Analysis of Community Behavior Maintaining the Settlement Environment in the River Flow Area (Das) Mamasa Upstream Section

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Abstract: This research aims to: (1) to know the behavior of the community in maintaining the residential environment in the upstream Mamasa watershed (DAS), (2) to determine ecosystem knowledge, environmental knowledge, motivation, and attitudes towards the community's environment in the upstream Mamasa watershed, (3) to determine the effect of ecosystem knowledge, environmental knowledge, motivation, and attitudes towards the environment individually and collectively on the behavior of the community in maintaining the residential environment in the upstream Mamasa watershed. This type of research is quantitative correlational. The research location is in the upstream Mamasa watershed. Research population is the community (head of family) who live in the upstream Mamasa watershed. Respondents as many as 50 heads of families were selected using the Systematic Random Sampling method. The research variables consist of: (1) independent variable (X), and (2) dependent variable (Y). The dependent variable is the behavior of the community in protecting the residential environment in the upstream Mamasa watershed (Y). The independent variable (X) consists of: (a) ecosystem knowledge (X1); (b) environmental knowledge, (X2); (c) motivation to maintain the housing environment (X3), and (d) attitude towards the housing environment (X4). Data analysis techniques used: (1) descriptive statistical analysis, to describe the average, maximum, minimum, standard deviation, frequency distribution, and histogram values of each variable, and (2) inferential statistical analysis is used to test the hypothesis. The analysis model used is simple regression analysis and multiple regression. The results showed that: (1) Behavior of the community to care for the environment in the upstream Mamasa watershed was low, (2) knowledge of ecosystems, environmental knowledge, motivation, and attitudes towards the community's environment in the upstream Mamasa watershed was low, (3) knowledge ecosystems, environmental knowledge, motivation, and attitudes towards the environment individually and jointly influence the behavior of the community to maintain the residential environment in the upstream Mamasa watershed.

Keywords: Settlements, Knowledge, Motivation, Attitudes, Mamasa Watershed

1. Introduction

Law of the Republic of Indonesia Number 7 Year (2004) [1] concerning water resources, it is explained that a Watershed (DAS) is a land area which is an integral part of the river and its tributaries which functions to collect, store and distribute water originating from from rainfall to lakes or to the sea naturally, the boundaries on land are topographical separations and boundaries at sea up to water areas that are still affected by land activities. Based on this, it can be understood that the Mamasa watershed consists of three areas, namely: (1) the upstream Mamasa watershed, (2) the middle Mamasa watershed, and (3) the downstream Mamasa watershed. Law of the Republic of Indonesia No. 32 Year (2009) [2] concerning Environmental Protection and Management explains that the living environment consists of biotic components and abiotic components where the environment needs to be maintained and preserved.

The behavior of managing a responsible and sustainable housing environment is determined by several factors. These factors include knowledge about the problem, motivation, attitudes, situational factors, and so on (Hungerford & Volk, 1990) [3]. Various knowledge about issues, namely: knowledge about the environment, knowledge about ecosystems, knowledge about environmental conservation, knowledge about settlements, local wisdom or local culture, situational factors, and so on are factors that influence people's behavior in managing their built environment, such as as well as residential areas.

The location of this research is in the upper reaches of the Mamasa river basin, to find out: (1) community behavior to protect the residential environment in the upstream Mamasa watershed, (2) ecosystem knowledge, environmental knowledge, motivation, and attitudes towards the environment, (3) the influence ecosystem knowledge, environmental knowledge, motivation, and attitudes towards the environment individually and collectively towards community behavior in maintaining the residential environment in the upstream Mamasa watershed.

2. Literature Review

Notohadiprawiro (1988) [4] states that a watershed (DAS) is an area bounded by a mountainside where all surface runoff flows into a main river. According to the Director General of Watershed Management (BPDAS) Ministry of Forestry of the Republic of Indonesia (2011) [5] it is explained that a watershed is a complex megasystem built on physical systems, biological systems and human systems. Furthermore Asdak (2002)[6] explains that the notion of a watershed is an area or area bounded by natural topography that is interconnected in such a way that all the water that falls in the area will come out of one main river.

Adnil (2011) [7] states that human behavior is an action carried out by humans based on thoughts and feelings that are viewed integrally. Veithzal & Deddy (2011) [8] states that, behavior is all actions carried out by an individual or a person. Hines (2010) [9] states that action skills, knowledge of action strategies, knowledge of issues, personality factors, and other situational factors influence responsible environmental behavior.

Law of the Republic of Indonesia number. 4. Year (1992) [10] concerning Housing and Settlements, explains that housing is a group of houses that function as a residence or residential area equipped with environmental infrastructure and facilities. The environmental infrastructure and facilities referred to in the law include, among others, excrement disposal sites, waste disposal sites, green open spaces (RTH) and so on. Doxiadis (2003) [11] said that humans have basic needs such as space, air, temperature, and so on and to take shelter requires building a house as a means of social service.

Soekanto (2007) [12] states that knowledge is an impression in the human mind as a result of the use of the five senses. Suriasumantri (2010) [13] states that knowledge is essentially all that we know about a particular object, including knowledge. So science is part of the knowledge that is known by humans. Bloom (2001) [14] states that knowledge has three components, namely cognitive, affective, and psychomotor components. Environmental knowledge according to Gonggool, D; N. Thiengkamol; and C. Thiengkamol (2012) [15] is an environmental education process that aims to change human behavior based on knowledge and understanding, awareness, values, beliefs, attitudes, and changes in behavior.

Law Number 32 of the Year (2009) [2] concerning the Protection and Management of the Environment says that an ecosystem is an overall unified structure between all elements of the environment that influence each other. Odum (1993) [16] says that an ecosystem is an ecological unit in which there is a relationship between the diversity of species that influence one another.

Ahira (2011) [17] says that, the environment is everything that is around us in the form of living things, be it humans, animals, or plants. Soerjani (2007) [18] states that the environment is a living system in which there is human interference in the ecosystem. Singh, (2006) [19] basically states that the environment consists of three important components, namely: the physical environment, the biological environment and the social environment.

(Adnil, 2011) [7] states that motivation is a force that exists in a person who can encourage, activate, move, and direct one's behavior. Sarwono, 2007) [20] states that motivation is a stimulus from within a person that causes him to do something. Notoatmodjo (2007) [21] and Azwar (2012) [22] stated that attitude is readiness or willingness to act based on knowledge and experience possessed. Azwar (2012) [22] states that the attitude structure consists of three components. The three components are as follows: cognitive component, affective component, and conative component.

3. Research Methods

This research is a correlational research. implemented in the Upper Mamasa Watershed, Mamasa Regency, West Sulawesi Province. The research variables consist of: (1) independent variable (X), and (2) dependent variable (Y). The dependent variable is the behavior of the community in maintaining the living environment (Y). The independent variables consist of: (1) ecosystem knowledge (X1); (2) environmental knowledge, (X2); (3) motivation to maintain the housing environment (X3), and (4) attitude towards the environment (X4).

The population of this study is the people who live in the upstream Mamasa watershed. Respondents were 50 families selected by systematic random sampling method. Behavioral data is collected by observation. Ecosystem knowledge data and environmental knowledge are collected by giving tests. Motivation and attitude data were collected by giving a questionnaire. The data analysis technique used is descriptive statistical analysis and inferential statistical analysis. The analysis model used is simple regression and multiple regression.

4. Research Results and Discussion

4.1. Research Results

4.1.1. Description of Community Behavior in Maintaining the Settlement Environment

The results of descriptive statistical analysis of community behavior in maintaining the residential environment of people who live in the upstream Mamasa watershed show that the mean value = 36.51; maximum = 49, and minimum = 23. In the frequency distribution, the average value is in the low category. Thus it can be concluded that the behavior of the community in maintaining the settlement environment in the upper Mamasa watershed is classified as low.

4.1.2. Description of Ecosystem Knowledge

The results of the descriptive statistical analysis of the ecosystem knowledge of the people who live in the upstream Mamasa watershed show that the mean value = 5.62; maximum = 9; and minimum = 2. In the frequency distribution, the average value is in the low category. Thus it can be concluded that the community's knowledge of the ecosystem that lives in the upstream Mamasa watershed is low.

4.1.3. Description of Environmental Knowledge

The results of the descriptive statistical analysis of knowledge about the environment of the people who live in the upstream Mamasa watershed show that the mean value = 5.72. maximum = 9, and minimum = 3. In the frequency distribution, the mean is in the low category. Thus it can be concluded that knowledge about the environment of the people living in the upstream Mamasa watershed is low.

4.1.4. Description of the Motivation to Maintain the Housing Environment

The results of the descriptive statistical analysis of the motivation of the people who live in the upstream Mamasa watershed to maintain their housing environment show that the mean value = 36.94; maximum = 50, and minimum = 25. In the frequency distribution, the average value is in the low category. Thus it can be concluded that the motivation of the community to maintain the housing environment that lives in the upstream Mamasa watershed is low.

4.1.5. Description of Attitudes Towards the Environment

The results of descriptive statistical analysis of attitudes towards the environment of the people who live in the upstream Mamasa watershed show that the mean value = 37.41; maximum = 49, and minimum = 25. In the frequency distribution, the average value is in the low category. Thus it can be concluded that the attitude of the people towards the environment who live in the upstream Mamasa watershed is classified as low.

4.1.6. The Effect of Ecosystem Knowledge (X1) on the Behavior of Maintaining the Settlement Environment (Y)

The results of simple regression analysis show that ecosystem knowledge (X1) influences the behavior of maintaining the residential environment (Y) of people who live in the upstream Mamasa watershed. To find out the magnitude of this influence, the following shows the results of a simple regression analysis (Summary model) in Table 1.

Table 1. Model Summary X^1 to Y.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.663ᵃ	.4395	.4285	1,006
a. Predictors: (Constant), X^1. B X^1 = 2.64				

In Table 1, it can be seen that the coefficient of determination (R square) = 0.4395. This means that X1 has an influence of 43.95% on Y. The regression coefficient of X1 (B X1) = 2.64. This figure shows that X1 contributed to Y of 2.64.

4.1.7. The Effect of Knowledge of the Environment (X2) on the Behavior of Maintaining the Residential Environment (Y)

The results of simple regression analysis show that environmental knowledge (X2) influences the behavior of maintaining the residential environment (Y) of people who live in the upstream Mamasa watershed. To find out the magnitude of this influence, the results of a simple regression analysis (Summary model) are shown below in Table 2.

Table 2. Model Summary X^2 to Y.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.683ᵃ	.4664	.4336	.216
a. Predictors: (Constant), X^2; B X^2 = 3.58				

In Table 2, it can be seen that the coefficient of determination (R square) = 0.4664. This means that X2 has an effect of 46.64% on Y. The regression coefficient X2 = 3.58. This figure shows that the contribution of X2 to Y is 3.58.

4.1.8. The Influence of Motivation to Protect the Environment (X3) on Behavior to Protect the Environment (Y)

The results of simple regression analysis show that the motivation to maintain the environment (X3) influences the behavior of maintaining the residential environment (Y) of people who live in the upstream Mamasa watershed. To find out the magnitude of this influence, the results of a simple regression analysis (Summary model) are shown below in Table 3.

Table 3. Model Summary X^3 to Y.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.5923ᵃ	.3508	.3412	1.03
a. Predictors: (Constant), X^3; B X^3 = 3.67				

Table 3 shows that R square = 0.3508. This means that X3 has an effect of 35.08% on Y. The regression coefficient of X3 = 3.67. This figure shows that the contribution of X3 to Y is 3.67.

4.1.9. The Effect of Environmental Attitudes (X4) on the Behavior of Caring for the Environment (Y)

The results of simple regression analysis show that environmental attitudes (X4) influence the behavior of maintaining the residential environment (Y) of people who live in the upstream Mamasa watershed. To find out the magnitude of this influence, the results of a simple regression analysis (Summary model) are shown in Table 4.

Table 4. *Anova X^4 to Y.*

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.572[a]	.3272	.3184	0.09
a. Predictors: (Constant), X^4; B X^4 = 2.79				

Table 4 shows that R square = 0.3272. This means that X4 has an effect of 32.72% on Y. The regression coefficient of X4 = 2.79. This figure shows that X4 contributes to Y of 2.79.

4.1.10. The Influence of Ecosystem Knowledge (X1), Environmental Knowledge (X2), Motivation to Maintain the Environment (X3), and Environmental Attitudes (X4) Together on Environmental Preserving Behavior (Y)

The results of multiple regression analysis show that ecosystem knowledge (X1), environmental knowledge (X2), motivation to maintain the environment (X3), and environmental attitudes (X4) jointly influence the behavior of caring for the living environment (Y) of people who live in the Mamasa Watershed. upstream section. To determine the magnitude of this influence, the results of a simple regression analysis (Sammary model) are presented in Table 5 below.

Table 5. *Model Summary X^1, X^2, X^3, and X^4 To Y.*

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759[a]	.5761	.5492	0.10
a. Predictors: (Constant), X^1, X^2, X^3, X^4				
BX^1 = 2.87; BX^2 = 2.75; BX^3 = 2.49; B^{X}4 = 2.35				

Table 5 shows that R square = 0.5761. This means that X1, X2, X3, and X4 have a joint effect on Y of 57.61%. The variable X1 contributes 2.87; variable X2 contributes 2.75; variable X3 contributed 2.49; and variable X4 contributed 2.35 to variable Y.

4.2. Discussion

The results showed that the community's behavior in maintaining the settlement environment in the upstream Mamasa watershed was low. This is caused by a lack of ecosystem knowledge, environmental knowledge, motivation to protect the settlement environment, and attitudes towards the environment. Knowledge of the ecosystem of the people living in the upper Mamasa watershed is low. This is because the community does not get counseling about the reciprocal relationship between the community and its environment, both the social environment, the physical environment and other living things. Knowledge of the environment of the people who live in the upper Mamasa watershed is low. This is because the community does not get counseling about environmental knowledge, ecosystem knowledge, namely the reciprocal relationship between the community and its environment, both the social environment, the physical environment and other living things.

The motivation of the people who live in the upstream Mamasa watershed to maintain their housing environment is low. This motivation needs to be increased by encouraging people to take care of the environment, encouraging people to maintain settlements, encouraging people to dispose of good waste. In addition, there needs to be an example of how to dispose of waste that is safe for the environment. The attitude towards the environment of the people living in the upstream Mamasa watershed is low. This attitude needs to be improved by providing examples for the community to care for the environment, maintain settlements, dispose of waste properly.

Ecosystem knowledge, environmental knowledge, environmental attitudes, and community motivation to maintain the settlement environment in the upstream Mamasa watershed have a positive effect and contribute to the behavior of maintaining the settlement environment, both individually and collectively. This means that ecosystem knowledge, environmental knowledge, motivation to maintain the environment, and environmental attitudes of the people in the upstream Mamasa watershed play a very important role in increasing the behavior of maintaining the residential environment. Therefore, ecosystem knowledge, environmental knowledge, motivation to protect the environment, and environmental attitudes of the people in the upstream Mamasa watershed need to be improved by carrying out continuous coaching.

5. Conclusion

Based on the results of research and discussion, the conclusions of this study are: (1) community behavior to protect the environment in the upstream Mamasa watershed is still low, (2) ecosystem knowledge, environmental knowledge, motivation, and attitudes towards the environment in the upstream community. The Mamasa watershed is classified as low, (3) ecosystem knowledge, environmental knowledge, motivation, and attitudes towards the environment individually and collectively influence and contribute positively to community behavior in maintaining the residential environment in the upstream Mamasa watershed.

Acknowledgements

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