

# Community-Based Mangrove Tourism Object Development in Kampung Nipah, North Sumatra, Indonesia

Agus Purwoko<sup>1,\*</sup>, Kansih Sri Hartini<sup>1</sup>, Mohammad Basyuni<sup>1,2</sup>, Marsonang Daud Situmorang<sup>1</sup>

<sup>1</sup>Forestry Study Program, Faculty of Forestry, Universitas Sumatera Utara, Medan, Indonesia

<sup>2</sup>Center of Excellence for Mangrove, Universitas Sumatera Utara, Medan, Indonesia

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**Abstract** The mangrove ecosystem with its uniqueness is a natural resource that has the potential to be used as a tourist destination. Kampung Nipah Mangrove Beach in North Sumatra Province, Indonesia, is community-based tourism that has been managed sustainably and has the potential to become a source of prosperity for the community. This study aimed to analyze visitor assessments, the economic value of the existence of tourist objects, the intensity of visits, and factors that affect the intensity of visits at The Mangrove Beach of Kampung Nipah. Through this research, ratings were generated on various aspects of the management of tourist objects according to visitor assessments (such as natural beauty, security, spatial planning, facilities, and accessibility). The economic value of the existence of ecosystem-based tourism objects is obtained with the travel cost method (TCM) approach. The magnitude of the economic value illustrates the extent to which community-based mangrove tourism objects create spending from visitors, most of which becomes income for the communities involved. This study also produced information on the intensity of visits and factors influencing the intensity of visitors to travel. The results of this study are an important reference for managers and related stakeholders to improve services, attractiveness, and development of tourism object management.

**Keywords** Economic Value, Mangrove, Visit

Intensity, Community-Based Tourism, Kampung Nipah

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## 1. Introduction

Mangrove ecosystems have a significant role in biodiversity conservation, adaptability to sea level rise, natural barriers that block storms and tsunamis, as well as potential as carbon sinks [1-3]. Ecologically, it has its exotica, including a complex stand structure that is not too high, allowing for a reasonably good view, tree vigor, and exotic morphology of mangrove trees. In addition, their habitat is geographically located on the coast, with views of the vast sea panorama, cool coastal air, and close access to residential bases [4-6].

Indonesia has immense potential for mangrove resources [7]. It can meet standard requirements such as firewood, construction materials, home necessities, paper, medicine, bark, and charcoal. In addition, the fruit can even be processed into various foods and beverages [8]. This shows that the mangrove ecosystem has a very high economic value, which based on its resources is estimated to be between US\$ 3,624.98 and US\$ 26,734.61/ha/year using the total economic assessment technique [9]. Therefore, mangrove ecosystems as the main ecosystem in coastal ecosystem areas in the form of forests are important

areas for various planning and management perspectives regarding the use of mangrove forests for sustainable economic activities [10].

The Mangrove Tourism Object of Kampung Nipah in Sei Nagalawan Village, Perbaungan Sub-District, Serdang Bedagai Regency, North Sumatra, is one of the models for managing mangrove-based natural tourism objects that are initiated, managed, and developed by the surrounding community [11]. Through the pioneering efforts of many village youth leaders, mangrove management has evolved from a group-based activity to a multi-business cooperative (KSU) 'Muara Baimbai' with its main business unit being mangrove ecosystem-based tourism [12].

Proper tourism object management should have the correct data and information base, strong economic motivation, and objective feedback from the parties concerned. In addition, it is vital to investigate the characteristics and perspectives of tourists, the frequency, variables, and visit intensity, as well as the economic advantage that the tourism item provides to the community and the surrounding region. Therefore, this research aims to analyze visitor characteristics, assess visitors to tourist objects, determine and analyze visit intensity and the factors that affect it, as well as analyze the economic value

of the Mangrove Beach area of Kampung Nipah.

## 2. Materials and Methods

This research was conducted at the natural tourist object of Mangrove Beach in Kampung Nipah, Perbaungan Sub-District, Serdang Bedagai Regency, North Sumatra Province, Indonesia.

### 2.1. Methods

Data were collected through observations and interviews with informants and respondents in the field, including data on the characteristics of tourism objects, the community, and visitors, as well as visit intensity and influencing factors. Visitor characteristics data collected include identity, gender, occupation, education, income, place of origin, visit intensity, description, and value of the total expenditure (cost) of the visit, and others needed in the analysis and discussion. In addition, some secondary data related to ecosystem characteristics, tourism objects, and others are also collected.

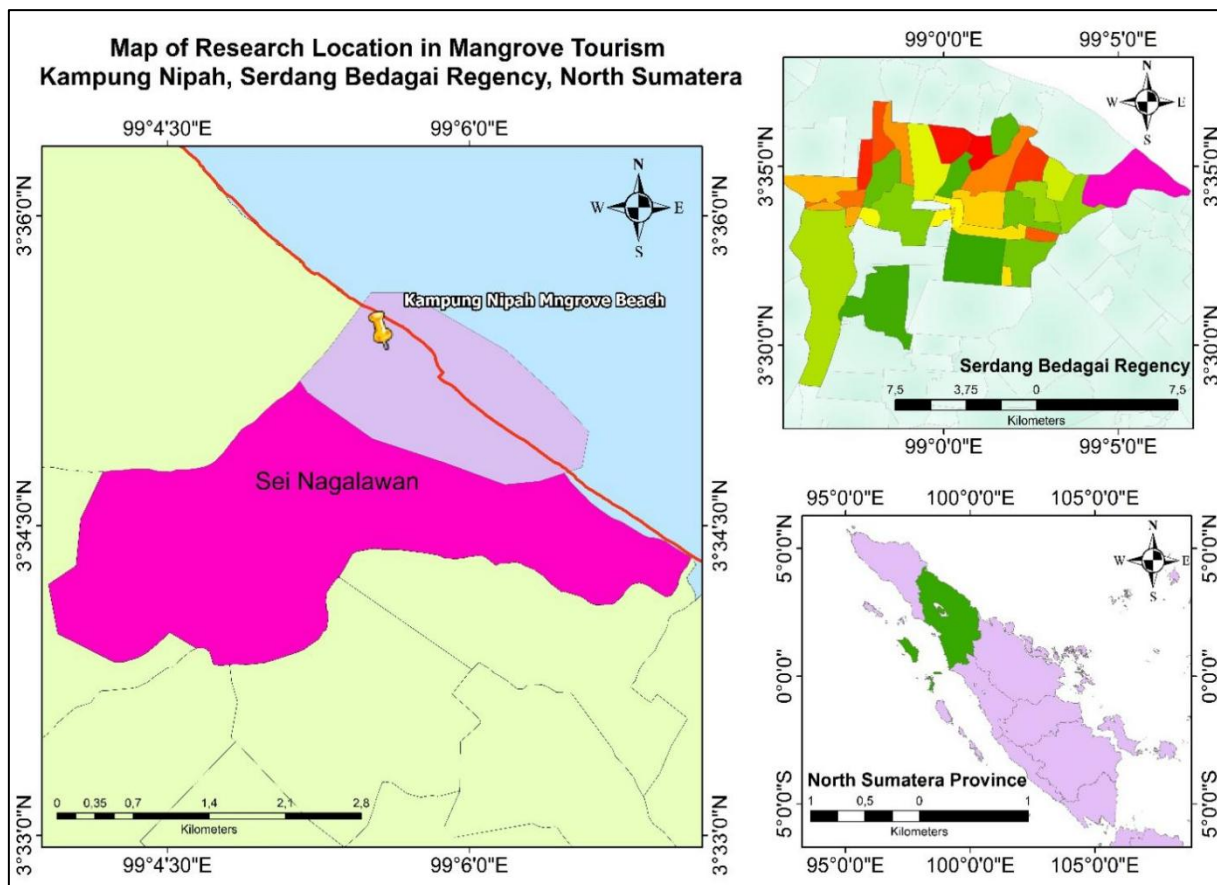


Figure 1. Map of Research Location

The object of this research is visitors, and the sample is selected using the accidental sampling technique, as applied by similar research [11,13]. This sampling approach designates visitors who visit tourism destinations and satisfy the required criteria as responders [14]. The requirements are those who are mature enough (aged 17 years and over), physically and mentally healthy, and able to communicate well. Meanwhile, several people are selected as group representatives [15,16].

Local visitors, particularly those from the North Sumatra administrative region, and adult visitors were targeted. The formulas Slovin were used to determine the sample size [17,18].

$$n = \frac{N}{1+Ne^2} \quad (1)$$

Description:

- n = Sample size
- N = Population size
- e = Inaccuracy limit (Percentage of allowance for inaccuracy due to errors in sampling)

The number of samples taken was determined based on the average of annual visits to Kampung Nipah. In the last two years (2017-2018) data is 29,485 people/year. Therefore, a total of 100 samples were obtained using the Slovin formula.

## 2.2. Data Analysis

### 2.2.1. Visitor Assessment analysis

Visitor assessment was analyzed descriptively using a Likert Scale [20]. It is a scale used in questionnaires and the most widely used in survey research. In addition, Rensis Likert developed a scale to measure people's attitudes, which is currently known as the Likert Scale. This strategy was also employed by [20] in Manado's Tumpa Mountain Area, [22] in West Lampung's Liwa Botanic Gardens (LBG), and [23] in Banka Belitung's Munjang Mangrove Forest. The results were categorized into five ordinal scales, from lowest (score 1) to highest (score 5).

### 2.2.2. Economic value analysis

Economic value analysis uses a Travel Cost Approach. This applies the principle of adding up the cost of sacrifices willing to be paid to enjoy a natural tourism object [24,25]. Travel costs are the total expenses incurred during recreational activities [26,27]. The practice of using this approach has been widely exemplified in previous research, such as used in Taman Tasik Cempaka, Malaysia [28], in the Valencia Region, Spain [29], and most recently in Bozcaada, Turkey [30].

The formula used to estimate the travel total cost is as follows [31-33]:

$$BP = BT + (BKr - BKh) + BD + BL \quad (2)$$

Description:

- BP = Travel Cost (IDR/person/day of visit)

- BT = Transport Cost (IDR)
- BKr = Consumption costs incurred during recreational activities (IDR/day of visit)
- BKh = Daily consumption costs incurred under normal circumstances (IDR/day of visit)
- BD = Documentation Cost (IDR)
- BL = Miscellaneous costs (IDR)

### 2.2.3. Visit intensity analysis

The Likert measurement was also used based on [34,35] to determine the factors that influence visit intensity. Respondents determine their level of agreement with a statement by selecting one of the available options, and the answers were provided in five options [36].

The factors that influence visit intensity are arranged with the following basic model:

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e \quad (3)$$

Description:

- Y = Visit intensity and visitors
- a = Intercept or constant
- X<sub>1</sub> = Travel cost
- X<sub>2</sub> = Level of education
- X<sub>3</sub> = Income level
- X<sub>4</sub> = Age
- X<sub>5</sub> = Travel time (hours)
- b<sub>1</sub>, b<sub>2</sub>,... b<sub>n</sub> = regression coefficient of X

The Coefficient of Determination ( $R^2$ ) is used to determine the magnitude of the influence of variable X on Y. Before calculating the value of the coefficient of determination, it is necessary to determine a few correlation coefficients (r) in the results from SPSS 16. Furthermore, the F-test statistic is utilized to determine the significance of the regression coefficient [36]:

$$F \text{ test} = \frac{R^2/k}{(1-R^2)-(n-k-1)} \quad (4)$$

Description:

- K = Number of independent variables
- F = Obtained from the distribution table
- R<sup>2</sup> = Coefficient of determination
- n = Number of samples

Regression testing was conducted to determine the best model obtained. The F-test was used to determine whether all independent variables have the same effect on the dependent (simultaneously) with the decision-making rules at the 95% confidence level ( $\alpha = 0.05$ ). Finally, the t-test is used to assess the influence of each independent variable partially or to discover which is more important using the formula [37], as follows:

$$t \text{ test} = \frac{r\sqrt{n-2}}{(\sqrt{1-R^2})} \quad (5)$$

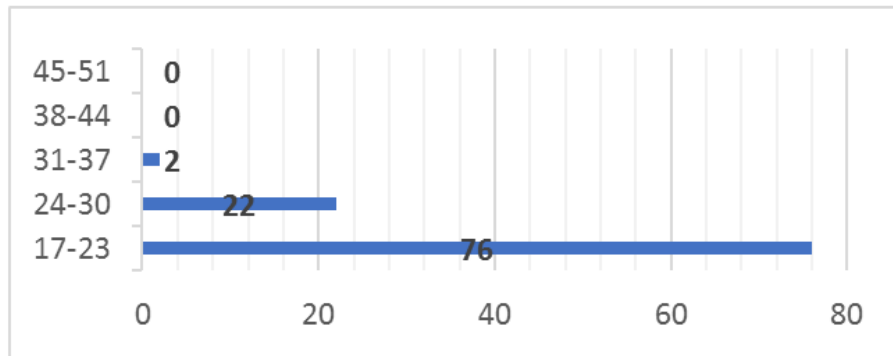
Description:

- t = t-test value
- n = number of observations
- r = correlation coefficient
- R<sup>2</sup> = coefficient of determination

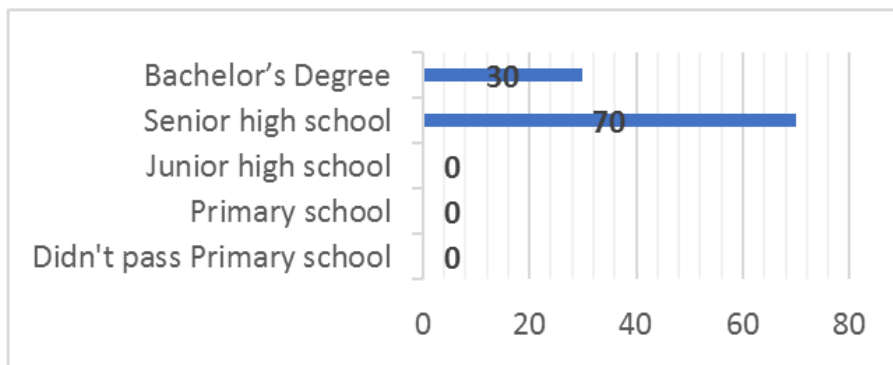
### 3. Result and Discussion

#### 3.1. Determinants of Visit Intensity

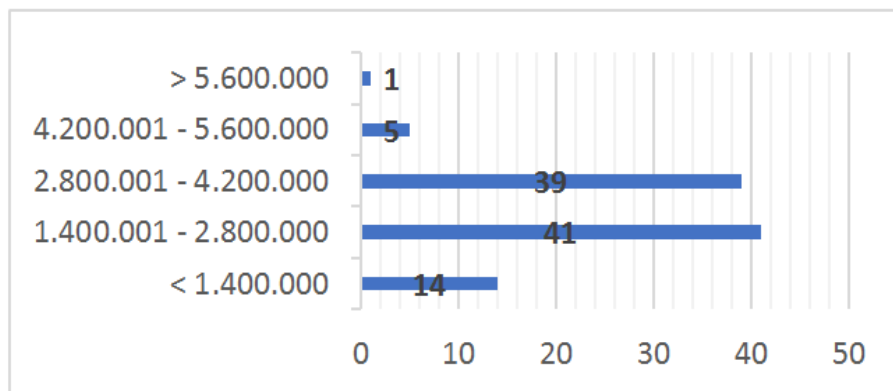
Visitor characteristics are an important aspect of this study. By recognizing the characteristics of visitors we can explore important variables to support the development of tourism objects. Characteristics of visitors are presented in the following Figure 2.



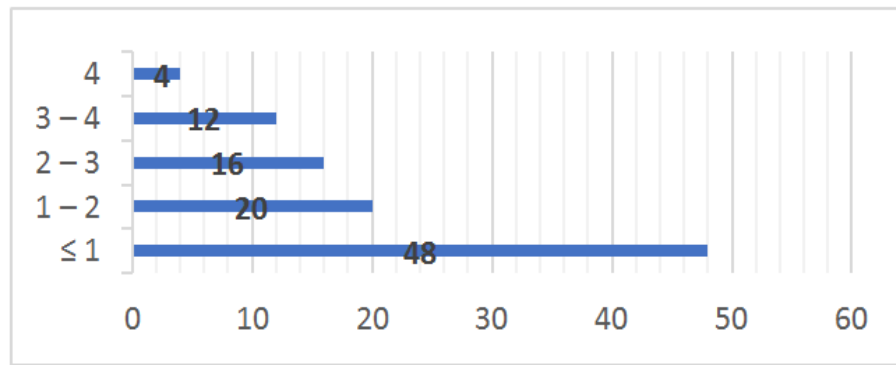
(a)



(b)



(c)



(d)

**Figure 2.** Recap of Distribution Data; (a) Visitor Age Class (in a year); (b) Visitor Education Level; (c) Visitor Income Level (in IDR); (d) Length of Trip (in an hour)

3.1.1. Age

The age range used was from 17-50 years. The distribution of age level of visitors is divided into five groups. According to Figure 2a, most visitors (76%) are between the ages of 17 and 23, followed by those between 24 and 30 (22%). The average age is 21.82 years, indicating that this tourism object is viral among students, teenagers, and other young people. The tourism destination offers a variety of educational and environmental tour options that spark students' interest. The educational tour packages include planting mangroves, interpreting mangroves, making various foods, unique and interesting photography spots, and various entertainment attractions suitable for other young people.

3.1.2. Level of Education

The level of education measured by visitors is the last education from elementary to college. However, data on Elementary to Junior High School education levels were not obtained. Based on Figure 2b, the highest percentage of visitors was at The Senior High School level, which was 70%, followed by College as much as 30%. Visitors with advanced degrees tend to have a more open perspective and a desire to learn more about the natural world, therefore, they are more likely to benefit from the experience. Furthermore, they are more interested in the Mangrove Beach region of Kampung Nipah and its mangrove plant collection because of their higher educational level. This is also in line with the tour packages, targeting young and educated people. In general, those with a higher level of education are more likely to seek out ecotourism [37].

3.1.3. Income Level

Kampung Nipah visitors come from various income levels. These are divided into five categories according to the income interval based on the data class interval

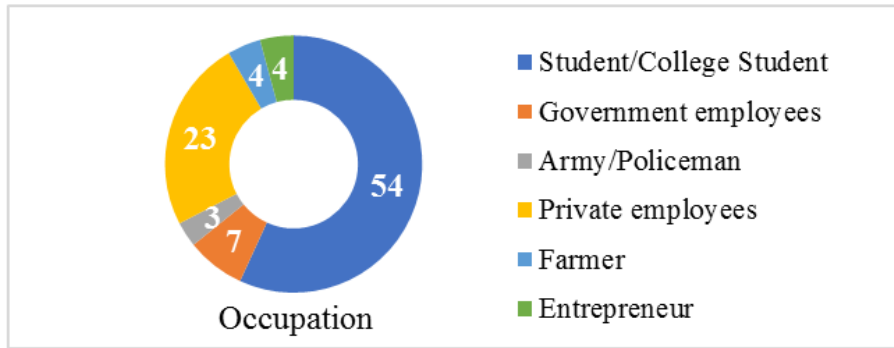
approach. The income size will affect someone making a tourist visit [39]. From the results in Figure 2c, the income level of most visitors is in the 2<sup>nd</sup> and 3<sup>rd</sup> classes of IDR 1,400,001 and IDR 4,200,000 (80%). Meanwhile, the average income of all visitors was IDR 2,632,000 (equivalent to 175.5 US\$). For the most part, those who work in various industries are in this salary group. The data also illustrates that this tourism object has not attracted high-income visitors. This condition is due to the lack of adequate facilities for visitors, such as lodging and cafes. Managers of tourism objects must strive for these facilities because people with high incomes will carry out tourism activities more often and incur more costs [39]. The same result is reported in research conducted in India [40], and Pakistan [41].

3.1.4. Length of Journey

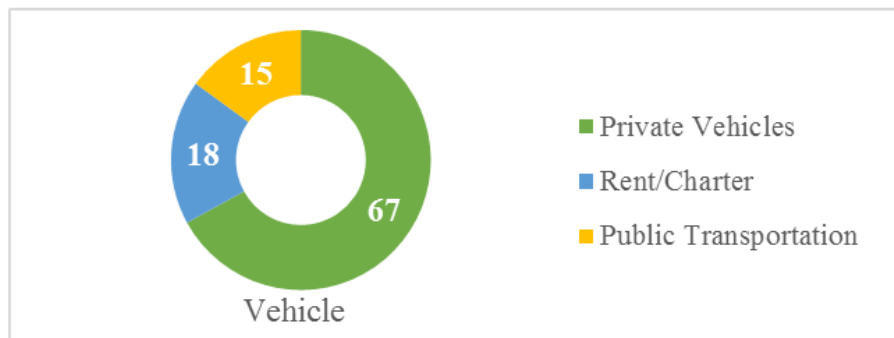
The length of a visitor's journey to Mangrove Beach in Kampung Nipah is grouped into five categories. According to the class range, most tourists arrive at this site in less than an hour (48%), followed by one to two hours (36%). The average length of a visitor's journey is 1.54 hours since most frequent visitors are not too distant from the tourism object location and do not waste excessive time getting there. However, the potential for the beauty of this tourism object is still limited to being enjoyed by the surrounding community. This data indicates efforts are still needed to develop the market to reach tourists outside the region, nationally and even internationally.

3.2. Visitor Characteristics

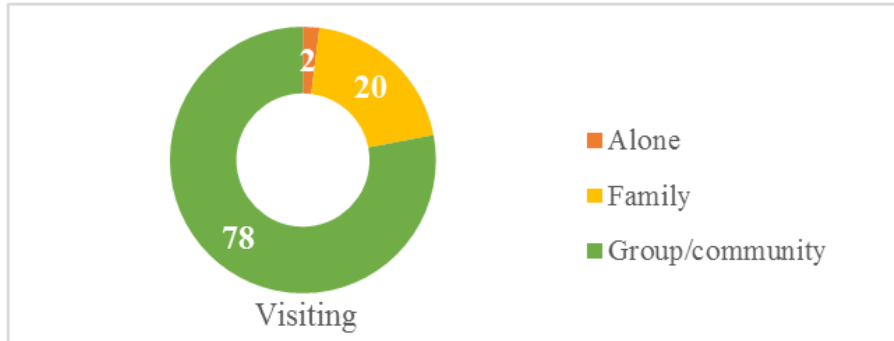
Analysis of visitor characteristics to tourism objects is needed to understand the conditions, behavior, and needs, and this was conducted using a quantitative descriptive approach.



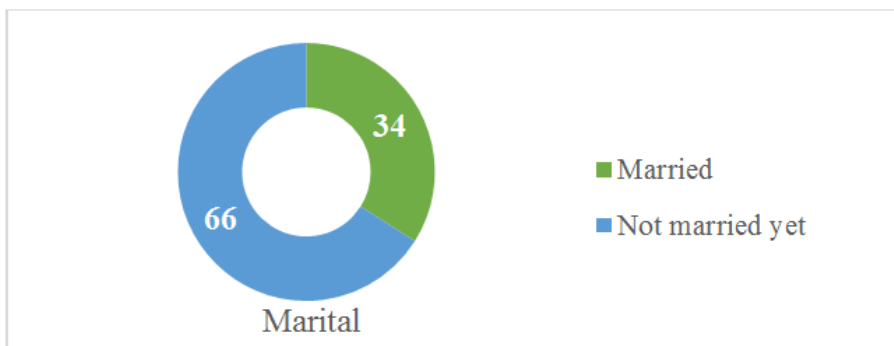
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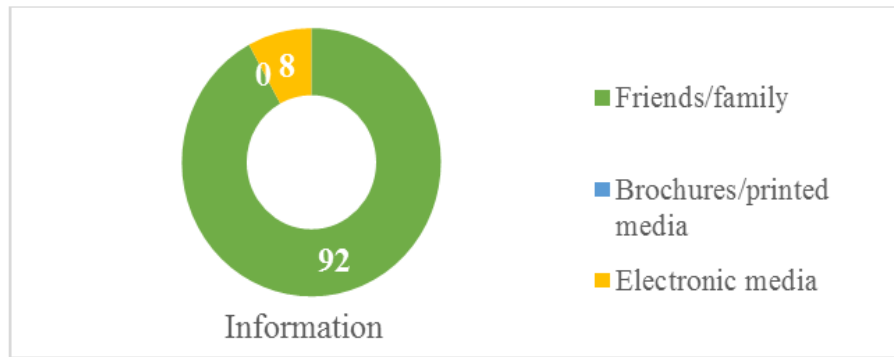
(b)



(c)



(d)



(e)

**Figure 3.** Recapitulation of Visitor Data Based on; (a) Type of Occupation (b) Type of Vehicle Used (c) Method of Visiting, (d) Marital Status, and (e) Source of Information

### 3.2.1. Occupation

Based on Figure 3a, the highest number of visitors was students (54%), followed by the private sector employee group (23%). This shows that Kampung Nipah is in great demand by student visitors. The distribution of visitors' occupations is influenced by the types of tourist attractions offered, where many tourist attractions are educational to younger and popular nuances.

### 3.2.2. Vehicle Used

Based on Figure 3b, 67%, 18%, and 15% of visitors use private vehicles, chartered/rented, and public transportation, respectively. Private vehicles are the most popular mode of transportation for travelers to utilize while visiting tourism objects since they are more cost-effective than renting or taking public transit. However, many of them have to use public transportation modes (15%) and need adequate facilities to get to this tourism object. Currently, the availability of public transportation has not reached the object's location, making it difficult for visitors. Therefore, the low percentage of tourists may be due to the location's lack of convenient amenities.

### 3.2.3. How to Make a Visit

The three modes of entry into Kampung Nipah are an individual, family group, and community. Based on Figure 3c, 78% and 20% visit in groups and as a family, while few visit individually. Visitors in groups are often conducted because they share a common field of employment or are members of a community that serves as a conduit for strengthening relationships. Apart from academic tourist destinations, this type of visit is frequently coupled with a social objective within the community. These social agendas include social gatherings, office holidays, family gatherings, community meetings, celebrations, and others. For example, those who visit with family members can be classified into family travel activities [42,43].

### 3.2.4. Marital Status

The marital status of visitors to tourism objects can

describe the behavior and service needs of facilities. Apart from being relatively young, singles tend to travel in smaller groups and have a greater demand for amenities associated with the millennial lifestyle. This implies that photography-based tourism objects and facilities are in great demand by this group of visitors. Meanwhile, married people are more likely to interact with groups under the category of family. They needed cottages, lodging, and more complete culinary facilities. Figure 3d shows that most visitors are unmarried (66%). Apart from a younger age, single people generally prefer visiting larger communities such as schoolmates, college colleagues, co-workers, game partners, fellow members of an organization, and other types of groups/communities.

### 3.2.5. The Source of Information

Up to 92% of visitors acquire information from relatives and friends, while only 8% get their knowledge through electronic media. This proves that the mangrove tourism promotion in Kampung Nipah is still not optimal. According to the company's management, information is still being disseminated one-on-one. However, promotional efforts through electronic media on websites and social media have not been utilized since only 8% of visitors obtain information through this method.

Even though the number is currently small, the management is attempting to maximize how these attractions are promoted. Promotion may be accomplished through social media, given that the current population has easy access to a variety of information through the internet [44-46]. National and international promotions are one aspect of developing tourist objects to attract tourists [47]. Print media is no longer effective, and managers are no longer reliant on it. Meanwhile, as a social media platform, the internet gives credible and engaging information to prospective travelers.

## 3.3. Visitor Assessment of Mangrove Beach Area

### 3.3.1. Natural Beauty

The natural beauty of Mangrove Tourism items in Kampung Nipah is assessed as 'beautiful' by tourists using the Likert Scale, which obtained a value of 410. They can enjoy the beach atmosphere and feel the natural beauty of the Mangrove ecosystem around the beach. This is consistent with the statement that natural beauty is one of the primary natural attractions to attract visitors [22].

### 3.3.2. Security

For the safety of Kampung Nipah, visitors consider that this object area is a safe place to visit. According to Table 2, 90% of the visitors interviewed stated that Kampung Nipah is a 'safe' tourist site. According to management interviews, there has not been a riot, robbery, theft, or loss, either by local visitors or members. This shows that the manager maintains the security of every visitor who comes to the location. Security can increase future visits to this destination, and this is similar to the report [48], where the

safety of tourism objects is an important factor.

### 3.3.3. Landscape planning

The following Table 3 is visitor evaluations of the landscape of Kampung Nipah's natural tourist object.

Ecotourism requires good landscape planning [48] to obtain a score of 408, which is classified as 'good' (Table 3). Furthermore, landscape planning in the Mangrove Beach tourism object is in a good category since every facility and its potential is managed and laid out correctly. Managers provide various functions of the micro space needed, such as an open space in white sand to view the sea. There is a relaxing room on this site with the shade of the mangrove ecosystem and coastal air. In addition, there is a space where visitors can enjoy sea culinary tours and coffee comfortably. All facilities and potential tourist attractions can be easily seen on a map in this tourism destination.

**Table 1.** Recapitulation of Visitor Assessment of Natural Beauty

No.	Natural Beauty	Scoring Scale	The proportion of Visitors (%)	Total score
1	Very beautiful	5	11	55
2	Beautiful	4	88	352
3	Less beautiful	3	1	3
4	Not beautiful	2	0	0
5	Bad	1	0	0
Total			100	410

**Table 2.** Visitor Rating Recapitulation of Security

No.	Security level	Scoring scale	The proportion of visitors (%)	Total score
1	Very safe	5	6	30
2	Safe	4	90	360
3	Less Safe	3	4	12
4	Not safe	2	0	0
5	Dangerous	1	0	0
Total			100	402

**Table 3.** Recapitulation of Visitor Assessment of Landscape Planning

No.	Landscape planning	Scoring scale	The proportion of visitors (%)	Total score
1	Very good	5	12	60
2	Well	4	84	336
3	Less good	3	4	12
4	Not good	2	0	0
5	Bad	1	0	0
Total			100	408



### 3.3.4. Facility

The total score for the facility is 383, which is classified as complete. The existing facilities currently include a meeting hall, huts for relaxing, cafes, canteens, places of worship, parking lots, souvenir centers, information centers, umbrellas to relax on the sand beach, and toilets. Therefore, visitors will feel at ease, and their requirements are addressed with these great amenities. This refers to the results of research [50] that facilities and infrastructure significantly affect the level of visitor interest in a tourist place.

**Table 4.** Recapitulation of Visitor Assessment of Facilities

No	Facility	Scoring scale	The proportion of visitors (%)	Total score
1	Very complete	5	8	40
2	Complete	4	72	288
3	Less complete	3	15	45
4	Incomplete	2	5	10
5	Very incomplete	1	0	0
Total			100	383

From the results and direct observations in the field, the facilities provided in Kampung Nipah are quite 'complete'. However, managers still have to make efforts to add facilities for development, so that visitors are increasingly interested in coming for tours.

### 3.4. Road Condition/Accessibility

Table 5 shows that visitors assess the condition of the road to the object's location as not being good, and the total score is 288, which is classified as 'not good'. In 2017, road repairs have been carried out but have not yet been completed to the tourist site, and part of the road is still in poor condition. There is also still a dirty and unpaved road about 800 meters long leading to the location, and during the rainy season, it becomes muddy, slippery, and uncomfortable. Meanwhile, accessibility is a significant factor in increasing visits to tourist destinations [51]. Therefore, the local government as an authorized stakeholder should prioritize improving accessibility to this tourist object, considering the large multiplier effect resulting from community-based tourism management.

**Table 5.** Recapitulation of Visitor Assessment of Road Conditions

No.	Road condition	Scoring scale	The proportion of visitors (%)	Total score
1	Very good	5	0	0
2	Well	4	8	32
3	Less good	3	82	246
4	Not good	2	10	10
5	Bad	1	0	0
Total			100	288

### 3.5. Visit Intensity

Visit intensity is determined by the number of times each visitor accessed The Kampung Nipah Mangrove Beach tourism area. The total score of the assessment using a Likert scale is 207. This value indicates that visit intensity to this area is on average two times (Table 6).

### 3.6. The Economic Value of Mangrove Beach Tourism Object

The average cost of traveling is IDR 231,600 (equivalent to 15.44 US\$)/person/visit. From the data in Table 7, the highest and lowest average travel cost comes from Karo and Deli Serdang Regencies, which are IDR 495,625/person/visit and IDR 158,937/person/visit. This implies the average travel cost incurred is IDR 231,600/person/visit. Furthermore, the average annual number of visitors based on data for the last year (2016-2017) is 29,485 people. The economic value of the tourism object is IDR 6,828,726,000/year (equivalent to 455,248.4 US\$/year) based on the data recapitulation of travel costs incurred.

The economic value of the Ir. H. Djuanda Forest Park using the Travel Cost Method approach is IDR 3,193,579,412/year when compared [52]. Similar research on the natural tourism object of Curug Sewu with a value of IDR 12,377,025,750/year [53]. Research at Sawarna Beach [54] found an economic value of IDR 6,722,558,424 (USD 448,170) per year. Meanwhile, research in Australia stated that tourism is estimated to provide about \$69 million for the Southern Forest Region and \$138 million for the Gascoyne Coastal Region [55]. Research in Sweden [33] reported that nature tourism resulted in an average travel cost of 117 SEK (USD 16) for each trip. The results above indicate that the economic value of the Mangrove Beach tourism object is quite high for a tourist attraction with a relatively small size.

### 3.7. Analysis of Factors Affecting Visit Intensity

Theoretically, several socio-economic factors can influence visit intensity [56]. These include travel costs, education level, income level, age, and length of the trip. Research [57] in Muara Badak Regency, Indonesia, also discusses tourist income, travel costs, travel costs to other tourism objects, travel time, and facilities, which affect the number of visits. These factors are designed into several orders of rank to be analyzed quantitatively.

The results of the F-test output in the ANOVA (Table 8) showed significant results. The significance of <0.05 indicates that all predictor factors affect visit intensity. A similar result was shown by the F-count value (5.798), which is more significant in value than the F-table (2.31).

**Table 6.** Visitor Recapitulation Based on Visit Intensity

No.	Visit intensity	Scoring scale	The proportion of visitors (%)	Total score
1	1 time	1	27	27
2	2 times	2	50	100
3	3 times	3	14	42
4	4 times	4	7	28
5	≥ 5 Times	5	2	10
Total			100	207
Average				2,07

**Table 7.** Visitor Recapitulation Based on Average Travel Cost

No	Place of origin	The proportion of visitors (%)	Total travel cost (IDR)	Average (IDR/person/trip)
1	Medan	44	11,512,000	261,636
2	Karo	8	3,965,000	495,625
3	Deli Serdang /Serdang Bedagai	48	7,629,000	158,937
Average				231,600

**Table 8.** Results of Analysis of Variance (ANOVA)

	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	61.991	5	12.398	5.798	.000 <sup>a</sup>
	Residual	200.999	94	2.138		
	Total	262.990	99			

a. Predictors: (Constant), Trip\_Length, Income, Education, Age, Travel\_Cost

b. Dependent Variable: Visit\_Intensity

**Table 9.** T-test results (partial)

Model	Standard Coefficient		Standard Coefficient	T	Sig
	B	Std Error			
Constant	3.854	1.147		3.360	0.001
Travel expense	0.001	0.003	0.024	0.155	0.877
Level of education	-0.098	0.251	-0.041	-0.391	0.697
Income level	0.216	0.124	0.201	1.743	0.085
Age	-0.022	0.017	-0.143	-1.306	0.195
Travel length	-0.606	0.193	-0.449	-3.133	0.002

a. Dependent Variable: Visit Intensity

The Coefficient of Determination value ( $R^2$ ), which is only 0.236 or (23.6%), showed that the predictor factors cannot explain the variation in visit intensity. Other variables (76.4%) are needed to affect visit intensity but are not included in this research. The coefficient of determination indicator needs to be measured since no other variables are added. However, it should have a theoretical relationship and produce a high coefficient of determination [58].

Based on Table 9, the resulting model is  $Y = 3.854 + 0.001X_1 - 0.098X_2 + 0.216X_3 - 0.022X_4 - 0.606X_5 + e$ . In the multiple linear regression analysis results, only one predictor variable has a significant effect on visit intensity,

namely the length of the trip. The variable has a regression coefficient of 0.606 with a negative sign in the opposite direction. This shows an inverse relationship that a longer travel time decreases visit intensity [59]. People from nearby areas tend to visit more natural attractions such as the forest biosphere.

The variables of travel costs, education level, income level, and age have no significant effect on visit intensity. Research in Anamalai Tiger Reserve (ATR) reported different results where marital status, travel costs, and distance negatively influenced visit intensity [59]. The non-significance of the travel cost variable is due to the low diversity of the data. This is because 92% of visitors come

from Deli Serdang Regency, Serdang Bedagai, and Medan City, which causes the average travel costs to be almost similar. Likewise, the variables of education level and age tend to be homogenous since the data obtained in the range of scores is almost the same. The weakness of qualitative data that is ordinally quantified is the low potential for diversity because it is only divided into five orders of rank. The income variable, which is also still homogeneous, illustrates that visitors are still accumulating and homogeneous in the middle to lower economic class. In India, it even reported that high-income groups and educated people make fewer visits to ATR [59].

The above results and discussion as a whole provide scientific information about the characteristics, behavior, and assessment of visitors. For people involved in the management of mangrove-based tourism objects, the data is an important reference for various efforts to improve services and the attractiveness of tourist objects so that visitors can feel more comfortable and impressed. The strong social capital owned by the Sei Nagalawan community [12] will be effective if supported by appropriate scientific data in the development of community-based tourism objects. Stakeholders related to both government and non-government can take the results of this research as a policy reference to support the development of mangrove tourism. It is hoped that a positive visitor impression will increase the intensity of the visit, and will recommend family, friends, and colleagues to visit mangrove tourism. The increasing number of visitors will provide additional income and welfare for the people involved as tourism managers. Communities that prosper from the extension of mangrove tourism will eventually continue to be at the forefront of preserving the mangrove ecosystem as a valuable resource. Therefore, the restoration and protection of mangrove ecosystems in North Sumatra which has been carried out since 2005 and is still ongoing is important to be supported by all stakeholders. This activity is expected to be able to restore ecological and economic functions for the community [60].

## 4. Conclusions

The characteristics of visitors to the mangrove tourism object of Kampung Nipah are an average age of 21.82 years, and the majority are educated from high school to college. The average income of visitors is IDR. 2,632,000/month (equivalent to 175.46 US\$/month). The majority of visitors who are unmarried with jobs are generally students. The type of vehicles used by the majority is private vehicles and visiting groups/communities. The travel time of visitors to the object averages 1.54 hours, and the source of information generally comes from friends /family. This visitor characteristic is a reference for managers and stakeholders related to determining segmentation policies, promotions, and other efforts to increase tourist visits. Visitors'

assessment of Kampung Nipah Mangrove Tourism is 'beautiful' (score 410), 'safe' (score 402), 'good' spatial arrangement (score 401), 'complete' facilities (score 383), and 'poor' accessibility conditions (score 388) at intervals of 0-500. This information is a reflection for managers to improve their facilities and attractiveness. Meanwhile, the average intensity of visits to the Kampung Nipah Mangrove Tourism is 2.07, which means the average visitor visit for the second time. Based on simultaneous regression analysis, the level of education, income level, age, and length of travel has a significant effect on the real level, but partially only the variable of the length of the trip has a significant effect on the intensity of visits to the Kampung Nipah mangrove tourism object. This is a policy brief for local area trimmers to support the development of this tourism object through increasing accessibility, especially the procurement of efficient public transportation facilities. With the travel cost method, the economic value of the existence of The Kampung Nipah Mangrove Tourism Object is IDR. 6,828,726,000/year (equivalent to 455,248.4 US\$/year). The magnitude of the economic value of the existence of mangrove-based tourism objects is a strong reason for all stakeholders to help as a natural tourism management community in improving the quality of services, attractions, and visits.

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