Factors Affecting Level of Participation in the Management of Mangroves as Ecotourism Attraction: Lesson Learned from Cengkong Watulimo, Trenggalek

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Abstract

Ecotourism development can not be separated from the social aspects of the people living around the tourist sites. One indicator that a tourist location is said to be ecotourism-based is the participation of community in the activities of management. This study aims to determine the effect of variables that exist on the level of community participation in the management of mangrove areas Cengkong using Partial Least Square (PLS) method. The variables used in this study are: community characteristics, perceptions, norms, patterns of social relationships, and trust. From the research, the variables that have a dominant influence on the level of participation in the management of mangrove Cengkong is variable of perceptions, norms, and trusts with the value of the effect size, respectively for 0.098, 0.204, and 0.431. While variable of trust has most influence to the coefficient path of community participation with a value of 0.64.

Keywords: Ecotourism, Factors of Participation, Level of Participation, Partial Least Square (PLS).

INTRODUCTION

Cengkong mangrove area is one of the ecotourism-based objects for tourist destination located in Cengkong coastal area. As the ecotourism area, Cengkong mangrove areas have an important role not only for the natural balance of coastal areas, but also for the economy of the people living around the mangrove areas [1,2]. Ecotourism development requires social acceptance that the successful development of ecotourism requires community participation [3]. The settlements of people who live around the conservation area have function as a buffer area. Without the participation of the community, the negative effect in the form of excessive use of natural resources that could damage the existing resources, degrade the quality of the ecology in the area, causing an imbalance in economic growth and cultural erosion. Tourism activities should be able to enhance the role of the community in order to avoid threats to the region and tourism through which exerts a positive impact of increased revenues, improved public infrastructure and empowerment of the local culture.

Community participation in the development process is influenced by many factors. Internal factors affecting such characteristics include age, education level and monthly income.

Besides that, other influential factors are perception, and social capital (norms, patterns of relationship and trust). The stages of participation in the development process are explained as follows. The participation is in the planning stage, implementation stage, deployment stage, and assessment of development stage [4].

Recent growths of mangrove tourism management has been identified as an important strategy for community participation development. It is due to numerous tourist visit and economic benefit derived from tourism activity. Mangrove tourism in Karanggandu Village has been grown as an important variant of tourism product. Demand for natural-based tourism increase significantly. It is important to study the community participation for future sustainable management practices of mangrove tourism. The aims of the research was to analyze the variables that influence level of community participation, and variables that affect the dominant level of community participation in mangrove Cengkong, Karanggandu Village, Sub district Watulimo of Trenggalek Regency. It is especially important for sustainable mangrove tourism planning and management.

MATERIAL AND METHOD

Study area

Research was done in Karanggandu Village, Sub district Watulimo of Trenggalek Regency (Fig.1). This village has wide coastal and mangrove area which is used as tourism

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destination sites. Mangrove area in Karanggandu Village was about 87 ha. Most people in Karanggandu Village has job that related with tourism activity in the mangrove area. The development of local community participation in mangrove Cengkong area was addressed to improve local community prosperity; in which local people involve and receive benefit from tourism activity. Following the potential site of coastal environment in Karanggandu Village as ecotourism site, local authority and community proposed such area as ecotourism destination in Trenggalek Regency called *Ecotourism of Mangrove Cengkong*. Recently, this area is one of the favorite tourism sites in Trenggalek Regency.

Variables Identification

The variables used in this study consisted of a latent variable (X) and the measured variables or indicators (Y). The variables in the study are presented in Table 1.

To measure characteristic variable, we identified the characteristic respondents to

indicate their level of age, monthly income, and their education using a 5-point Likert-type scale. To measure variable of perception, norms, patterns of social relations, trust and participation, we asked respondent to indicate their level agreement using 5-point Likert-type scale, ranging from strongly disagree to strongly agree. The following items of instrument to measure variables was given in Table 1.

Figure 1. Location of Study Area

Table 1. Latent Variables and Indicators

Latent variables	Variables measured (indicators)	Definition
Characteristics (X ₁)	Age (X _{1.1})	Age of respondents
	Monthly income (X _{1.2})	Respondent income in one month
	Education (X _{1.3})	Formal education respondents
Perception (X ₂)	Knowledge 1 (X _{2.1})	Respondents' knowledge regarding the benefits of the economic existence of mangroves for communities
	Knowledge 2 (X _{2.2})	Knowledge of respondents associated the influence of the mangrove ecosystem for social life
	Knowledge 3 (X _{2.3})	Knowledge of respondents associated the influence of mangrove ecosystems for coastal environmental quality
	Knowledge 4 (X _{2.4})	Respondents' knowledge regarding the benefits of mangrove ecosystems for coastal fauna
	Knowledge 5 (X _{2.5})	Related respondents' knowledge of ecotourism
	Attitudes 1 (X _{2.6})	The attitude of the respondents with the activities of travel
	Attitude 2 (X _{2.7})	The attitude of the respondents with their tourism development
	Attitude 3 (X _{2.8})	The attitude of the respondents to the development of ecotourism
	Attitudes 4 (X _{2.9})	The attitude of the respondents to the management activities
Norm (X ₃)	Family rules (X _{3.1})	The rules applicable in the family
	The rules of society (X _{3.2})	The rules that apply in the community
	Norms of decency (X _{3.3})	Norms of decency held
	Government regulations (X _{3.4})	Government rules that apply
Patterns of Social Relations (X ₄)	Relations with neighbors (X _{4.1})	Conditions relations with neighbors
	Mutual support between neighbors (X _{4.2})	Daily activities that involve neighbors
	Social activeness (X _{4.3})	Activeness in following the activities of the village
	Community involvement (X _{4.4})	The involvement of local communities in managing
Trust (X ₅)	Openness (X _{5.1})	Openness towards tourists
	Confidence in the manager (X _{5.2})	Confidence in the management of the manager in managing the region
	Fairness in decision-making (X _{5.3})	Business fair in making decisions involving the common interests
	Willingness to follow the direction of the manager (X _{5.4})	People want to implement directives and advice from area manager
	Confidence in the local government (X _{5.5})	Public trust in government that facilitates the development of rural area management
Participation Stage (Y)	Planning (Y ₁)	Participation in planning activities
	Implementation (Y ₂)	Participation in the implementation of activities
	Utilization of results (Y ₃)	Participation in the activities of utilization of the results
	Evaluation (Y ₄)	Participation in evaluation activities

The population of this study is that the village community Karanggandu involved in management mangrove Cengkong areas totaling 120 people. For sampling using purposive sampling, while the determination of the number of samples using methods Slovin [5]:

$$n = \frac{120}{120(0,05)^2 + 1} = 92 \text{ sample}$$

Description:

n = sample

N = population (120 people)

d = the value of precision of 95% or 0.05

Quality Data Test

Validity Test

The validity test of an instrument has done by result of output from PLS model which shows the discriminant validity (AVE roots and the correlation between the latent variables). Discriminant validity is a value that measure how much the variable influence another variable [6].

Reliability Test

Instrument reliability test resulted by composite reliability from the output model of PLS. The instrument has a high degree of reliability if the value obtained reliability coefficient > 0.60 [7].

Processing and Data Analysis with PLS Approach

PLS is a component-based SEM or variance analysis method that is not based on many assumptions. The purpose of the PLS is to test the theory of the weak and weak data such as the small sample size or a problem in the normality of the data, predicting the effect of variable X (exogenous) to Y (endogenous variable) and explain the relationship theoretical between these two variables [8].

Research hypothesis

Statistical hypothesis for the inner model of latent exogenous variables (independent) against

endogenous variable (dependent) in this study are:

H₀: $\gamma_i = 0$ opponents H₁: $\gamma_i \neq 0$

H₁: There is the influence of variables X (exogenous) to the level of community participation.

H₀: There is no influence between variable X (exogenous) to the level of community participation

RESULTS AND DISCUSSION

Cengkong mangrove area as one of ecotourism-based area in Trenggalek Regency has an effort management area, i.e. a Community Group Supervisor (*Pokmaswas*) Kejung Samudera which is partner of the Department of Marine and Fisheries in Trenggalek. Moreover, because Cengkong mangrove areas included in the area of forestry area, then Indonesia State Owned Forest Enterprises (*Perhutani*) also participated in the activities of mangrove Cengkong area management. They formed Forest Village Community Institution (*LMDH*) Gunung Madu. Collaborative management of these two groups is expected to manage the mangrove areas Cengkong well.

Characteristics of Respondents

Number of questionnaires distributed as many as 92 respondents. Questionnaires were distributed to the people living around the Cengkong mangrove areas and aged over 16 years. The village community profile Karanggandu who became respondents in this study is shown in Table 2.

Analysis Method with PLS

Evaluation Criteria Goodness of Fit

Evaluation of Goodness of Fit Outer Model

Evaluation Goodness of Fit on the outer models with reflective indicators evaluated by discriminant validity and composite reliability with the following results (Table 3 and 4).

Table 2. Distribution of the Respondent Characteristics

Characteristics	Interval	Total (respondent)	Percentage (%)
Age	20-35	11	12%
	36-50	52	57%
	51-65	29	32%
Monthly Income (Rupiah)	<1000000	55	60%
	1000000-2000000	34	37%
	> 2000000	3	3%
Level of education	Elementary School	35	38%
	Junior High School	23	25%
	Senior High School-Degree	34	37%

Figure 2. Diagram Construction of PLS Path Modeling

Table 3. Discriminant Validity Results Test

	Characteristics	Perception	Norms	Relationship patterns	Trust	Participation
Characteristics	0.771*	0.583	0.479	0.526	0.196	0.310
Perception	0.583	0.613*	0.609	0.529	0.366	0.279
Norms	0.479	0.609	0.856*	0.689	0.146	0.325
Relationship patterns	0.526	0.529	0.689	0.859*	0.314	0.430
Trust	0.196	0.366	0.146	0.314	0.727*	0.663
Participation	0.310	0.279	0.325	0.430	0.663	0.767*

*Square root of AVE

Discriminant validity of the measurement model reflective indicators assessed by cross loading which compares the value of cross loading of each indicator against the construct is greater than the value of cross loading indicator to construct or other latent variables. The output of the discriminant validity can be seen in Table 3.

Discriminant validity can be seen from the root of AVE (Average Variance Extracted) on a larger diagonal column depend correlations among constructs in the same column. The table shows that the root of AVE on the diagonal column is higher than the correlation between the latent variables in a column other than the diagonal (off-diagonal). This indicates discriminant validity is met.

Composite reliability is a reliability test in PLS which shows the accuracy, consistency of the accuracy of a measuring instrument in measuring [9]. The results of the composite reliability can be

seen in Table 4. Composite reliability is good if it has value of more than 0.7.

Table 4. Reliability Test Results

Variable	Composite reliability
X ₁	0.812
X ₂	0.837
X ₃	0.916
X ₄	0.934
X ₅	0.804
Y	0.781

Evaluation of Goodness of Fit Inner Model

Goodness of fit inner models R-square is evaluated using latent dependent variable and using Q-square predictive relevance to demonstrate that the construct used is a construct that has a good predictive relevance and feasible for use in research. Q-square value must be > 0 which indicates the model has predictive relevance good [6]. R-square value of the result of analysis using PLS software Warp 5.0. R-squared values were obtained in Table 5.

Table 5. R-square Result

	Characteristic (R ₁)	Perception (R ₂)	Norms (R ₃)	Relationship patterns (R ₄)	Trust (R ₅)	Participation (R ₆)
R-squared	0	0.512	0.235	0.346	0.083	0.851

Furthermore, the acquisition of R² inserted into the Q-square following equation:

$$\begin{aligned}
 Q2 &= 1 - (1-R_1^2) * (1-R_2^2) * (1-R_3^2) * (1-R_4^2) * (1-R_5^2) * (1-R_6^2) \\
 &= 1 - (1-0^2) * (1-0.512^2) * (1-0.235^2) * (1-0.346^2) * (1-0.083^2) * (1-0.851^2) \\
 &= 1 - (1-0) * (1-0.74) * (1-0.94) * (1-0.88) * (1-0.99) * (1-0.28) \\
 &= 0.8319
 \end{aligned}$$

Based on the results of the calculation of the value of the Q-square can be seen that the Q-square value of 0.8319. This shows that the inner goodness of fit of the model study factors affecting the level of public participation can be predicted well by the variable characteristics, perceptions, norms, patterns of social relationships and trust with a value of 83.19%. While 16.81% predicted by other variables outside studied.

Discussion

Hypothesis testing is done by comparing the effect size that appears at the output modeling results. Output effect size presents the results f-squared effect size [10]. Effect size can be grouped into three categories: weak (0.02), medium (0.15), and large (0.35) [11,12] effect size values below 0.02 indicate that latent variable effect is very weak predictor of practical view despite having a significant p value.

Based on estimates indicate that the characteristic has the effect size of 0.229 to perception, characteristic to the norm of 0.235, and characteristics of the social relationship of 0.283. These results belong to a group effect size large enough to show the characteristic variable has a considerable influence on the perception, norms and patterns of social relations. Variable characteristics have a weak effect on the variable trust (0.036) and participation (0.077).

Perception variable have an influence on the variables of trust with a medium effect size value of 0.119. While the perception variable has effect size of 0.098 includes enough participation. Norms variable have a large effect size on the perception variable (0.283) and participation (0.204). Otherwise, variable pattern of social relationships has weak influence on participation variable (0.040). The variable of trust has a weak effect size (0.063) on the pattern of social relations variable and the large effect size (0.431) against participation variable.

In an effort to increase community participation in the management of Cengkrong mangrove areas, required efforts from the management and the government to improve the public perception related to tourism activities and management activities in Cengkrong mangrove areas Cengkrong. Public perception identified in this study relates to the knowledge and attitudes the community in tourist activities and Cengkrong mangrove management activities. Activity-based development of the area managers and the government in the form of socialization activities related to tourism management plan and management of mangrove areas Cengkrong overall. Development activities are expected to improve public knowledge in the management of Cengkrong mangrove areas effort and can make people have an attitude that is able to support the activities and management of Cengkrong mangrove tourism

Test result *effect size* showed that the variables that have a considerable influence on community participation is variable perceptions, norms, and trusts. A person's perception is closely related to the choice in decision-making [13] so that when people have a good perception of mangrove Cengkrong management activities, then the public will also be encouraged to participate in it.

Beside that, adherence to social norms and trusts that are part of the social capital of the community must also be increased in order to ensure continuity of community participation in the management of mangrove Cengkrong. Efforts to improve the adherence to the norms and social trust can be done by strengthening family function [14] and ensure one's social life in society [15]. Family function is meant is to ensure rules that apply remain adhered to and maintained within the family and the community [16]. Compliance with existing norms in the order of daily life is expected to ensure the livelihood of the people and inter-community relations can be maintained.

Social trust should be maintained and enhanced in an effort to ensure public participation in the management of Cengkong mangrove areas. Social trust can be built by establish good communication within the community, openness between the manager of the community, and real support from the government on the management of Cengkong mangrove areas.

CONCLUSION

Variables used in this modeling are the characteristics of the respondent, perceptions, norms, patterns of social relationships, and trust. Based on the results of studies showed that the variables that have a strong influence on the level of community participation in the management of mangrove areas Cengkong is norms and trusts variables. The dominant influence on the level of community participation in the management of mangrove areas Cengkong is variable trust with path coefficient value of 0.64.

The management of mangrove Cengkong in Karanggandu Village should increase the effort of community participation. Program should be paid to community development which contributes to the mangrove Cengkong management. The community in Karanggandu Village should be involved in mangrove management. Community-based tourism can be an effective strategy to involve community in mangrove Cengkong management.

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