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Understanding Environmental Protection Behavior Among Coastal Communities: A Case Study of South Buton Regency, Indonesia

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Abstract:
The coastal area of South Buton Regency faces various environmental challenges, including coastal ecosystem degradation, shoreline abrasion, declining environmental quality, and limited community participation in environmental education and conservation actions. These conditions indicate that the success of coastal management is determined not only by policy frameworks but also by the behavior of communities that directly interact with the coastal environment. This study aims to examine the effects of environmental knowledge, coastal ecosystem knowledge, local cultural knowledge, environmental concern, environmental motivation, and environmental attitudes on environmental conservation behavior among coastal communities in South Buton Regency, Indonesia. A quantitative cross-sectional design was employed, involving 250 respondents selected through purposive sampling. Data were collected using structured questionnaires and analyzed through multiple linear regression with SPSS. The findings reveal that coastal ecosystem knowledge, local cultural knowledge, environmental concern, environmental motivation, and environmental attitudes significantly influence environmental conservation behavior, while general environmental knowledge shows no significant effect. These results highlight the importance of context-specific knowledge and affective factors in promoting sustainable coastal environmental conservation.

Keywords: Coastal conservation, Coastal environmental preservation, Sustainable development.

I. Introduction

As an archipelagic nation, Indonesia boasts immense natural potential in its coastal areas. Coastal ecosystems, including mangroves, coral reefs, and seagrass beds, protect the coastline and support local food sources. Furthermore, the use of these areas as tourist destinations has significantly impacted local

economic growth in coastal areas. However, the exploitation of coastal resources has significantly impacted environmental quality. Exploitation of marine resources has resulted in the loss of mangroves and the destruction of coral reefs. Furthermore, inadequate management of coastal areas has resulted in slums and neglected coastal settlements.

The coastal environment in South Buton faces various pressures and challenges. Environmental pressures resulting from land use and community activities are characterized by minimal waste management. Some coastal communities still view the sea as the most effective waste disposal site. Consequently, coastal ecosystems are increasingly damaged, both on land and in water areas. The presence of waste in residential areas creates slums and impacts public health. The negative impact of waste in waters is the decline in the quality of mangroves and coral reefs.

The coastal potential of South Buton Regency contributes significantly to ecological, economic, social, and cultural conditions. However, unsustainable exploitation of natural resources will negatively impact coastal environmental sustainability. As a control measure, this study focuses on community environmental behavior in environmental protection. Community behavior, reflected in knowledge, attitudes, and daily practices, plays a strategic role in determining the success of sustainable coastal management. By understanding community environmental behavior patterns, this research is expected to provide an empirical basis for formulating more effective, participatory, and sustainable coastal environmental protection strategies in South Buton Regency.

The study of environmental behavior is rooted in the theory of planned behavior [1], which states that knowledge plays a cognitive role in shaping attitudes toward behavior and perceived behavioral control. A person's knowledge contributes to the formation of behavior. In other words, a person's knowledge of how to protect the coast impacts their actions in managing the environment. Thus, knowledge indirectly influences behavioral intention and, ultimately, actual behavior. Environmental psychology theory explains that behavior is formed as a result of a rational process based on the information and understanding possessed by the individual.

In addition to knowledge, other psychological variables such as attitude, motivation, and concern also play a significant role. Clayton and Myers [2] stated that attitudes are formed from values believed to be direct indicators of behavior. Hines' theory [3], on the other hand, links attitudes to pro-environmental behavior, and Stern [4] links motivation to environmental conservation behavior.

2. Methodology

This research is quantitative research with descriptive and inferential approaches to analyze the direct influence of environmental knowledge, coastal ecosystem knowledge, local cultural knowledge, environmental awareness, environmental preservation motivation, and environmental preservation attitudes on the environmental preservation behavior of coastal communities. This research is located in the coastal area of South Buton Regency. The number of respondents is 250 people, who were determined using purposive sampling techniques with the following criteria: (1) domiciled in the coastal area for at least five years, and (2) having direct involvement in activities that interact with the coastal environment.

Data collection was conducted through observation and structured questionnaires with a Likert scale of 1–

5 for instrument variables, motivation, attitudes and behavior of the community in preserving the environment as well as knowledge variables and concern variables with a scale of 0-1, where a value of 0 indicates low knowledge while a value of 1 indicates a high level of knowledge. analyzed using SPSS 21 software. Descriptive analysis was used to describe the level of each research variable. Furthermore, to test the direct influence between variables, multiple linear regression analysis was used with a significance level of $\alpha = 0.05$. This analysis aims to identify variables that have a significant influence on the behavior of preserving the environment of coastal communities.

3. Result and Discussion

The respondents in this study were people living near coastal areas, whose daily lives are inextricably linked to direct interaction with the coastal environment and its natural resources. Coastal geography shapes the social, economic, and cultural characteristics of these communities, which generally depend on marine and coastal activities such as fishing, coastal resource utilization, and local cultural practices passed down through generations. Therefore, the respondents possess relevant contextual experience and knowledge regarding environmental issues and coastal ecosystem management.

The presence of coastal communities also makes them a vulnerable group and plays a strategic role in environmental conservation efforts. Settlement patterns, livelihoods, and levels of interaction with the coastal environment are important factors influencing respondents' perceptions, attitudes, and behaviors. Based on this background, it is necessary to describe the characteristics of the respondents to provide an initial overview of the research subjects' conditions before discussing the results in more depth.

Respondent Characteristics

The presentation of respondent characteristics aims to provide a general overview of the respondents' backgrounds, thus helping them understand the context of the data and interpret the research results more comprehensively. This information includes demographic and social aspects relevant to the research objectives. Respondent characteristics are presented in tabular form to facilitate readers in viewing the distribution and proportions of each variable studied. The characteristics of the respondents in this study can be seen in the following table:

Table 1: Respondent Characteristics

Category	Frequency	Percentage
Gender		
Male	199	80%
Female	51	20%
Age		
15 - 25	36	14%
26 - 36	67	27%
37 - 47	68	27%
48 - 58	67	27%
> 58 years	12	5%
Length of Residence		
More than 5 years	229	92%

Less than 5 years	21	8%

Source: Data processed, 2025

Based on Table 1, the number of respondents in the study was 250, with the majority being male (80%). The largest age group was 37–47 years old (27%), which is considered productive age. Most respondents (92%) had lived in coastal areas for more than five years, indicating a good level of engagement and understanding of local environmental conditions.

Description of Research Data

Environmental knowledge is an individual's level of understanding of environmental conditions, the causes of environmental damage, and the impact of human activities on ecosystem balance. This variable reflects the extent to which an individual is aware of environmental issues such as pollution, natural resource degradation, climate change, and the importance of environmentally friendly behavior. Environmental knowledge serves as a cognitive foundation that influences how individuals assess, behave, and act toward the environment. The greater the level of environmental knowledge, the greater the individual's potential to demonstrate pro-environmental behavior in everyday life.

Furthermore, coastal ecosystem knowledge refers to an individual's understanding of the types, functions, and roles of coastal ecosystems, such as mangroves, coral reefs, seagrass beds, and shallow marine waters. This variable encompasses knowledge of the benefits of coastal ecosystems as habitats for marine life, natural coastal protection, and support for the livelihoods of coastal communities. Furthermore, this knowledge also encompasses an understanding of the impact of human activities on the sustainability of coastal ecosystems. A good level of coastal ecosystem knowledge is expected to increase community awareness and responsibility in preserving the coastal environment.

Conservation knowledge focuses on an individual's understanding of the principles, goals, and practices of environmental and natural resource conservation. This variable encompasses knowledge of conservation efforts, such as habitat protection, sustainable resource use, pollution reduction, and community involvement in conservation activities. Conservation knowledge also encompasses an understanding of policies, rules, and norms related to environmental protection. Individuals with high levels of conservation knowledge are more likely to support and participate in environmental protection efforts, both individually and collectively.

Local cultural knowledge is an individual's understanding of the values, norms, beliefs, and traditional practices of the local community related to environmental utilization and management. In the context of coastal communities, local cultural knowledge encompasses local wisdom in managing marine resources, customary rules, and traditions embodying principles of environmental sustainability. This variable emphasizes that local culture serves not only as a social identity but also as a social mechanism that regulates human relations with the environment. Strong local cultural knowledge can be an important foundation for encouraging environmental behavior that aligns with community values and ecosystem sustainability. The following description of the level of community knowledge across the four variables is outlined in Table 2.

Table 2: Description of Coastal Community Knowledge Variables

Indicator	Environmental Knowledge	Coastal Ecosystem Knowledge	Conservation Knowledge	Local Cultural Knowledge
Affective	0.91	0.94	0.39	0.85
Cognitive	0.9	0.87	0.53	0.73
Psychomotoric	0.84	0.85	0.96	0.91
Average	0.88	0.89	0.63	0.83

Communities living along the coast of South Buton Regency demonstrate a very high level of environmental knowledge, including an understanding of coastal ecosystems and local cultural aspects inherent in their daily lives. This is in line with research findings showing that environmental knowledge and local traditions are important predictors in shaping community awareness of sustainable coastal environmental management, where local knowledge and traditions have a positive relationship with environmental awareness in Indonesian coastal communities [5]. Knowledge of coastal ecosystems among coastal communities also appears to be strengthened through various environmental literacy programs that can improve technical understanding of coastal ecosystems such as mangrove function, beach cleanliness, and marine resource conservation [6].

Next, to obtain an overview of each indicator representing motivation, concern, attitudes, and behavior in coastal environmental management and preservation, the values displayed reflect the perceptions and responses of coastal communities to various aspects related to their interactions with their surroundings. The results of the descriptive analysis of the research variables and indicators are presented in the following table.

Table 3: Description of Motivation, Concern, Attitude and Behavior Variables of Coastal Communities

Variable	Indicator	Average Value
Environmental Maintenance Motivation	Intrinsic	4.44
	Extrinsic	4.40
Environmental Concern	Beliefs and Commitment	0.95
	Rules and Local Wisdom	0.96
	Social Concern	0.75
Environmental Attitude	Affective	3.76
	Conative	4.23
	Behavioral Intention	3.13
Environmental Conservation Behavior	Coastal Ecosystem Protection	3.31
	Environmental Infrastructure Management and Maintenance	4.26
	Participation and Environmental Education	2.18

Motivation to preserve the environment and environmental awareness were categorized as very high among respondents, although attitudes toward the environment were categorized as high and conservation knowledge and environmental preservation behavior were categorized as moderate. The results of the study indicate that although knowledge and attitudes toward the environment have increased, conservation and preservation behavior are still not optimal or are still in a transition phase towards consistent environmentally friendly behavior [7]. This indicates a gap between the cognitive (knowledge) and

affective (attitude) levels and actual community actions in conservation behavior. Therefore, a sustainable empowerment approach that integrates local cultural aspects, education, and active community participation is needed to encourage more significant behavioral changes.

Results of Multiple Linear Regression Statistical Test

Multiple linear regression analysis using SPSS showed that coastal ecosystem knowledge, local cultural knowledge, environmental awareness, environmental conservation motivation, and environmental conservation attitudes had a positive and significant direct influence on the environmental conservation behavior of coastal communities in South Buton Regency. These results are consistent with the literature stating that ecological knowledge and local cultural values can increase community awareness and involvement in sustainable coastal environmental management [5].

In contrast, general public environmental knowledge did not demonstrate a significant direct influence on coastal conservation behavior. This finding aligns with international research showing that only action-related knowledge has a greater influence on actual environmentally friendly behavior, while general knowledge without practical context is often insufficient to trigger behavioral change [8]. The following are the results of testing the influence of independent variables on the dependent variable:

Table 4: Results of Multiple Linear Regression Test

Independent Variable	B	SE	β	t	Sig. (p)
(Constant)	1.254	0.412	—	3.043	0.003
Environmental Knowledge	0.052	0.078	0.034	0.667	0.507
Coastal Ecosystem Knowledge	0.198	0.062	0.185	3.197	0.001*
Local Cultural Knowledge	0.223	0.059	0.211	3.781	0.000*
Environmental Concern	0.317	0.048	0.325	6.604	0.000*
Environmental Maintenance Motivation	0.191	0.054	0.176	3.537	0.001*
Environmental Maintenance Attitude	0.142	0.053	0.129	2.679	0.008*

Note: $p < 0.05$ is significant

Based on the results of multiple linear regression analysis, it can be interpreted that coastal ecosystem knowledge, local cultural knowledge, environmental awareness, environmental motivation, and environmental attitude have been proven to have a direct and significant influence on the environmental conservation behavior of coastal communities in South Buton Regency. The environmental awareness variable shows the strongest influence, indicating that the higher the level of community awareness of coastal environmental conditions, the greater their tendency to engage in environmental conservation behavior. This finding confirms that affective factors and local values have a strategic role in encouraging real community actions in maintaining coastal environmental sustainability, as also found in various studies that state that awareness, motivation, and positive attitudes are the main determinants of pro-environmental behavior in coastal communities and local communities [9], [10].

Coastal ecosystem knowledge helps communities understand the direct impacts of their activities on the environment, while local cultural knowledge reinforces inherited conservation values. These findings align with research confirming that the combination of specific knowledge, positive attitudes, and intrinsic motivation are key factors in shaping sustainable pro-environmental behavior in coastal communities. Furthermore, local cultural knowledge plays a crucial role in shaping environmental conservation behavior

among coastal communities in South Buton Regency. Local culture, passed down from generation to generation, embodies values, norms, and local wisdom that govern the relationship between humans and nature, including unwritten rules regarding the wise use of coastal resources. Community understanding of this local culture fosters a sense of moral and social responsibility to maintain the balance of coastal ecosystems, so that environmental conservation behavior is seen not only as an ecological obligation but also as part of a cultural identity and heritage that must be maintained. This reinforces conservative behavior in daily life, such as maintaining clean beaches, protecting coastal habitats, and adhering to customary rules regarding the use of natural resources. In line with Zhang et al, [11] who stated that communities who have a high level of local cultural knowledge tend to show more consistent conservation behavior because cultural values can function as a social control mechanism and internal motivation in protecting the environment.

In contrast, general community environmental knowledge did not significantly influence coastal conservation behavior. This indicates a gap between cognitive knowledge and behavioral implementation, where general environmental understanding is not necessarily followed by concrete action without the support of contextual knowledge, cultural values, and motivational drive. This finding aligns with recent research suggesting that general environmental knowledge is often insufficient to drive behavioral change unless it is accompanied by direct experience, emotional engagement, and relevance to people's daily lives [12], [13]. Thus, the results of this study emphasize the importance of a local context-based approach and strengthening attitudes and motivations in efforts to improve coastal conservation behavior. Therefore, efforts to improve coastal conservation behavior need to be directed at strengthening contextual knowledge and developing action-oriented attitudes and motivations.

Discussion

Coastal communities in South Buton Regency have a relatively mature capacity for understanding and awareness of the existence of the coastal environment as a primary living space. Continuous interaction with coastal areas forms an empirical understanding as well as social values that encourage a high level of attention to the surrounding natural conditions. Furthermore, the strong value system and traditional practices that have developed within the community have contributed to building a positive orientation toward environmental protection efforts. This condition aligns with the view that coastal communities generally develop experience-based knowledge that is adaptive to the dynamics of the ecosystems on which they depend. Research results indicate limitations in the implementation of sustainable conservation practices, which can be influenced by various external factors such as limited facilities, economic pressures, and suboptimal institutional support. This situation illustrates that environmental behavior change is a complex process that relies not only on cognitive aspects but is also influenced by the surrounding structural and social conditions. This is in line with Etim [14] who stated that the transition from awareness to concrete action requires a supporting environment that can facilitate active community involvement.

Analysis of the relationships between variables shows that factors directly related to coastal life and socially embedded values significantly contribute to the emergence of environmental conservation actions. Internal motivation, social sensitivity, and an understanding of coastal natural systems have been shown to play a strategic role in shaping more responsible behavioral patterns. Cultural values passed down from generation to generation also serve as social control instruments, directing communities to act in line with sustainability principles. This is in line with Abas et al [15], which states that approaches based on local wisdom and

awareness-building are more effective in encouraging conservation practices than informational approaches.

On the other hand, general understanding that isn't directly tied to the local context tends to be less effective in driving real behavioral change. Information that doesn't align with lived experiences and community value systems has the potential to remain merely discourse without leading to concrete action. This phenomenon underscores the importance of intervention strategies that shift from increasing general knowledge to contextual understanding, establishing social norms, and empowering communities based on local needs. This approach is considered more relevant in developing sustainable coastal environmental conservation behavior.

4. Conclusion

Communities living in the coastal areas of South Buton Regency have a relatively good level of understanding and awareness of the coastal environment, as reflected in their high levels of contextual knowledge, local cultural values, concern, motivation, and attitudes toward the environment. This condition illustrates the existence of strong social and cognitive capital as a basis for supporting efforts to preserve the coastal environment sustainably, although the implementation of conservative behavior is not yet fully optimal. The results of the influence analysis indicate that factors directly related to the life experiences of coastal communities as well as internal drives and social values, such as understanding of coastal ecosystems, local culture, concern, motivation, and attitudes towards preserving the environment, play a significant role in shaping environmental conservation behavior. Conversely, general environmental knowledge does not directly encourage behavioral change, indicating that information without local context and value reinforcement is not sufficient to generate concrete action.

These findings emphasize the importance of a coastal environmental management approach that focuses on strengthening contextual knowledge, internalizing local cultural values, and increasing community awareness and motivation. Therefore, intervention strategies based on local wisdom, active community participation, and applicable environmental education are key to encouraging sustainable coastal environmental conservation behavior in South Buton Regency. Therefore, it is recommended that further research examine coastal environmental conservation behavior using more specific variables, such as mangrove conservation behavior, for a more focused and in-depth analysis. Furthermore, further research should combine quantitative and qualitative approaches to further explore personal factors within the community, such as environmental knowledge, motivation, awareness, and attitudes through in-depth interviews. For local governments, the results of this study can serve as a basis for formulating integrated coastal community education and empowerment strategies involving government agencies, community organizations, and educational institutions. These strategies need to be tailored to local potential and community needs to increase participation, strengthen pro-environmental attitudes, and encourage sustainable coastal environmental conservation behavior.

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