Original Research Article

Perceptions of Sustainable Utilization of Coastal Resources in The Pangandaran Sub-District

ABSTRACT

This study aims to determine the Community's perception of the sustainability of resource use in Pangandaran District, Pangandaran Regency, West Java, 2022. The method used in this research is a survey method. The sampling technique used the chi-square method with a total of 50 respondents. Data collection using questionnaires and documentation techniques. The results showed that the sustainability of coastal resources in the Pangandaran District was classified as moderate, with a percentage of 48%. The factors that support the sustainable use of coastal resources include economic factors that have a calculated chi-square value of 15,089. Then, social factors have a calculated chi-square value that is 18. Environmental factors also have a significant influence, namely by value. The calculated chi-square value obtained is 16,322. Other factors that affect sustainability are government policy information obtained by the Community and community understanding of the sustainable use of coastal resources.

Keywords: [Perception, Sustainability, Coastal Resources, Utilization, Policy}

Comment [U1]: Rev. Note 1: No, sorry, the sampling technique cannot be the chi-square method. Please correct..

Comment [U2]: Rev. Note 2: Linguistic mistake.

Comment [U3]: Rev. Note 3: A chi-square value alone shows nothing.

Comment [U4]: Rev. Note 4: No need for «[« and «}».

1. INTRODUCTION

Indonesia is the largest archipelago in the world. Indonesia has about 17,499 islands. The area of the Indonesian sea area also exceeds the land. Most of Indonesia is coastal. The coast is a unique area because, in the landscape context, a coastal area is a meeting place for land and sea. Humans can utilize natural resources as living creatures. The utilization of natural resources must be managed and possibly be utilized for the long term and sustainable [1]. The utilization of coastal resources is indirectly related to the economy of the surrounding community, one of the coastal areas that have been widely utilized by the Community, namely Pangandaran Regency of West Java Province. Most of the pangandaran regency is a coastal area; therefore, most of the surrounding population has livelihoods as fishermen [2]. This research is focused on the pangandaran district, where there are communities that directly utilize coastal resources. The Community will then become research respondents. From these respondents will be obtained public perceptions about the sustainability of utilization and factors related to sustainability. Then the response will be assessed whether it is following the policies issued by the government or not community involvement is needed in studying the level of sustainability of coastal areas because the Community is the leading actor in development and has direct contact with the environment.

2. METHODOLOGY

The method used in this study is the survey method to provide a detailed picture of a case's background, traits, and character characteristics. This research process includes location surveys, data collection, and tabulation of fisheries business activities around Pangandaran Beach.

2.1.1 Types and Sources of Data

The data required in this study are primary and secondary data related to government regulations regarding the sustainability of coastal resource utilization. Primary data is obtained from observations directly at the research site and from respondents, while secondary data is obtained from literature sources and documents from several research agencies. The primary data was obtained through questionnaires on the relationship of economic, social, and environmental factors with the sustainability of the use of coastal resources distributed to tourism business actors and fisheries industry players (fisheries processing industry both on a household scale) fishers.

2.1.2 Sampling Technique

Sampling techniques use Accidental Sampling. Accidental Sampling is a technique of determining samples based on chance; consumers who coincidentally / incidentally meet with researchers can be used as samples if it is considered that people who happen to be encountered are suitable data sources [3] . The sample taken by 50 respondents included tourism business actors, fisheries industry players, and small fishers in Pangandaran District. The data taken will then be processed using the Chi-square method, and the results and suitability with secondary data regarding government regulations.

2.1.3 Chi-square parameters

To find out the public's perception of the sustainability of the use of coastal resources of the pangandaran subdistrict can be known based on the following indicators of observation variables:

a. Public Perception
b. Coastal Resource Utilization Information
c. Understanding the Importance of Coastal Resource Utilization
d. Environment (Conformity of Resource Utilization with Regulations, Efforts to Prevent Pollution and Environmental Damage in the Surrounding Environment, Filial Work Activities, Cleanliness of Coastal Areas, Conservation of Environmental Preservation)
e. Social (Environmental Supervision by Local Government and Socialization of Coastal Utilization Management Policy)
f. Economy (Increased Visitors to Coastal Communities and Welfare of Coastal Communities)

The variables used in this study are grouped into two parts, namely:

a. Fixed Variables

The fixed variable in this study is the sustainability of the utilization of coastal resources in the Pangandaran Subdistrict, namely the Community's view of matters related to the sustainability of coastal resource utilization, grouped into:

- Score 3 for the high category if the indicator has met the criteria or conditions that should have been set through the choice that has

been given on the questionnaire answer.

- Score 2 for the medium category. Indicated by choice of answers given can still meet the criteria.
- A score of 1 for the low category indicates that the answers given by the respondents do not meet the established criteria.

The scale used in this scoring technique is the Likert scale. The Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena [4]

b. Free Variables

Free variables include economic, social, and environmental utilization conditions such as information and utilization about the use of coastal resources and environmental, social, and economic factors. These variables will be categorized as high, medium, and low.

Data analysis is carried out using the chi-square formula as follows [5]**:**

$$x^2 = \sum_{i=1}^{k} \frac{(ft - fo)^2}{ft}$$

Information:

X^2= Chi-Squared

Fo = Frequency obtained from survey results

Ft = Expected frequency

$$f_{e=\frac{(total\ kolom)(total\ baris)}{(jumlah\ total)}}$$

Where:

n = Number of samples

The formulation of the Research Hypothesis is

- H0 = There is no relationship between the sustainability of coastal resource utilization in sub-districts with economic factors such as community welfare and increased visitors
- Ha = There is a relationship between the sustainability of the use of coastal resources in sub-districts with economic factors such as community welfare and increased visitors

Decision making based on Chi-Square values

- If the Chi-square value counts > the Chi-Square value of the table, then H0 is rejected, and Ha is accepted.
- If the Chi-square Value calculates < the Chi-Square Value of the table, then H0 is accepted, and H0 is rejected.

3. RESULTS AND DISCUSSION

3.1 Characteristics of Respondents

Of the 50 respondents taken, it was dominated by the age range of 41-50 years, 42% with a total of 21 respondents and then followed by the age range of 31-40 years by 22% with many respondents, namely 11 people. Furthermore, the age range of 51-60 years is 18% with the Number of people nine and followed by the age range of >60 years by 10% with the Number of 5 people, and the last is the age group of 20-30 years by 8% with a total of 4 people. This fact shows that human resources in Pangandaran District are quite potential when viewed from age.

Then from the 50 respondents taken, among others, they have jobs related to the use of coastal resources, namely fishers, tourism business actors, fisheries industry players with a total of 16 respondents to tourism business actors with a percentage of 32%, then fisheries

industry respondents as many as 17 people with a percentage of 34%.

Of the 50 respondents, each had a different length of stay; therefore, the length of stay of respondents was grouped into 2, which is less than ten years and more than ten years. Of the 50 respondents, two people with a stay of fewer than ten years had a percentage of 4%, and 48 others with a stay of more than ten years, which was 96%. By the requirements of the respondents, namely staying more than two years, the actual data in this study is *valid* because the most petite length of stay of respondents is two years and ten years. In seeing the sustainability of the utilization of coastal resources in the Pangandaran District, an extended stay is a guarantee in analyzing the condition situation.

3.2 Public Perception of Sustainability in the Utilization of Coastal Resources in the Pangandaran District

The frequency of respondents based on public perception of the Utilization of Coastal Resources in the Pangandaran District can be seen in the table:

Table 1. Frequency of Respondents based on Public Perception of Sustainability of Coastal Resource Utilization

Sustainability of Coastal Resource Utilization		
Level	Sum	Percentage
Low	5	10%
Medium	24	48%
High	21	42%
TOTAL	50	100%

Based on the results of the chi-square X2 test for variable understanding of the sustainability of coastal resource utilization to the sustainability of coastal resource utilization is 12,762 with df = 4, because X2 calculates> X2 table (12,762 > 9,488) then Ha is accepted and H0 is rejected or can be known with a signification value of 0.012 which has a meaning smaller than 0.05 which means significant. So it can be concluded that the understanding factor of the use of coastal resources has a significant effect on the sustainability of coastal resource utilization. The chi-square test was also conducted to determine the relationship between the policy information obtained by the Community and the sustainability of the utilization of coastal resources. In the results of the chi-square X2 test for variable understanding of sustainability of coastal resource utilization to the sustainability of coastal resource utilization is 12,762 with df = 4, because X2 calculates> X2 tables (12,998 > 9,488) then Ha is accepted and H0 is rejected or can be known with a signification value of 0.011 which has a meaning smaller than 0.05 which means significant. Then it can be concluded that information factors regarding the use of coastal resources have a significant effect on the sustainability of the use of coastal resources.

In table 1, it is explained that respondents who have a moderate perception tend to be more when compared with low and high perceptions; this is because the people of the pangandaran subdistrict have not received information and understanding that supports the sustainability of coastal resource utilization.

The relationship between economic factors and the sustainability of the utilization of coastal resources of the

Pangandaran Subdistrict can be seen in the table:

Table 2. The output of Economic Factors Relationship to Sustainability of Coastal Resource Utilization in Pangandaran District

		A Low		Medium		High	
		Count	Column N %	Count	Column N %	Count	Column N %
economics	Low	4	80%	6	24.0%	2	10.0%
	Medium	3	60%	17	68.0%	15	75.0%
	High	3	60%	13	52.0%	16	80.0%

Based on the Chi Square test results with free degrees (db) = 6 at a significant level of 5% obtained the chi-square calculated value, which can be 15,089, then the chi-square table value is 12,592. So as the decision-making on the research method, it can be concluded that H0 is rejected and Ha is accepted so that it can be interpreted that there is a relationship between economic factors and the sustainability of the use of coastal resources in the Pangandaran District. Respondents of economic factors with high categories have a high perception, while respondents in the low and moderate economic categories tend to have a moderate perception of the sustainability of the utilization of coastal resources of the Pangandaran Subdistrict. Pangandaran district has directly impacted the social, cultural, and economic life of fishers. Therefore, economic factors related to welfare and increased visitors have a relationship with the sustainability of utilizing coastal resources in the Pangandaran District. [6]

The relationship between social factors and the sustainability of the utilization of coastal resources of the Pangandaran Subdistrict can be seen in the table:

Table 3. The output of Social Factors Relationship towards Sustainability of Coastal Resource Utilization in Pangandaran District

		A Low		Medium		High	
		Count	Column N %	Count	Column N %	Count	Column N %
Social	Low	4	80.0%	9	36.0%	2	10.0%
	Medium	1	20.0%	13	52.0%	10	50.0%
	High	1	20.0%	12	48.0%	15	75.0%

Based on the Chi Square test results with free degrees (dB) = six at a significant level of 5%, obtained calculated chi-square value can be 18,163, and the chi-square table value is 12,592. So as the decision-making on the research method, it can be concluded that H0 is rejected and Ha is accepted so that

it can be interpreted that there is a relationship between social factors and the sustainability of the use of coastal resources in the Pangandaran District.

Respondents of social factors with high categories have a high perception. In contrast, respondents in the category of low and medium social factors tend to have a moderate perception of the sustainability of the utilization of coastal resources of the Pangandaran Subdistrict. Community development efforts need to be adapted to the populist society closely and cannot be uninformed, in line with the concept of human-centered development [7]. Therefore, social factors will be seen concerning the sustainability of the utilization of coastal resources.

The relationship between environmental factors and the sustainability of the use of coastal resources in the Pangandaran District can be seen in the table:

Table 4. The output of Environmental Factors Relationship to Sustainability of Coastal Resource Utilization in Pangandaran District

		A					
		Low		Medium		High	
		Count	Column N %	Count	Column N %	Count	Column N %
Milieu	Low	3	60.0%	11	44.0%	6	30.0%
	Medium	2	40.0%	25	100.0%	17	85.0%
	High	5	100.0%	25	100.0%	20	100.0%

Based on the Chi Square test results with free degrees (dB) = six at a significant level of 5%, the chi-square count value can be 16,322; then, the chi-square table value is 12,592. So as the decision-making on the research method, it can be concluded that H0 is rejected and Ha is accepted so that it can be interpreted that "There is a relationship between environmental factors and the sustainability of the use of coastal resources in Pangandaran District."

Respondents of environmental factors with medium and low high categories tend to have the same perception, namely the level of moderate perception of the sustainability of the utilization of coastal resources of Pangandaran District. Analysis of man's mutual relationship with his environment as a relationship of subsystems and social subsystems. One of them sometimes affects, and one time it is influenced by the other. Community empowerment in environmental management will help sustainability in Pangandaran District [8] It should be seen the relationship between community understanding and sustainability of the utilization of coastal resources in the Pangandaran District can be seen in the table:

Table 5. Chi-Square Test on the Influence of Community Understanding Factors on the Sustainability of Pesisisir Resource Utilization in Pangandaran District.

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12,762a	4	.012
Likelihood Ratio	15.301	4	.004
Linear-by-Linear Association	3.489	1	.062
N of Valid Cases	50		

a. 3 cells (33.3%) have an expected count of less than 5. The minimum expected count is 1.40.

The result of the chi-square X2 test for variable understanding of the sustainability of coastal resource utilization to the sustainability of coastal resource utilization is 12,762 with df = 4; because X2 calculates> X2 tables (12,762 > 9,488), then Ha is accepted, and H0 is rejected or can be known with a signification value of 0.012 which has a meaning smaller than 0.05 which means significant. So it can be concluded that the understanding factor of the use of coastal resources has a significant effect on the sustainability of coastal resource utilization. Therefore, to sustain the use of coastal resources, there needs to be an understanding of their use so that the Community, as one of the actors involved, can contribute to the excellent use of coastal resources.

In addition to the understanding needed to support the sustainability of utilization, information about sustainability submitted by related parties such as the government also needs to go hand in hand; therefore, researchers see the relevance of information obtained with the sustainability of coastal resource utilization. Furthermore, there will be a relationship between community understanding and sustainability of the use of coastal resources in the Pangandaran District, which can be seen in the table:

Table 6. Chi-Square Test on the Influence of Policy Information Factors obtained by the Community on the Sustainability of The Utilization of Pesisisir Resources in Pangandaran District.

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12,998a	4	.011
Likelihood Ratio	11.454	4	.022
Linear-by-Linear Association	9.056	1	.003
N of Valid Cases	50		

a. 5 cells (55.6%) have an expected count of less than 5. The minimum expected count is .40.

The result of the chi-square ^{X2} test for variable understanding of the sustainability of coastal resource utilization to the sustainability of coastal resource utilization is 12,762 with df = 4; because X2 calculates> X2 tables (12,998 > 9,488), then Ha is accepted, and H0 is rejected or can be known with a signification value of 0.011 which has a meaning smaller than 0.05 which means significant. Then it can be concluded that information factors regarding the use of coastal resources have a significant effect on the sustainability of the use of coastal resources. The more information conveyed about the importance of sustainability of coastal resource

utilization, the higher the sustainability of coastal resource utilization in the Pangandaran District.

3.3 Conformity of Government Regulations and Utilization of Coastal Resources in the Pangandaran District

Regulation number 27 of 2007 concerning the Management of Coastal Areas and Small Islands, the government regulates economic and social factors in article 4 part C and Article 5 [9]. In social factors mentioned, one of the factors that can affect the sustainability of socialization and visits from local governments to the surrounding community that makes this region can be maintained sustainability; this is following regulations regarding the role of each section to form an understanding and delivery of the latest information about the sustainability of coastal resource utilization. The data shows a relationship between social factors and the sustainability of the use of coastal resources in the Pangandaran District.

Article 4 Part C also explains the role of the Community in the use of coastal resources related to social and economic values around the coast. When the sustainability of utilization is high, the higher the economic value taken from the utilization of coastal resources. When the higher socialization and government visits to coastal communities, the Community will increasingly understand how to manage good coastal resources. Therefore, there is a relationship between social and economic factors to the sustainability of the use of coastal resources.

In environmental factors, there are regional regulations that regulate the Regulation of Pangandaran Regency number 3 of 2018 concerning the spatial plan of Pangandaran Regency in 2018-2038 article 26 which explains the prevention of waste pollution carried out by the government through the following regulations with the same effect that occurs in the pangandaran subdistrict; there is a clean Friday for each week where there is cooperation and also the Number of garbage bins contained in the district. The government also carries out waste management with regular waste collection to maintain coastal sustainability [10].

4. CONCLUSION

The condition of the utilization of coastal resources in the Pangandaran District is classified as sustainable with a moderate level; this is seen from the perception of people who use coastal resources directly. This fact can be seen in 48% having a sustainability perception regarding the utilization of coastal resources in the Pangandaran District. This situation is supported by the interrelationship of information and understanding received by the Community related to the utilization of coastal resources of the Pangandaran District. The data results showed that Ha was accepted and H0 was rejected; there was a significant link between the sustainability of the use of coastal resources with information and understanding of the Community. The more information received and the more people who understand the importance of sustainability of coastal resource utilization, the sustainability of coastal resource utilization will be maintained. Other factors such as economic, environmental, and social factors significantly influence the sustainability of coastal resource utilization.

Comment [U5]: Rev. Note 5: I am afraid that you have to produce your results again and to write your text from the beginning in another way.
(a) As I understand it, you used SPSS for data analysis. So I would propose you to write somewhere in the «Methodology» section just this: «For data analysis SPSS (version ...) was used for descriprive statistics (frequencies and percentages) and for chi-square tests [5]. P values of less than 0.05 were regarded as statistically significant».
(b) As you used SPSS software, you don't need to write the basic formula of chi-square test and to refer to its primordial usage.
(c) In fact you need just one table. I propose you to put your results on a single table like the one I have written separately (color yellow) at the end of this revised text. Such a table is enough to discuss everything.
(d) I am sure though that most of the values you have written in the separate tables (just copied into the proposed unified template) are not correct.
(e) For every one chi-square test, please consider if Fisher's exact test is more proper.

Through Law Regulation Number 27 of 2007, the government discusses the interrelationship of social and economic factors and regional regulations governing the environment, namely The Regulation of Pangandaran Regency Number 3 of 2018 concerning spatial planning of Pangandaran Regency in 2018-2038. There is a relationship between government regulations and the sustainability of the use of coastal resources due to the interrelationship of economic and social factors regulated in the regulation. However, people still do not get information from the government about the use of coastal resources, which causes an uneven understanding of the sustainability of coastal resource utilization in the Pangandaran District and the existence of community welfare that has not been evenly assessed from economic factors, from the precepts of society.

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REVIEWER's PROPOSED TABLE TEMPLATE

Table 1: …frequencies and percentages distribution…….

		Sustainability of Coastal Resource Utilization (N=50)			Chi-square test
		Low (n=5, 10.0%)	Medium (n=24, 48.0%)	High (n=21, 42.0%)	
Economic Factors (N=…)	Low (n=…, …%)	4 (80.0%)	6 (24.0%)	2 (10.0%)	χ^2=…; df=…; P=…*
	Medium (n=…, …%)	3 (60.0%)	17 (68.0%)	15 (75.0%)	
	High (n=…, …%)	3 (60.0%)	13 (52.0%)	16 (80.0%)	
Social Factors (N=…)	Low (n=…, …%)	4 (80.0%)	9 (36.0%)	2 (10.0%)	χ^2=…; df=…; P=…
	Medium (n=…, …%)	1 (20.0%)	13 (52.0%)	10 (50.0%)	
	High (n=…, …%)	1 (20.0%)	12 (48.0%)	15 (75.0%)	
Environmental Factors (N=…)	Low (n=…, …%)	3 (60.0%)	11 (44.0%)	6 (30.0%)	χ^2=…; df=…; P=…
	Medium (n=…, …%)	2 (40.0%)	25 (100.0%)	17 (85.0%)	
	High (n=…, …%)	5 (100.0%)	25 (100.0%)	20 (100.0%)	

* denotes statistical significance (P<.05).