

Analysis of Knowledge, Attitude, and Behavior of the Long Pasia Sipitang Community Based on Customary Practices in River Management

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Abstract

Rivers play an important role in the lives of communities, especially those that depend on the surrounding natural resources for survival. The interwoven interaction between nature and society has formed a system of customary practices that become ethical for certain communities. For example, river pollution due to human activities and global climate change is becoming more worrisome, which affects the sustainability of the river ecosystem, and the preservation of the river using a traditional approach also guarantees the cleanliness of the river's water resources. Therefore, this study aims to analyse the knowledge, attitude, and behaviour of the Kampung Long Pasia community in managing water resources and preserving the river by emphasizing local traditional practices such as the Tagal System. This study aligns with the SDG6 and SDG15 Sustainable Development Goal, which prioritizes the availability and sustainable management of water, and sustainability of terrestrial ecosystems. This study uses a quantitative approach through a questionnaire involving 133 residents of Long Pasia village. The findings of the study show that the community's knowledge about the importance of the river is at a moderate level, while their attitude towards the preservation of the river is positive, with the majority of the community practicing local customs and traditions in protecting the river. An in-depth exploration of the traditional practices of the Tagal System, which not only functions as a river preservation tool but also as a social mechanism that strengthens the community's value in caring for the environment. This study contributes to the water resource management literature by providing a different local perspective while linking it to the SDG global agenda to preserve water resources sustainably. The practical value of this study can be used as a basis for river conservation efforts through an integrated approach between modern knowledge and traditional practices, especially in rural areas.

Keywords: Community, Customary Practices, Tagal, River Ecosystem, And Sustainability

Introduction

Sustainable management of water resources has become a critical issue around the world. For the Long Pasia community, the river is not only the main source of water but also plays an important role in their social, cultural, and economic structure. Traditional practices in managing the river, such as the Tagal System, are the backbone of the conservation of the river and the surrounding ecosystem. In this context, the study of knowledge, attitudes, and behavior of the local community is very important to understand how the community influences the sustainability of the river. In line with the findings of the study by Hosen et al. (2020), it also supports that this traditional knowledge is a practical tool that helps local communities promote socio-ecological resilience that supports social continuity and sustainable resource management. In a study by Dopelt et al (2020), attitude was found to be an important mediator in the relationship between the level of knowledge and behavior towards the environment. In recent decades, the issue of river pollution has been gaining global attention, including in Malaysia. Many studies conclude that human activity is the main cause of environmental problems, especially river pollution (Alia & Amin, 2019). This factor is linked to a lack of knowledge about environmental issues as well as a selfish attitude that ignores the balance of the ecosystem. In Long Pasia, traditional customary practices in river management are seen as having the potential to foster awareness and influence the community's attitude towards the sustainability of natural resources, thereby helping to maintain the well-being of the environment. Zhou et al (2022), stated that pollution caused by human activities such as agriculture, logging, and housing development in areas near rivers has had a significant impact on river water quality as well as river biodiversity. This raises questions about the level of community awareness and knowledge about the importance of taking care of the river, as well as their attitudes and behaviors in dealing with pollution (Deb et al., 2021). In Long Pasia, the river is still a big part of daily life, but how traditional practices are applied in dealing with these pollution issues still needs in-depth research. Without adequate knowledge, communities may not fully understand how their actions can affect the quality and survival of river ecosystems. The term Knowledge in this study refers to the application of environmental elements in the activities and daily life of the community in this village. Traditional and local communities through their knowledge, values and practices oppose injustice to nature and make a great contribution in managing ecosystem health to face societal pressures and environmental burdens (Brondízio et al., 2021). This knowledge involves issues related to traditional ecological knowledge among communities in an effort to maintain the sustainability of the river ecosystem. This knowledge that is passed down orally from generation to generation includes a deep understanding of the symbiotic relationship between humans and the environment, which is the application of an effective resource management strategy. According to Tengö et al (2021), existing local knowledge can generate useful knowledge in addition to strengthening indigenous and local knowledge systems for better ecosystem monitoring. This statement is also supported by Cebrián-Piqueras et al. (2020), stating that local community knowledge is able to increase understanding of landscape changes, water services, and human relationships with nature that can contribute to the sustainability of environmental management.

The era of technology and information modernization now makes the community's attitude and behavior towards the issue of river sustainability also an important challenge. The

community's attitude towards the environment shows respect through everyday cultural practices and values. The attitude displayed through environmentally friendly behavior to avoid conflict with nature reflects sustainable ecological principles. This finding is supported by Shein & Sukinarhimi, (2022) who state that humans have the ability to make sustainable development meet the needs of the present without affecting the ability of future generations to meet their needs. Although there is some evidence that traditional practices still work, many of the younger generations may be less involved or fully understand the value of river conservation. This problem is exacerbated by external pressures such as modern development and socio-economic changes that undermine the stability of these traditional practices (Kamboj et al., 2020). Therefore, there needs to be a more in-depth study to assess the extent to which this practice is still relevant and effective in facing today's ecological challenges.

The objective of this study is to analyze the level of knowledge, attitude, and behavior of the Long Pasia riverside community towards river conservation and the role of traditional practices such as the Tagal System in water resource management. This study also aims to evaluate the effectiveness of traditional practices in maintaining river water quality and reducing pollution, as well as identify factors that influence community awareness and behavior on this issue. Through this study, it is hoped that there will be empirical confirmation of the relevance of traditional practices in the context of modern environmental sustainability. The conceptual framework for this study involves three main variables, which are knowledge, attitude, and community behavior towards river conservation. Knowledge is closely related to the community's understanding of river ecosystems and traditional customary values. Attitude refers to the community's belief in the importance of taking care of the river through traditional practices. Behaviors represent the actual actions taken by the community in taking care of the river, including involvement in the Tagal System.

Community and River Ecosystem Management

River management in rural areas such as Long Pasia and Sipitang plays an important role in ensuring the sustainability of ecosystems and water resources. Rivers are not only the main source of clean water but also support the lives of communities and the surrounding ecosystem. The use of traditional practices has long served as a mechanism for the preservation of rivers and natural resources. According to Mold et al. (2020), participation by local communities is a key requirement for many environmental management policies at the global level. However, with increasing ecological challenges and pollution, the study of community knowledge, attitudes, and behavior towards river management becomes an important requirement to conserve river ecosystems effectively. Humphrey's study (2024), shows that the traditional practices of local communities are in line with the principles of sustainability, where their local ecological knowledge becomes an important asset in sustainable resource management.

Wong (2003), Environmental sustainability and the concept of community-based resource management (CBRM) provide a solid foundation for understanding how traditional practices can contribute to more sustainable resource management. This theory emphasizes the need for local communities to lead conservation efforts based on local knowledge and practices, where the Tagal System is one effective example. In this context, the theory of sustainability attitudes by Schultz et al (2004), is also relevant, where a positive attitude towards the

environment is the main driver of environmentally friendly behavior. According to Wyss et al. (2022), traditional community attitudes are more likely to be translated into positive behavior towards the environment when personal costs are low or environmental benefits are clear. Self-control plays an important role in ensuring that actions are in line with this attitude, emphasizing self-control as a key element in maintaining traditional customary practices to continuously protect the river ecosystem.

Intervention efforts that target aspects of attitude and subjective norms, as well as environmental education, play an important role in fostering pro-environmental behavior in the community. A study by Hu et al (2021), emphasizes that changes in individual attitudes towards the environment are often related to social norms applied in the community. In line with the findings by Nguyen et al (2019), attitude has the strongest relationship with intention, followed by perceived appropriate behavioral control towards environmental care. In the context of river management, the community's knowledge, attitude, and belief in traditional customs such as the Tagal System play an important role in directing their behavior towards river conservation. The community's knowledge of the importance of the river as well as their attitude towards the environment will determine their actions in preserving this water source. A study by Ardoin et al (2020), shows that ecological knowledge directly affects positive attitudes and actions towards improving the quality and conservation of nature. This means that the higher the individual's knowledge about environmental issues, the more positive their behavior towards preservation activities (Baierl et al., 2022; Ienna et al., 2022). It clearly shows that individuals with a stronger environmental attitude will maintain more knowledge related to the environment and reasonable behavior towards environmental preservation (Nguyen et al., 2019; Anebagilu et al., 2021).

Research Methodology

This study uses a quantitative approach through a survey method involving 133 respondents. The research instrument consists of a questionnaire with three parts. Part A gathers the socio-demographic information of the respondents, while Part B measures knowledge, attitudes and part C measures the community's behavior towards the role of customary practices in river management. Each construct is evaluated using a Likert scale with a value of 1 (Strongly Disagree), 2 (Disagree), 3 (Agree) to 4 (Strongly Agree). Data was analyzed using SPSS software through descriptive statistics involving percentage, frequency and mean analysis to assess the profile of the respondents and responses to the research questions. The mean value obtained will be referred to the mean scale issued by Chua (2006).

Table 1

Interpretation of the level for each aspect of awareness and practice towards the environment

Mean Range	Interpretation Level
< 2.00	Low
2.0 – 3.0	Moderate
> 3.0	High

Source: Chua (2006)

Research Findings

Respondent Demographics This section describes the demographic background of the study respondents in Kampung Long Pasia, Sipitang, with a focus on four main variables: gender, age, education level, and income.

Table 2

Demographic of Respondent

Demographics	Category	Total	Percentage (%)	
Gender	Male	61	45.9	
	Female	72	54.1	
Age	18 - 60 Years	116	87.2	
	61 Years and Above	17	12.8	
Level of Education	Not Attending School	6	4.5	
	Primary School	2	1.5	
	Secondary School	58	43.6	
	Diploma/Certificate	36	27.1	
	Degree/Master/PHD	31	23.3	
	Income	RM100	52	39.1
		RM101 - RM5250	60	45.1
RM5251 - RM11819		16	12.0	
RM11820 And Above		5	3.8	

Based on Table 2, 54.1% of respondents were female, while 45.9% were male, clearly showing a balanced gender distribution. In terms of age, 87.2% are between 18 and 60 years old, while only 12.8% represent the elderly aged 61 and over. This shows that the majority of respondents are young people. In terms of education, the majority of respondents have a high school education (43.6%), followed by those with a diploma or certificate (27.1%) and a degree, master's, or PhD (23.3%). The level of primary education and not attending school recorded a small percentage, 1.5% and 4.5%, respectively. Overall, the education level of this community is quite good, with the majority having formal education. As for income level, the group with income between RM101 and RM5250 represents the largest percentage (45.1%), followed by the group with income less than RM100 (39.1%). The higher income group (RM5251-RRM11819) and the lowest (RM11820 and above) recorded 12.0% and 3.8%, respectively. This data shows clear variation in community income levels.

Evaluation of Community Attitudes and Knowledge Levels Towards Custom Practices

This study evaluates the community's attitude and knowledge towards traditional practices in the care of the river ecosystem in Long Pasia, which contains 10 items. Based on Table 2, the overall mean for community knowledge and attitude is 2.45, which is at a moderate level according to Chua's (2006), scale. Respondents generally showed a willingness to contribute to the preservation of the river, although there were constraints in terms of willingness to contribute financially for environmentally friendly products, with a mean value of 2.323. Willingness to contribute a small portion of income to maintain the river also recorded the highest mean value (2.696), with most respondents strongly agreeing (58.6%) with this statement indicating a high community commitment to the sustainability of the river.

Table 3

Community Responses to the Construct of Attitudes and Environmental Knowledge

Question	Frequency %				Mean value
	Strongly Disagree	Disagree	Agree Strongly	Agree	
I am willing to contribute a small part of my income to the care of the river.	6.8	21.1	54.1	18.0	2.1300
The responsibility of taking care of the river is the responsibility of the government and not me.	7.5	9.0	58.6	24.8	2.259
I do not waste when using water resources.	1.5	1.5	57.1	39.8	2.518
I do not waste when using water resources. I always keep the river in the Tagal.	0	0	51.9	48.1	2.617
I believe I can contribute to a better river ecosystem.	0	1.5	57.9	40.6	2.549
I am willing to pay more to buy products that are environmentally friendly, especially the river ecosystem.	3.8	6.0	67.7	22.6	2.325
I think I would be more satisfied if I took care of the inherited river.	0	1.5	48.9	49.6	2.617
I am willing to compromise. My life is to protect the river ecosystem	3.8	1.5	60.2	34.6	2.449
I am willing to pay more for environmentally friendly products.	0	14.3	62.4	23.3	2.323
I am willing to contribute in part my small income for the river ecosystem.	0	0	41.4	58.6	2.696
MEAN VALUE					2.45

The Level of Awareness and Behavior of Local Communities Towards the Sustainability of River Ecosystems

Descriptive analysis shows that the local community's level of awareness of river sustainability is at a high level with a mean value of 3.15 as shown in Table 3. Respondents generally understand and are willing to take action to preserve the river ecosystem, with the majority showing a positive attitude towards issues such as avoiding littering in the river with a mean value of 3.586 and not wasting while using water with a with a mean 3.353. This indicates that the community's awareness of environmental sustainability is at a good level, although there is still room for improvement, especially in terms of more active river conservation behavior. Based on the findings of the study, the Long Pasia community's attitude and knowledge towards traditional practices in river management show a moderate level with an overall mean of 2.45. This indicates that although the community is aware of the importance of

traditional practices such as the Tagal System in taking care of the river ecosystem, the level of appreciation and commitment to implement it still does not reach a satisfactory level. Although 58.6% of respondents stated that they are willing to contribute a small portion of their income to take care of the river, the modest mean value indicates that financial barriers and a lack of understanding of the economic value of the river may prevent communities from acting more proactively. In addition, the lack of willingness to pay more for environmentally friendly products with a mean value of 2.323 shows the existence of a gap between knowledge and the implementation of sustainable actions.

Table 4

Community Response to the Consciousness Construct

Community awareness of Environmental	Awareness				Mean
	Strongly Disagree	Disagree	Agree	Strongly Agree	
Statement 1: Increasing tree felling activities near rivers can improve the country's economy.	67	50	14	2	1.631
Statement 2: Solid waste must not be thrown into the river.	6	0	47	80	3.511
Statement 3: I prefer walking to a place rather than using a vehicle when going to a nearby area.	10	12	78	33	3.007
Statement 4: I always keep the river in the tagal.	0	0	69	64	3.481
Statement 5: I do not practice open burning near rivers.	2	2	73	39	3.255
Statement 6: I always carry my own plastic bag, especially when shopping.	5	8	90	30	3.090
Statement 7: I support the sale of	-	2	65	66	3.481

environmentally friendly products.					
Statement 8: I am willing to pay more for environmentally friendly products	-	19	83	31	3.090
Statement 9: I do not waste when using water sources.	2	2	76	53	3.353
Statement 10: I don't throw garbage everywhere.	-	-	55	78	3.586
TOTAL MEAN					3.15

In addition, findings on community awareness and behavior towards river sustainability also show a high level, with a mean value of 3.15. This is in line with the findings of the Brondzio et al. (2021) study showing that the community's behavior towards the importance of traditional practices contributes greatly to managing the health of local and regional ecosystems by producing knowledge based on diverse natural values. Although the majority of respondents agreed that dumping garbage into the river should be avoided and water use should be conserved, the main challenge was how to mobilize the community to act more consistently and systematically. This reflects that despite the awareness of the importance of traditional practices, the influence of socio-economic changes such as development and globalization causes the younger generation to be less interested in adhering to inherited traditional practices. In this context, the challenge faced by the Long Pasia community is to find a balance between protecting the river ecosystem through traditional practices and adapting to the pressure of modern development.

Table 5

Level of Community Readiness to Adopt Environmental Conservation Practices

Willingness to Practice Environmental Sustainability Practices	Attitude			Mean
	Disagree	Agree	Strongly Agree	
I have become a member of the tagal community to know what can be contributed to preserve the environment.	14	37	82	3.51
need to manage the garbage together so that it is not thrown in the river that has been cleared by separating garbage and recycling.	14	43	76	3.47
I will hold a campaign to prevent the felling of trees around the river, which I think should be held.	4	52	77	3.55
I will stop using materials that will pollute the river, including products that are not environmentally friendly.	23	81	29	3.05
MIN TOTAL				3.40

Table 5 shows the level of readiness of the community to practice preserving the environment. This construct contains 4 items that show an overall mean of 3.40. Formulation In the context of the Long Pasia community, which is rich in traditional customs, knowledge and attitudes towards river management are directly influenced by the cultural heritage passed down from generation to generation. This practice not only reflects concern for the balance of the river's ecosystem but also instills conservation values passed down through customary norms. This study supports the view that traditional knowledge owned by indigenous and local communities forms the basis for a more comprehensive, resilient, and friendly approach to environmental management. Therefore, the emphasis on holistic interventions that involve environmental education based on customs and subjective norms has the potential to enhance positive attitudes and behaviors towards environmental conservation in Long Pasia. As for the practical implications, this study suggests that the approach to river conservation in rural areas needs to combine traditional knowledge with modern initiatives to increase community awareness and involvement optimally. The findings of this study affirm that non-human entities such as animals, plants, earth, rivers, and human landscapes that require interactions based on values of respect and kinship require a holistic and ethical approach in environmental management.

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