

Comments for the Editor

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Muhammad Ichsan Ali (mia21)

Messages

Note	From
<p>Dear</p> <p>Editor of International Journal of Sustainable Development and Planning</p> <p>Please consider the paper with the title "Environmental knowledge and attitude of coastal community in decision making to participate in mangrove rehabilitation in Sinjai District South Sulawesi Indonesia" for publication in International Journal of Sustainable Development and Planning.</p> <p>We declare all the authors approved that the paper is submitted to International Journal of Sustainable Development and Planning. We state also the paper is original, and has not been published elsewhere, and has not been submitted simultaneously for publication elsewhere.</p> <p>Corresponding author:</p> <p>Muhammad Ichsan Ali. E-Mail: michsanali21@gmail.com</p>	<p>mia21</p> <p>Nov 30</p>

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ENVIRONMENTAL KNOWLEDGE AND ATTITUDE OF THE COASTAL COMMUNITY IN DECISION-MAKING TO PARTICIPATE ON MANGROVE REHABILITATION IN SINJAI REGENCY SOUTH SULAWESI INDONESIA

Muhammad Ichsan Ali, Abdul Malik, Abd....

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Muhammad Ichsan Ali <michsanali21@gmail.com>

revise your manuscript submitted to IJSDP

3 messages

editor.ijmdp@iieta.org <editor.ijmdp@iieta.org>
To: michsanali21@gmail.com

Wed, Jan 12, 2022 at 6:24 PM

Dear author,

Thank you for contributing your paper to INTERNATIONAL JOURNAL OF SUSTAINABLE DEVELOPMENT AND PLANNING!

- Please revise your paper according to the attached comments.
- Highlight the revised parts in the final version of your paper and give a response according to review comments.
- Please typeset your paper according to template.

To ensure fast publication of your paper, please return your revised manuscript and answers to all queries to this email before **28 January, 2022**. Thus, we have enough time to process your manuscript in the next step. For further assistance, please do not hesitate to contact us via this email.

We would like to take this opportunity to thank you for choosing *International Journal of Sustainable Development and Planning* as your publishing medium and hope that we will receive further submissions from you in the future.

Best regards,

IJSDP Editorial Board**International Journal of Sustainable Development and Planning**<http://www.iieta.org/Journals/IJSDP>**International Information and Engineering Technology Association (IIETA)**<http://www.iieta.org/>

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Muhammad Ichsan Ali <michsanali21@gmail.com>
To: abd.rahim@unm.ac.id


Thu, Jan 13, 2022 at 1:33 AM


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Muhammad Ichsan Ali <michsanali21@gmail.com>
To: editor.ijsdp@iieta.org
Cc: abdulmalik@unm.ac.id, "Dr. Abd. Rahim UNM" <abd.rahim@unm.ac.id>

Fri, Jan 28, 2022 at 11:42 AM

Dear IJSDP Editorial Board

We sincerely thank and appreciate the constructive critics and relevant comments to this manuscript. We have implemented all the suggestions in the revised version of the manuscript and give responses to review comments.

Attached 3 files for it, including: 1. revised version of manuscript with track changes, 2. revised version of manuscript with no track changes, and 3. author's responses to reviewer comments.


Best regards,

Muhammad Ichsan Ali
Corresponding author

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3 attachments

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To Reviewer:

We sincerely thank and appreciate the constructive critics and relevant comments to this manuscript. We have implemented all the suggestions in the revised version of the manuscript.

Here is the detail of the revisions in the manuscript and our responses to the reviewer's comments:

REVIEWER'S COMMENTS

Title of the article reviewed:

Environmental knowledge and attitude of coastal community in decision making to participate in mangrove rehabilitation in Sinjai District South Sulawesi Indonesia

Summary

To analyze the influence of the knowledge and attitudes of coastal communities on the decision to participate in mangrove reconstruction in Tongke-Tongke village, Sinjai District, South Sulawesi. In this paper, qualitative descriptive statistical description is used to analyze the socioeconomic and demographic characteristics of families, and multiple regression equations and Logit model estimates are used to test participation decisions. The results show that knowledge and attitude have a critical role in determining their understanding and behaviors concerning mangrove rehabilitation, with positive and significant effects.

Minor Issues

ABSTRACT:

- The sentence “However, the majority of them have little income and are in poor status.” is illogical, so it is suggested to reorganize it.

Response: Thanks for the comment. We have decided to delete this sentence.

- The abstract part lacks logical sense, for example, the research background used in this paper is not introduced comprehensively.

Response: Thanks for the comment. We have edited it: “Adversity in the past has provided lessons, information, and understanding of coastal communities about the importance of adequately conserving and managing mangrove forests and encouraged their attitude towards mangrove rehabilitation”.

INTRODUCTION:

- It is recommended to add a brief description of the research method in the introduction part.

Response: Thank you for your comment and suggestion. We have added it at the end part of the introduction

METHODOLOGY:

- Part of the language of this article can be optimized to make the language more academic. For example, the sentence “Age can affect a person's decision and activities [16], and it is closely related to responsibilities, privileges, rights, and duties [17] and the level of individual's maturity that become a basic concern in understanding their response in terms of their knowledge and attitude on mangrove functions and benefits, and rehabilitation [11].”.

Response: Thank you for your comment and suggestion. We have edited the sentence “Age influences a person's decision-making and behaviors [16], and it is linked to responsibilities, rights, and duties [17], as well as the maturity level of an individual's response to mangrove functions and benefits, as well as rehabilitation [11]”.

- The paper uses the questionnaire survey method, and the author should introduce the design basis of the questionnaire, and the specific content of the questionnaire should be attached to the appendix.

Response: Thank you for your comment and suggestion. We have added it in the manuscript:

“The questionnaire contains information about the respondents' socioeconomic demographics (such as their age, education, occupation, household income), respondents' knowledge of mangrove functioning, benefits of mangrove goods and services, and attitudes toward mangrove rehabilitation initiatives. The authors and trained enumerators questioned the household heads”.

We also added the specific content of the questionnaire in the appendix.

- It is recommended to add the introduction of and the country and continent the area in.

Response: Thank you for your comment and suggestion. We have added it in the part of the introduction

- The typography of Formula 2 in this part is confused, so it is suggested to be modified.

Response: Thanks for your comment and suggestion. We have revised it:

$$\frac{P_i}{1-P_i} = DCRM = \beta_0 + \beta_1 Ag + \beta_2 Edu + \beta_3 Kw + \beta_4 Att + \beta_5 \pi H + \mu \quad (2)$$

Where P_i : probabilities with values between 0 and 1. $DCRM$: Decision of the coastal community to rehabilitate mangroves (1, decided on participation; 0, for other). β_0 : intercept. β_1, \dots, β_5 : regression coefficient of the independent variable. Ag : age (year). Edu : education (year). Kw : knowledge. Att : attitude. πH : household income. μ : error term.

RESULTS AND DISCUSSION:

- It is mentioned in this article that “The dominance of fishing occupations points out that the area of the study is a coastal community.”. This sentence is of little significance, so it is suggested to be delete.

Response: We have deleted this sentence. Thank you for the suggestion.

- The selection criteria of respondents were not mentioned, so it is suggested to add it.

Response: Thanks for the comment and suggestion. We have edited the sentence and added the selection criteria of respondents:

“A household survey in Tongke-Tongke village was used to conduct fieldwork in August 2019. Random sampling was used to identify 150 respondents who lived near mangrove areas and relied on mangrove services to complete structured questionnaires”.

- The adjusted R^2 is only 0.2574, indicating a low goodness of fit. It is suggested to remove outliers, take logarithms, and conduct autocorrelation tests.

Response:

Thanks for the comment and suggestion. We have revised it by taking logarithms using SPSS software, but we cannot do autocorrelation testing because the research data used are cross-sectional data or primary data. Autocorrelation problems only generally occur in time-series data or secondary data. In cross-sectional data, this problem is not found (Gujarati and Porter, 2009). Autocorrelation or serial correlation is one of the critical assumptions of the OLS method related to the existence of a relationship between one disturbance variable and another, the correlation between one variable or sample with

another sample or μt with $\mu t-1$ or other random error observations in sample members sorted according to time series with the equation $\mu t = \rho \mu t-1 + vt$.

$$Z_i = \text{Ln} \left(\frac{P_i}{1-P_i} \right) = \beta_0 + \beta_i X_i \quad (1)$$

Based on equation (1), The decision of coastal communities to rehabilitate mangroves uses an exponential estimation model of the multiple regression equation (Gujarati and Porter, 2009) with a logit model estimation (Borooah, 2002), as follows:

$$DCRM = \left(\frac{P_i}{1-P_i} \right) = \beta_0 Ag^{\beta_1} Edu^{\beta_2} Kw^{\beta_3} Att^{\beta_4} \pi H^{\beta_5} \mu \quad (2)$$

Furthermore, to facilitate the estimation of equation (2), it can be converted into a natural logarithm in the form of a double log (Ln) as follows:

$$DCRM = \left(\frac{P_i}{1-P_i} \right) = \beta_0 + \beta_1 \text{Ln}Ag + \beta_2 \text{Ln}Edu + \beta_3 \text{Ln}Kw + \beta_4 \text{Ln}Att + \beta_5 \text{Ln}\pi H + \mu \quad (3)$$

Where P_i : probabilities with values between 0 and 1. $DCRM$: Decision of the coastal community to rehabilitate mangroves (1, decided on participation; 0, for other). β_0 : intercept. β_1, \dots, β_5 : regression coefficient of the independent variable. Ag : age (year). Edu : education (year). Kw : knowledge. Att : attitude. πH : household income. μ : error term.

Table 2. The influence factors of coastal communities in the decision-making to participate in mangrove rehabilitation

Independent Variable	E.S	Coefficient (β_i)	t-test	Sig.
Age	+	0.081ns	0.718	0.474
Education	+	0.144ns	1.355	0.178
Knowledge	+	0.394***	3.238	0.001
Attitude	+	0.316***	2.550	0.012
Household income	+	0.003ns	0.057	0.955
Intercept				-0.625
F-test				11.811
Adjusted R ²				0.266
n				150

Descriptive Statistics

	Mean	Std. Deviation	N
DCRM	.68	.468	150
lnAg	3.6445	.29954	150
lnEdu	1.8675	.31982	150
lnKw	.7344	.37801	150
lnAtt	1.2992	.36823	150
lnIH	14.3908	.67111	150

Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.539 ^a	.291	.266	.401	1.971

a. Predictors: (Constant), lnIH, lnAg, lnAtt, lnEdu, lnKw

b. Dependent Variable: DCRM

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.493	5	1.899	11.811	.000 ^b
	Residual	23.147	144	.161		
	Total	32.640	149			

a. Dependent Variable: DCRM

b. Predictors: (Constant), lnIH, lnAg, lnAtt, lnEdu, lnKw

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.	Collinearity Statistics	
		B	Std. Error				Tolerance	VIF
1	(Constant)	-.625	.830		-.753	.453		
	lnAg	.081	.113	.052	.718	.474	.944	1.060
	lnEdu	.144	.106	.098	1.355	.178	.935	1.069
	lnKw	.394	.122	.318	3.238	.001	.509	1.963
	lnAtt	.316	.124	.249	2.550	.012	.518	1.931
	lnIH	.003	.050	.004	.057	.955	.952	1.051

a. Dependent Variable: DCRM

- It is mentioned in this article that “Mangrove knowledge and attitude play an important role in determining people's understanding and behavior regarding mangrove rehabilitation issues.”. This sentence is illogical, so it is suggested to reorganize it.

Response: Thank you for your comment and suggestion. We have edited the sentence: “Their knowledge and attitudes significantly influence the understanding and behavior of communities in mangrove rehabilitation issues”.

- Part of the language of this article can be optimized to make the language more academic. For example, the sentence “Thus, it encouraged them to conserve and rehabilitate mangrove forests as a natural fortress defense for their lives against the threat of abrasion, seawater intrusion, storms, and big waves.”.

Response: Thanks for the comment and suggestion. We have edited the sentence: “Coastal communities have been encouraged to maintain and rehabilitate mangrove forests as a natural fortress defense against erosion, seawater incursion, storms, and large waves due to these experiences”.

CONCLUSIONS

- The limitations of the article and future research directions are not mentioned in this part, so it is recommended to add it.

Response: Thank you for your comment and suggestion. We have added it in the conclusions section.

- The conclusions are too short, so it is recommended to enrich it, such as adding policy recommendations.

Response: Thank you for your comment and suggestion. We have added it in the conclusions section.

- The summary section does not explain the specific results of the study.

Response: Thank you for your comment and suggestion. We have added it in the conclusions section.

Others:

The following minor issues should be looked into by the author:

- There are problems with the format of the references.

Response: Thank you for your comment. We have revised it accordingly.

- There are problems with the format of the article. For example, most paragraphs do not have the first line indent.

Response: Thank you for your comment. We have edited it.

- There are some tense problems in this article, so it is suggested to modify it accordingly.

Response: Thank you for your comment and suggestion. We have revised it accordingly.

Environmental knowledge and attitude of coastal community in decision making to participate in mangrove rehabilitation in Sinjai District South Sulawesi Indonesia

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<https://doi.org/10.18280/ijstdp.xxxxx>

ABSTRACT

Received:

Accepted:

Keywords:

Environmental education, *participation*, mangrove, rehabilitation, South Sulawesi

~~Adversity in the past has provided lessons, information, and understanding of coastal communities about the importance of adequately conserving and managing mangrove forests and encouraged their attitude towards mangrove rehabilitation success.~~ Knowledge and attitude of coastal communities determining mangrove rehabilitation success. The study aims are to ~~analyse~~ *analyse* the influence of knowledge and attitude of coastal communities on the decision to participate in mangrove rehabilitation in Tongke-Tongke village, Sinjai district, South Sulawesi. A household survey was conducted in August 2019. Structured questionnaires were administered to 150 respondents who were selected through random sampling. The socioeconomic demographic characteristics of households were described using qualitative descriptive statistics, ~~and a multiple regression equation examined the decision to participate~~ and the decision to participate was examined by a multiple regression equation with a logit model estimation. The majority of the coastal communities have a low-level education and rely on fishing and shrimp farming as their primary source of income. ~~However, the majority of them have little income and are in poor status.~~ In contrast, ~~knowledge~~ *Knowledge* and attitude ~~have a play a~~ *have a play a* critical role in determining their understanding and behaviour concerning mangrove rehabilitation, with positive and significant effects.

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1. INTRODUCTION

Mangroves are one of the most useful coastal ecosystems in the tropics and subtropics, providing many ecosystem goods (such as fuelwood, charcoal, food, medicines, and construction materials) and services (such as carbon sequestration, coastal protection, prevention of saltwater intrusion, provision of breeding and nursery grounds for marine and pelagic species, education and scientific research, and ecotourism) for human well-being [1,2].

There are a total of 15.2 million hectares of mangrove forests worldwide, distributed among the regions of Asia (38%), Africa (21%), North and Central America (15%), Oceania (13%), and South America (13%) [3]. In addition, Richards & Friess [4] reported that more than one-third of the world's mangroves are found in Southeast Asia, and Indonesia is the largest mangrove area (more than 2.7 million hectares; observed 2000). However, in recent decades, communities around the mangrove area have been highly dependent on the mangroves, resulting in heavy exploitation and deforestation [5,6]. Therefore, it is crucial to conserve and rehabilitate the

mangrove areas to preserve their products for the livelihood of the communities.

~~Sinjai district, in South Sulawesi province, Indonesia, is one of the hotspots of mangrove areas and has become a popular tourist destination [7]. However, mangrove exploitation, mainly for the expansion of aquaculture ponds, began in the 1930s [8], with the most prominent development occurring in the last three decades [9]. Mangrove rehabilitation has been carried out on the initiative of the local community since 1984 [8]. The local community's environmental knowledge and attitudes toward mangrove protection and sustainable management are thought to be the trigger. Sinjai district is one of the hotspot mangrove areas and has become a famous tourist destination in South Sulawesi province [7]. However, the exploitation of mangroves mainly for aquaculture ponds expansion had started in the 1930s [8], and the most significant took place in the last three decades [9]. Since 1984, mangrove rehabilitation has been carried out at the initiative of local communities [8]. It is believed that local communities' environmental knowledge and attitude towards mangrove conservation and sustainable management is the trigger.~~ Sugandini et al. [10] revealed that ~~perceived~~

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towards mangrove functions, and benefits of products and services and rehabilitation. Furthermore, the coastal community's decisions on mangrove rehabilitation were represented by the response to the qualitative dependent variable or logit model [13]. The model is based on logistic distribution, which in most cases describes the dichotomous dependent variable model in most cases. The cumulative logistic probability function model is written as follows:

$$Z_i = \text{Ln} \left(\frac{p_i}{1-p_i} \right) = \beta_0 + \beta_1 X_i \quad (1)$$

According to equation 1, multiple regression equation estimation model [14,15] with logit model estimation [13] is used for the decision of coastal communities to rehabilitate mangroves as follows:

$$\frac{p_i}{1-p_i} = \text{DCRM} = \left(\frac{p_i}{1-p_i} \right) = \beta_0 + \beta_1 Ag + \beta_2 Edu + \beta_3 MKw + \beta_4 Att + \beta_5 \pi H + \mu \quad (2)$$

Where p_i : probabilities with values between 0 and 1. DCRM : Decision of the coastal community to rehabilitate mangroves (1, decided on participation to rehabilitate mangroves; 0, for other). β_0 : intercept. β_1, \dots, β_5 : regression coefficient of the independent variable. p_i : probabilities with values between 0 and 1. Ag : age (year). Edu : education (year). MKw : mangrove knowledge. Att : attitude. πH : household income. μ : error term.

The specification model equations 1 and 2 were equipped with measurement of model accuracy (*adjusted R²*) and hypothesis testing (F-test and t-test). The measurement of model accuracy or suitability (*goodness of fit*) was calculated by *adjusted R²*, as follows: [14,15]

$$\text{Adjusted } R^2 = 1 - (1 - R^2) \frac{(n-1)}{(k-1)} \quad (3)$$

Where, *Adjusted R²*: coefficient of determination adjusted. k: number of variables did not include intercept. n: number of samples.

Furthermore, the hypothesis testing on the regression coefficient is jointly used the F-test with a certain level of confidence, as follows: [14,15]

$$F \text{ hitung} = \frac{ESS/(k-1)}{RSS/(n-k)} \quad (4)$$

$$F \text{ tabel} [(k-1); (n-k); \alpha] \quad (5)$$

Where α : level of significance or specification error. k: number of variables did not include intercept. n: number of samples.

Testing of the regression coefficient individually (partially) used the t-test with a certain level of confidence, as follow: [14,15]

$$t \text{ test} = \frac{\beta_i}{S\beta_i} \quad (6)$$

$$t \text{ table} [(n-k); \alpha/2] \quad (7)$$

Where, β_i : regression coefficient of i . $S\beta_i$: standard error of regression coefficients to i .

3. RESULTS AND DISCUSSION

3.1 Socioeconomic-demographic characteristics of Household

The summary results of socioeconomic-demographic characteristics of household respondents provide in Table 1. Based on gender, most of the respondent is dominated by male (64.67%). The high of the male sex is related to the dominance of livelihood in the fishery sector in this area.

Table 1. Summary of socioeconomic-demographic profiles of respondents

Variables	Frequency (f)	Percentage (%)
Gender		
Male	97	64.67
Female	53	35.33
Total	150	100.00
Age (in years)		
20 - 30	36	24.00
31 - 40	48	32.00
41 - 50	34	22.67
51 - 60	20	13.33
61 - 70	12	8.00
Total	150	100.00
Educational achievement		
No completed elementary school	62	41.33
Elementary school (SD)	47	31.33
Junior high school (SMP)	24	16.00
Senior high school (SMA)	13	8.67
University	4	2.67
Total	150	100.00
Occupation		
Fisherman	83	55.33
Shrimp farmer	26	17.33
Seaweed farmer	18	12.00
Firewood collector	6	4.00
Civil servant	4	2.67
Businessman	13	8.67
Total	150	100.00
Household income (in USD/month)		
34 - 69	41	27.33
76 - 138	42	28.00
145 - 207	30	20.00
214 - 276	15	10.00
283 - 345	13	8.67
352 - 414	9	6.00
Total	150	100.00

Currency rate on 25 March 2021: 1 USD = 14,500 Rupiahs

The age structure is crucial in identifying a person's status and role in the community and plays an essential role in determining the status and role of a person in the community and in knowing and understanding their views regarding on specific issues [11]. Age influences and affect a person's decision-making and activities-behaviors [16], and it is closely related to responsibilities, privileges, rights, and duties [17], as well as and the level of individual's maturity level of an individual's that become a basic concern in understanding their response to mangrove functions and benefits, as well as

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rehabilitation in terms of their knowledge and attitude on mangrove functions and benefits, and rehabilitation [11]. The majority age brackets of the respondents in this area were between 31 and 40 years (32%), with followed by 20-30 years coming in second (24%). As a result, the productive ages of the population are the majority in this area. Hence, it indicates that the productive ages of the population dominate this community.

When it comes to

Concerning educational achievement, most of the respondents (41.33%) did not complete Elementary School, followed by Elementary School graduates (31.33%). It indicates that most coastal communities in this area have a low level of education level. Besides, this finding confirms the broadly held assumption that most local coastal communities have a low standard of education standard.

In terms of

Relative to occupation, more than half of respondents (55.33%) are working as fishermen, followed by (55.33%) and then as shrimp farmers (17.33%). The dominance of fishing occupations points out that the area of the study is a coastal community. Besides, it also indicates that the most majority of communities that are living near the coastal area are highly dependent on fishery resources, and with this sector becomes becoming the predominant source of income for the coastal community in this area. According to the FAO [18], approximately six million people out of a population of 250 million work in fisheries and aquaculture in Indonesia. It is estimated that over six million people of 250 million people engaged themselves in fisheries and aquaculture in Indonesia, with small-scale fisheries accounting for nearly all fishery products with almost 100% of fishery products derived from small-scale fisheries.

Finally, in connection to the household income, most of the respondents (28%) received revenue earned between 76 USD and 138 USD per month, followed by 34 USD to 69 USD per month (27%). According to the 2020 Indonesian Statistics Agency report [19], most household income is less than 138 USD per month, implying that most household revenues are low and still in the poor category. This research backs up the findings of Malik et al. [20], who found that most coastal settlements in South Sulawesi are in poor condition and have a low household income. The dominance of household income below 138 USD per month indicates that most household revenues are low and still in the poor category based on the 2020 Indonesian Statistics Agency report [19]. This study confirms Malik et al. [20] finding that demonstrated the most coastal communities in South Sulawesi are in poor condition, with a household income at a low rate.

3.2 The influencing factors of coastal community in the decision-making to participate in mangrove rehabilitation

After studying the coastal community's influencing elements (age, education, occupation, knowledge, and attitude) in determining to repair mangroves, Table 2 reveals that the model's accuracy value (adjusted R²) is 0.266. The independent variables account for 26.60 percent of the total. Table 2 shows that the model's accuracy value (adjusted

R²) is 0.2574 after examining the coastal community's influencing factors (age, education, occupation, mangrove knowledge, and attitude) in deciding to rehabilitate mangroves. The independent variables contribute 25.74%, whereas others (73.40%) have no influence. Whereas other models do not influence 74.26%.

Furthermore, the F-test showed that all independent variables, including age, education, knowledge of mangroves, attitudes, and household income, simultaneously significantly affect the coastal community's decisions to participate in mangrove rehabilitation. When the test is expanded with the t-test, knowledge and attitudes variables have a positive and significant effect with an error rate of 5% (0.05) and a confidence level of 95%, while other factors have no significant effects. It is in line with Hakim & Darusman's [21] finding that age, education, occupation, and income do not affect the coastal communities deciding on mangrove forest management in the Wonorejo Village East Java Indonesia.

Table 2. The influence factors of coastal communities in the decision-making to participate in mangrove rehabilitation actions

Independent Variable	E.S	Coefficient (β)	t-test	Sig.
Age	±	0.081 ^{ns}	0.718	0.474
Education	±	0.144 ^{ns}	1.355	0.178
Knowledge	±	0.394 ^{***}	3.238	0.001
Attitude	±	0.316 ^{***}	2.550	0.012
Household income	±	0.003 ^{ns}	0.057	0.955
Intercept				-0.625
F-test				11.811
Adjusted R ²				0.266
n				150

*is a level error significance of 5 % (0.05), or confidence level 95 %. E.S is an expectation sign. ns is not significant.

Independent Variable	E.S	Coefficient (β)	t-test	Sig.
Age	+	0.00159 ^{ns}	-1.5566	0.5786
Education	+	0.01629 ^{ns}	-1.2521	0.2125
Household income	+	6.7315E-09 ^{ns}	0.8830	0.7735
Knowledge	+	0.16722 [*]	2.8994	0.0043
Attitude	+	0.13896 [*]	3.6888	0.0003
Intercept				-0.4198
F-test				11.3340
Adjusted R ²				0.2574
n				150

*is a level error significance of 5 % (0.05), or confidence level 95 %. E.S is an expectation sign. ns is not significant.

Furthermore, the F-test showed that all independent variables include age, education, knowledge of mangroves, attitudes, and household income, are simultaneously having a significant effect on the coastal community's decisions to participate in mangrove rehabilitation. However, when the test expands with the t-test, mangrove knowledge and attitudes variables as partial have a positive and significant effect with an error rate of 5% (0.05) or confidence level of 95%, while other factors have no significant effects. It is in line with Hakim & Darusman's [21] finding that age, education,

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occupation, and income do not affect the coastal communities deciding on mangrove forest management in the Wonorejo Village East Java Indonesia.

Mangrove—k Their knowledge and attitudes significantly influence the understanding and behavior of communities in mangrove rehabilitation issues. knowledge and attitude play an important role in determining people's understanding and behavior regarding mangrove rehabilitation issues. Public awareness based on knowledge and attitude is the key to mangrove rehabilitation and management success [22], and Public awareness becomes a capacity basis for the coastal community to participate in pro-environmental behavior and is considered the first phase to a change towards acting pro environmentally, including participating in mangrove rehabilitation and Management [11]. Besides, the environmental problems considered serious are factors driving the protection and rehabilitation of mangrove areas among stakeholders [23].

In era 1980s, mangrove areas on the east coast of the Sinjai Regency, including the Tongke-Tongke coastal area, had experienced high exploitation due to logging and aquaculture ponds development. Abrasion and seawater intrusion has caused coastal lands to erode, ponds to be damaged, and people's water to become salty in many coastal areas. Many coastal areas have experience abrasion and seawater intrusion that consequence coastal areas eroded, ponds destroyed, and people's water becoming salty. Many residential areas are inundated by rising seas, threatening settlements, and fishing boats destroy and lose when storms and large waves occur. When storms and big waves occur, many residential areas are inundated due to rising seawater threatening their settlements, and fishing boats destroy and lose [8,9]. The majority of the community had learned and understood the need to maintain mangrove forests due to Coastal communities have been encouraged to maintain and rehabilitate mangrove forests as a natural fortress defense against erosion, seawater incursion, storms, and large waves due to these experiences. These experiences. Thus, it encouraged them to conserve and rehabilitate mangrove forests as a natural fortress defense for their lives against the threat of abrasion, seawater intrusion, storms, and big waves.

4. CONCLUSIONS

The influence of coastal community knowledge and attitudes on decision-making to participate in mangrove rehabilitation actions in Tongke-Tongke Village, Sinjai District, South Sulawesi has a positive and significant effect with an error rate of 5% (0.05) and a confidence level of 95%. In contrast, other factors (age, education, and household income) have no significant effects. The accurate model values (adjusted R² = 0.266) indicates that the independent variables account for 26.60 percent of the total, whereas other variables (73.40%) have no influence.

Some mangrove benefits and services are familiar to half of the coastal community, and they are typically supportive of mangrove rehabilitation activities. Past adversity has offered lessons, information, and understanding of the significance of adequately protecting and managing mangrove forests and encouraged their attitude to conduct mangrove conservation and rehabilitation. However, as mangrove cutting and extension of aquaculture ponds still occur in this

area, local authorities should provide comprehensive counseling to the community about mangrove conservation and rehabilitation to improve their understanding and awareness.

The limitations of data on independent variables, such as length of stay, number of families supported by respondents, as well as the frequency of counseling and rehabilitation activities in this area, are thought to cause the Adjusted R² value to be low, despite the variables of knowledge and attitude having a significant influence. Therefore, future research is recommended to be able to cover it.

This study has provided a piece of evidence that the coastal community's knowledge and attitude have a positive and significant effect in decision-making to participate in mangrove rehabilitation in Tongke-Tongke Village in the Sinjai District. Half of the coastal community already knows the functions and benefits of mangrove services, and generally, they have a supportive attitude toward mangrove rehabilitation efforts. Adverse past events have provided lessons, knowledge, and awareness of the importance of protecting and managing mangrove forests well and have encouraged their attitude toward conserving and rehabilitating them.

ACKNOWLEDGMENT

The authors would like to thank the Universitas Negeri Makassar for funding this research through the PNPB Universitas scheme. We also thank the Governments of South Sulawesi and the Sinjai Regency for their supporting of this research. We are also grateful to the anonymous reviewers for their helpful comments and suggestions on this paper.

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APPENDIX

Research Questionnaire

No.	PERTANYAAN (Question)	JAWABAN (Answer)
1	<i>Nama (Name)</i>
2	<i>Umur (Age)</i>
3	<i>Jenis Kelamin (sex)</i>	<i>Laki (L) /perempuan (P) (male/female)</i>
4	<i>Status Perkawinan (marital status)</i>	1. <i>Kawin (married)</i> 2. <i>Belum kawin (not married)</i> 3. <i>Duda/janda (widower/widow)</i>
5	<i>Tingkat Pendidikan (level of education)</i>	1. <i>Tidak pernah sekolah (No completed elementary school)</i> 2. <i>SD (Elementary school)</i> 3. <i>SMP (Junior high school)</i> 4. <i>SMA (Senior high school)</i> 5. <i>Perguruan tinggi (University)</i>
6	<i>Kedudukan responden dalam rumah tangga (Position respondent in household)</i>	1. <i>Kepala keluarga (Head of household)</i> 2. <i>Istri/pasangan (wife/partner)</i> 3. <i>Anak laki-laki/perempuan (son/daughter)</i> 4. <i>Lainnya, Sebutkan (other, specify):</i>
7	<i>Mata pencaharian (Occupation)</i>	1. <i>Nelayan (fisherman)</i> 2. <i>Petani tambak (shrimp farmer)</i> 3. <i>Petani rumput laut (seaweed farmer)</i> 4. <i>Pemungut kayu hutan (firewood collector)</i> 5. <i>Pegawai Negeri Sipil/PNS (civil servant)</i> 6. <i>Pedagang/pengusaha (Businessman)</i> 7. <i>lainnya, sebutkan (other, specify)</i>
8	<i>Jika mendapatkan hasil/pendapatan, berapa besar total jumlahnya per bulan atau permusim yang diperoleh rumah tangga? (If activity generates income, how much income is received by household per month or season)</i> <i>Tolong jabarkan dari tiap anggota keluarga (please describe for each of the household members):</i>	1. <i>Kepala keluarga (Head of household):</i> Rp. 2. <i>Istri/pasangan (wife/partner)</i> Rp. 3. <i>Anak laki-laki/perempuan (son/daughter):</i> Rp. 4. <i>Lainnya, Sebutkan (other, please specify):</i> Rp. Total = Rp.
9	<i>Apakah Anda mengetahui fungsi dan manfaat dari hutan mangrove? (Do you know the functions and benefits of mangrove forests?)</i>	1. <i>Tahu (Known)</i> 2. <i>Cukup tahu (Moderate)</i> 3. <i>Tidak tahu (Not known)</i> <i>Jika Anda tahu atau cukup tahu, silahkan sebutkan (If you know please specify):</i>
10	<i>Bagaimana tanggapan Anda terkait kegiatan konservasi dan rehabilitasi kawasan hutan mangrove yang ada di sekitar Anda? (Do you agree regarding the conservation and rehabilitation activities for mangrove areas around you?)</i>	1. <i>Sangat setuju (Strongly agree)</i> 2. <i>Setuju (Agree)</i> 3. <i>Netral (Neutral)</i> 4. <i>Tidak Setuju (Disagree)</i> 5. <i>Sangat tidak Setuju (Strongly disagree)</i>
11	<i>Apakah Anda bersedia berpartisipasi dalam kegiatan rehabilitasi mangrove (Are you willing to participate in mangrove rehabilitation activities)?</i>	1. <i>Ya (Yes)</i> 2. <i>Tidak (No)</i>

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