakarta	3.000.000
10	Makassar	50.000	33	Jakarta	3.000.000
11	Makassar	200.000	34	Jakarta	3.000.000
12	Makassar	500.000	35	Jakarta	3.000.000
13	Makassar	500.000	36	Bekasi	3.000.000
14	Makassar	600.000	37	Bekasi	3.000.000
15	Makassar	250.000	38	Bekasi	3.000.000
16	Makassar	300.000	39	Bekasi	3.000.000
17	Makassar	300.000			
18	Makassar	300.000			
19	Makassar	400.000			
20	Makassar	300.000			
21	Makassar	300.000			
22	Makassar	300.000			
23	Makassar	300.000			
Amount		8.900.000			42.000.000
Total				50.900.000	
Average				1.305.128	

Source: Primary data output after processing, 2024; (Juardi, 2024).

The total total travel costs (BPT) of 39 respondents was IDR. 50,900,000,- Per Visit. Calculation of the average cost of a visitor's trip to the Rammang-Rammang natural tourist attraction using formula :

$$ATC = \sum \frac{\mathbf{BPT}}{\mathbf{n}}$$

In which, ATC Average Cost of Visitor Trips (rupiah/person), BPT Total visitor travel costs

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(rupiah), n Number of visitors interviewed (people)

$$\text{ATC} = \frac{50.900.000}{39} = 1.305.128$$

Table 5. Number of Tourists/Visitors to the Rammang-rammang Natural Tourism Object in 2021-2022

Year	Number of Domestic Visitors	Number of Visitors	Total Visitors
2021	31.124	97	31.221
2022	49.979	1.561	51.540
Amount	81.103	1.658	
Average	40.551,5	829	

Source: Maros Regency Tourism, Youth and Sports Office, Year 2023.

The Average Travel Cost (ATC) of Respondents is obtained from the Total Travel Costs of Respondents (BPT) divided by the Number of Respondents by IDR. 1,305,128,-/Respondent Per Visit. the total travel costs for domestic visitors for 1 (one) year are obtained using the formula below.

$$\text{TTC} = ATC\ x\ visitors/Year$$

In which, TTC Total Domestic Visitor Travel Costs (Travel Cost Method, TCM), ATC, Average Travel Cost (ATC) of Respondents,P Population/Number of Visitors (2022)

$$\text{TTC} = Rp.\ 1.305.128\ x\ 49.979\ Visitors/Year$$

$$\text{TTC} = \text{Rp. } 65.228.992.312,-$$

As a result of adding up the data above, it can be seen that the total travel cost for visitors/domestic population is the average travel cost of respondents (ATC) multiplied by the number of domestic visitors in 1 (one) year, in the 2022 period, which is IDR. 65,228,992,312,- Per Year.

Suppose it is assumed that the number of domestic visitors in 2023 based on the average value of the number of domestic visitors for 2021-2022 is 40,551 visitors. In that case, the total travel costs for domestic visitors for visitors in 2023 are the average travel costs for respondents multiplied by the number of domestic visitors for 2023:

$$\text{TTC} = Rp.\ 1.305.128\ x\ 40.551\ Visitors/Year$$

$$\text{TTC} = \text{Rp. } 52.924.245.528,-$$

Total Travel Costs for Domestic Visitors for 2023 is IDR. 52,924,245,528,- Per Year.

Valuation of Economic Value without Use (Nonuse value) using the Contingent Valuation Method (CVM)

Contingent Valuation Method is a method used to ask visitors' willingness to pay voluntarily, in this case, the willingness to pay as a form of visitor contribution to preserving nature at the tourist attraction location that has been enjoyed. The costs incurred in this case are not included in the costs. Tourist Attraction Entrance Ticket of the 39 respondents who were asked "Are visitors willing to participate in maintaining nature conservation at the Rammang-Rammang natural tourist attraction?" all respondents answered, "Agree". The costs incurred by visitors vary, depending on the visitor's financial capabilities. The following is data on the Willingness to Pay the Value of Respondents After Enjoying the Rammang-rammang Natural Tourism Object.

The willingness to pay is the willingness of every individual or society to pay or spend money in order to improve environmental conditions according to the desired standards. Willingness to pay is based on consideration of the costs and benefits that consumers will obtain (Majid et al., 2020). According to the concept, Willingness to pay (WTP) is the maximum price a consumer pays for a good or service or measures the value that consumers are willing to pay for goods and services. In other words, WTP is defined as measuring the benefits of something products from consumers.

Based on the data in Table 6, the willingness to pay (willingness to pay) of respondents voluntarily as a form of visitor contribution to preserving nature at tourist attraction locations that have been enjoyed is the smallest value of IDR. 20,000,- Per Visit with a Respondent's Income of Rp. 1,500,000,- Per Month, while the highest Willingness to pay is Rp. 400,000,- Per Visit with Respondent Income of Rp. 4,500,000,- Per Month. The data above shows that not all respondents with the highest income per month are willing to pay a high amount. Likewise, respondents with low income are not all willing to pay a low value. There are even respondents with low income per month who are willing to pay more than the value. willingness to pay respondents with low income.

The total number of Willingness to Pay (WTP) from 39 Respondents is IDR. 4,780,000,- To calculate the estimated average value of visitors' willingness to pay, do it in the following way:

$$\mathrm{EWTP} = \frac{\sum_{I}^{N} \quad Wi}{n}$$

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Table 6. Value of Respondents' Willingness to Pay After Enjoying the Rammang-rammang Natural Tourism Object (Rupiah

Respondent	Place of Origin	(Travel Cost)	Respondent	Place of Origin	(Travel Cost)
1	2.500.000	100.000	21	1.500.000	200.000
2	3.500.000	300.000	22	4.500.000	100.000
3	5.000.000	50.000	23	3.500.000	100.000
4	5.000.000	100.000	24	2.500.000	100.000
5	1.500.000	100.000	25	4.500.000	400.000
6	3.500.000	100.000	26	2.500.000	100.000
7	2.500.000	100.000	27	1.500.000	20.000
8	5.000.000	100.000	28	2.500.000	50.000
9	2.500.000	100.000	29	5.000.000	200.000
10	5.000.000	70.000	30	5.000.000	200.000
11	5.000.000	50.000	31	5.000.000	70.000
12	5.000.000	100.000	32	5.000.000	150.000
13	3.500.000	100.000	33	5.000.000	50.000
14	3.500.000	100.000	34	3.500.000	200.000
15	2.500.000	100.000	35	5.000.000	150.000
16	3.500.000	150.000	36	5.000.000	50.000
17	5.000.000	250.000	37	5.000.000	50.000
18	5.000.000	200.000	38	3.500.000	100.000
19	1.500.000	100.000	39	1.500.000	70.000
20	5.000.000	150.000			
Amount		2.420.000			2.360.000
Total				4.780.000	
Average				122.564	

Source: Primary data output after processing, 2024; (Juardi, 2024).

In which, WTP Estimated average value of willingness to pay (Willingness to Pay),Wi WTP Value I, n Number of Respondents, I Respondent I who is willing to pay.

$$\text{EWTP} = \frac{4.780.000}{39} = 122.564$$

The estimated Average Value of Respondents' Willingness to Pay is obtained from the Total Number of Respondents' Willingness to Pay divided by the Number of Respondents,the result being Rp. 122,564,-/ Respondent Per Visit. The total Willingness to Pay (TWTP) of Domestic Visitors for 1 (One) Year is obtained using the following calculation:

$$\text{TWTP} = \sum_{i=l}^{n} WTPi \binom{ni}{N} x\ P$$

In which, TWTP Total willingness to pay (Willingness to pay, WTP),WTPi WTP value of the individual sample,ni Number of 1st samples who are willing to pay large WTP,N Number of Samples,P Total Population/Number of Domestic Visitors Year 2022,I ith respondent who is willing to pay

$$\text{TWTP} = Rp.122.564\ x\ \binom{38}{39} x\ 49.979\ Visitors/Year$$

$$\text{TWTP} = \text{Rp. } 5.968.558.819,-$$

As a result of adding up the data, it can be seen that the value of the willingness to pay (WTP) of domestic visitors voluntarily to participate in preserving nature throughout the year at the Rammang-Rammang natural tourist attraction during the 2022 domestic visitor period is IDR. 5. 968,558,819,- Per Year. Suppose it is assumed that the number of domestic visitors in 2023 will be 40,551 domestic visitors, based on the average value of domestic visitors in 2021-2022. In that case, the value of willingness to pay domestic visitors voluntarily to participate in preserving nature in 2023 is.

$$\text{TWTP} = Rp.122.564\ x\ \binom{38}{39} x\ 40.551\ Visitors/Year$$

$$\text{TWTP} = \text{Rp. } 4.842.654.488,-$$

The total value of willingness to pay (WTP) of domestic visitors for 2023 is IDR. 4,842,654,488,- Per Year. This is the value of environmental services in the Rammang-rammang Natural Tourism Object. States that a person's level of understanding about a tourist attraction influences the determination of the total WTP value, if visitors can make a good assessment of the tourist attraction, the total WTP value tends to be greater, and vice versa. The WTP value which is relatively small requires that tourist attraction managers immediately carry out development and improvement of tourist objects in the form of improvements and additional facilities at tourist attractions so that visitors are willing to pay more because they are by visitors' wishes so that it will improve the environmental services produced by tourist attractions.

Total Economic Value

The economic value of the rammang-rammang natural tourist attraction is based on direct users (use value) using the Travel Cost Method (TCM) or travel costs that have been incurred and based on non-direct use (nonuse value) using the Contingent Valuation Method (CVM) which is measured using Willingness to pay (WTP) of visitors for natural tourism is

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obtained by adding up the total travel costs and willingness to pay several studies were carried out (Çay and Taşlı, 2020), and(Liu *et al.*, 2019) . So the formula for finding the economic value is as follows:

$$NE = TTC + TWTP$$

In which, NE Economic Value,TTC Total Travel Cost (Travel Cost Method (TCM), TWTP Total Willingness to pay (WTP), NE TTC + TWTP, NE = Rp. 65.228.992.312,- + Rp. 5. 968.558.819,-, NE = Rp. 71.197.551.130,7,-

The total economic value of the Rammang-Rammang natural tourist attraction for domestic visitors for the 2022 period is IDR. 71,197,551,130.7,- Per Year. If it is assumed that the number of domestic visitors in 2023 will be 40,551 visitors based on the average number of domestic visitors in 2021-2022, then the total economic value in 2023:

In which,NE = TTC + TWTP, NE = Rp. 52.924.245.528,- + Rp. 4.842.654.488,-, NE = Rp. 57.766.900.016,- the total economic value is IDR. 57,766,900,016,- Per Year

Potential revenue for environmental preservation of the Rammang-rammang natural tourist attraction

The potential revenue value for the preservation of the rammang-rammang natural tourist attraction based on Willingness to pay (WTP) is obtained from the following calculation:

$$\text{TWTP} = \sum_{i=l}^{n} WTPi \binom{ni}{N} x\ P$$

In which, TWTP = Total willingness to pay (Willingness to pay, WTP), WTPi = WTP value of the individual sample,ni Number of 1st samples who are willing to pay large WTP,N Number of Samples,P Total Population/Number of Visitors in 2022, Iith respondent who is willing to pay.

$$\text{TWTP} = Rp.122.564\ x\ \binom{38}{39} x\ 49.979\ Visitors/Year$$

$$\text{TWTP} = \text{Rp. } 71.197.551.130,7,-$$

The potential amount of revenue for the preservation of the Rammang-rammang natural tourist attraction is based on Willingness to pay (WTP) during the 2022 Domestic Visitor Period, excluding the Entry Price (HTM) of IDR. 71,197,551,130.7,- Per Year. If it is assumed that the number of domestic visitors in 2023 will be 40,551 domestic visitors, based on the average value of domestic visitors in 2021-2022, then the value of willingness to pay domestic visitors voluntarily to participate in preserving nature in 2023 is

$$\text{TWTP} = Rp.122.564\ x\ \binom{38}{39} x\ 40.551\ Visitors/Year$$

$$\text{TWTP} = \text{Rp. } 4.842.654.488,\text{-}$$

The potential Total Revenue for Plastering the Rammang-Rammang Natural Tourism Object Based on Willingness to Pay (WTP) of Domestic Visitors for 2023 is IDR. 4,842,654,488,- Per Year, excluding Entry Ticket Price (HTP). The Willingness to Pay (WTP) value is a Non-Use Value or value without direct benefit to users which describes the visitor's assessment of the environmental conditions of the tourist attraction. The Willingness to Pay (WTP) value can be taken into consideration by Tourist Attraction Managers in making policies and alternative steps in overcoming problems if there is a lack of funds to maintain natural sustainability at the Rammang-Rammang Natural Tourist Attraction.

This research provides significant implications for the management of tourism and regional governance, highlighting the value of adopting strategic measures to address funding challenges in preserving natural attractions like Rammang-rammang. Specifically, it offers practical insights into policy formulation and setting sustainable entrance fees that balance accessibility and conservation needs. However, the study is limited by its contextual focus on a single tourism site, potentially reducing the generalizability of findings to broader contexts. Future research should explore comparative analyses across different natural tourism destinations, considering diverse ecological, cultural, and financial landscapes, to develop a more comprehensive framework for sustainable tourism management.

CONCLUSION

The economic value of the rammang-rammang natural tourist attraction for the Environmental Services produced is based on the Direct Use Value (use value) as measured by the Travel Cost Method (TCM) approach for Domestic Visitors totaling 49,979 people in 2022, namely IDR. 65,228,992,312,- Per Year, with an Average Travel Cost (ATC) for Respondents of IDR. 1,305,128,- / Person Per Visit. The economic value of the rammang-rammang natural tourist attraction for the environmental services produced based on non-use value is measured using the Contingent Valuation Method (CVM) by asking about visitors' willingness to pay (Willingness to Pay) voluntarily. Domestic, totaling 49,979 people in 2022, which is Rp. 5. 968,558,819,- Per Year, with an Average Willingness to Pay Value of Respondents of IDR. 122,564,-/person Per Visit. The total economic value of the rammang-rammang natural tourism object for the environmental services produced is based on the direct use value (use value) measured using

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the Travel Cost Method (TCM) approach and the non-use value (Non use value) measured using the method (Contingent Valuation Method, CVM) by asking individuals' willingness to pay voluntarily for domestic visitors totaling 49,979 people in 2022, namely IDR. 71,197,551,130.7,- Per Year. Potential Revenue Amount for Plastering Rammang-Rammang Natural Tourism Objects based on Voluntary Willingness to Pay (WTP) of visitors for Domestic Visitors in 2022, totaling 49,979 people excluding the Entry Price (HTM), which is IDR. 71,197,551,130.7,- Per Year. If it is assumed that the number of domestic visitors in 2023 is 40,551 people, based on the average value of domestic visitors in 2021-2022, then the value of willingness to pay domestic visitors voluntarily to participate in preserving nature in 2023 is IDR. 4,842,654,488,- Per Year, excluding Entry Ticket Price (HTP). This value can be used as a consideration by the management of tourism objects and the regional government in making policies and alternative steps in overcoming problems if there is a lack of funds in maintaining the preservation of nature in Rammang-rammang natural tourism objects and used as a consideration in determining the Entrance Ticket Price in the future.

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