
Research Article

Community preparedness in ecotourism development and their role in maintaining the natural resources in Kadamaian area, Sabah

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Abstract

Community preparedness in ecotourism development and their role in maintaining natural resources is necessary. Yet, many examples throughout the world suggest that local communities are unable to participate in development of ecotourism and maintaining natural resources. A preliminary study was carried out to identify the preparedness of local communities in ecotourism, as well as to determine the Strength, Weakness, Opportunities, and Threat (SWOT) that effect the preparedness of local communities. Sociological interviews was a recommend networking as the determining the factor. This paper aims to assess the potential of ecotourism in the Kadamaian area and the preparedness in development of ecotourism by the local community. We focused on evaluating the relationship between environment impact and ecotourism by the local community in terms of sustainable tourism development, which can provide an insight in future management for government, stakeholders and managers. This preliminary study shows that local communities are highly prepared in ecotourism development and inmaintaining natural resources, and the result could assist them in conserving natural resources.

Keywords: Ecotourism, SWOT, Conservation, Local Network, Tourism Development.

Introduction

Ecotourism is a type of niche market in the tourism industry. Researchers including from the United National Educational Scientific and Cultural Organization (UNESCO)(2008) state that niche markets in the tourism industry can be classified as Dark tourism, Cultural & Heritage tourism, Adventure

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tourism, Agricultural tourism, 3S tourism, Food tourism, Medical tourism, Cycling tourism, Sports tourism, Health tourism, Green tourism, Pink tourism, Ecotourism and others. Ecotourism is a niche market of the tourism industry, as stated above. According to Buckley (2009), the word “ecotourism” has been debated about in terms of its definition, for at least two decades. Ecotourism is defined as a promise that each tourist has responsibility during travel to natural areas; which means tourists will make a positive contribution towards the conservation of the natural environment and enhance the well-being and life style of local communities (Angelica, Eben & William, 2009). Cheia (2013) states ecotourism was and is a human activity with an extensive search and development model of a country, especially in the 21st century. Furthermore, Ikonen (2012) also indicated that ecotourism can be defined as a form of tourism that sees tourists’ main motivation being observation and appreciation of nature and trying their best to conserve and minimize the negative impacts on nature and the socio-cultural environment in ecotourism destination. The data collected from the survey was analysed using the Statistical Package for Science and Social Sciences (SPSS). In addition, SPSS is used to investigate the community preparedness and to test the reliability and the correlation of the study.

Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis has been widely used in business and management assessment, but it can also be usefully applied in other fields (Rizzo, 2005). SWOT can directly describe and measure factors in a study, interpret the strength and weakness of the project as well as its opportunities and threats. In this research, the development of ecotourism in Kadamaian area was considered after doing a survey on the perception of the local community and a SWOT analysis to measure the potential attraction of the area. This paper aims to assess the potential of ecotourism in Kadamaian area and preparedness for the local community to develop ecotourism. We focus on evaluating the relationship between environment impact and ecotourism by the local community in terms of sustainable tourism development, which can bring insights for future management for the government, stakeholders and managers. There was no information on community ecotourism development from Kadamaian at the time the current survey was done. As a result, this research is critical in terms of providing significant baseline data for conservation reasons via inventory, as well as information on community preparedness and their involvement in maintaining natural resources.

Literature review

Ecotourism can be illustrated as nature tourism that intentionally seeks to provide a net of positive contributions towards environmental conservation and to sustain this for local communities development (Weaver & Lawton, 2007). Moreover, ecotourism has been a preferable option in utilizing resources within a protected area and it is considered as a bridge between nature conservation and rural economic development.

Neoplist theory suggests that the local community should be central to tourism development and management, and encourage them to achieve or to formalize the system at local level planning. Local involvement is a critical element of preparedness of ecotourism development and the role of communities to maintain natural resources. The preparedness of local communities can be seen by their participation. Some scholars have created a typology of participation. However, not all of it deals directly with tourism development (Leksakundilok, 2006).

SWOT analysis is a useful method for the comprehensive assessment of sustainable tourism development (Reihanian, 2012). The analysis identified two main factors for evaluation development: Internal factors determine the advantages and disadvantages of the region; external environmental factors include opportunities and threats (Miandehi, 2013). The SWOT framework has been used as a good research tool to not only evaluate business, but to also conduct a comprehensive assessment for ecotourism development, and it is an effective way to identify the future directions of tourism development (Collins-Kreiner & Wall, 2007; Miandehi & Masrouri, 2013). SWOT can be applied for management processes that highlight important factors that interact with each other (Pickton & Wright, 1998), to overcome the weaknesses and threats, also to enhance strengths and opportunities in development. It plays a significant role in evaluating the potential of ecotourism in the local community, which provides a simple and clear strategy for managers and governments.

Table 1 shows community preparedness in ecotourism when they are actively involved in the development at community level. By examining community attitude and preparedness for ecotourism, this research encourages the local community to maintain available resources and to understand current issues that impact nature and enhance or limit participation in controlling development.

Table 1. Typologies of Participation

Levels	Types	Characteristic
Genuine participant (active)	Empowerment	Local people may directly contact explorer tourist and develop tourism by themselves: Local people have a control over all development without any external forces or influence.
Symbolic participant (towards active)	Partnership	There are some degrees of local influence in the tourism development process.
	Interaction	People have greater involvement at this level. The rights of the local people are recognized and accepted in practice at the local level (Pretty, 1995a).
	Consultation	People are consulted in several ways through meetings, seminars etc.. Developers may accept some contribution from locals (Arnstein, 1969).
Non-participant (passive)	Informing	People are told about tourism development programmes that have been already decided by the community. The developers, run the projects without getting any feedback from local communities.
	Manipulation	Tourism development is generally developed by powerful individuals, government, or outsiders without any discussion with the local communities (Arnstein, 1969).

Note. Source: Adapted from Leksakundilok (2006)

Methodology

Research Site

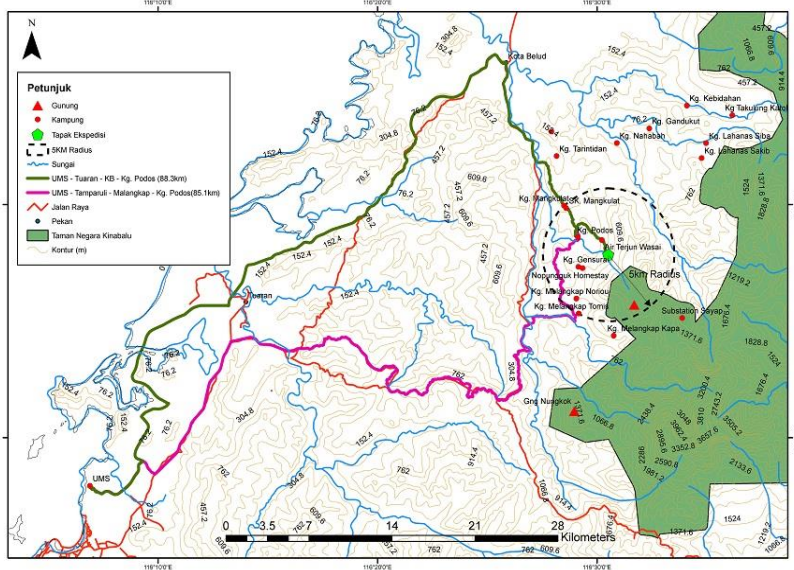


Figure 1. Map of Kadamaian Area

This research was conducted in the Kadamaian area of Kota Belud, from 20th 25th October, 2019 (6 days). Kadamaian is located to the north west of Kinabalu Park in the west coast of Sabah. The basecamp site is proposed to be set up in Kampung Podos at Podos Heritage Homestay compound (N06°12'44.2" E116°30'31.2") about 30 minutes from Kota Belud town, or about 1 hour 30 minutes from Kota Kinabalu (88.3 km).

A trail leading to the summit of Mount Nopungkok (1,430 m asl) will pass through different forest types, from lowland mixed dipterocarp forest, upland mixed dipterocarp forest to lower montane forest. Pristine forest can be seen inside the Kinabalu Park area.

Research Techniques and Procedure

The process of the investigation of the community's preparedness can be shades understanding in factors that is limiting the contribution of local communities in ecotourism and the support of conservation.

In conducting the preparedness of local communities and their role in maintaining natural resources, two types of data were required. Primary data was obtained through a survey from the site in the form of a sociological survey as a guideline since this study does not have control over event. As for secondary data, it was obtained through various journals and reports on the preparedness of local communities. In addition, any changes in development and their role in maintaining natural resources will be investigated through available reports. Because of the time constraints in completing this study, there are fewer samples and observations. In order to obtain fresh information in future, this study will serve as a guide for future researchers, ensuring that they have accurate information about the study's topic. It may not be much, but it should be useful.

Questionnaire Design

The research was conducted using quantitative data. Quantitative data consisted of a survey to describe and to measure the relationship of the variables (PenState University, 2017). Questionnaires were distributed without the respondent's name to keep the data private and to encourage critical opinion. Respondents for the study came from four villages in Kadamaian, (1) Kg. Melangkap Noriou, (2) Kg. Mengkulat, (3) Kg. Gensurai, and (4) Kg. Podos. Questionnaires used a Likert Scale of six as it has higher reliability when using Cronbach's Alpha Coefficient tool and will provide higher value (Chomeya, 2010). The questionnaire was were bilingual, in English and Bahasa Malaysia. In

general, the questionnaire consisted of three (3) sections, i.e (1) demographic which is the respondent's profile, (2) independent variable that includes the demographic variable, government policy, and benefit of ecotourism, and (3) perception of the local community in ecotourism and conservation.

Cronbach's Alpha

The reliability involved when developing variables from the accumulative scale is used as the predictive component of the target model. Santos (1999) mentioned that since accumulative scales are a collection of items designed to measure the interconnection of infrastructure, it is significant to know whether the same set of items elicit the same response if the same questions are redesigned and readministered to the same respondents. Variables derived from test instrumentation are confessed as reliable only if they provide a test, which is stable and a reliable response to repeated administrations.

Cronbach's alpha is an indicator in reliability test, which is associated with the variation accounted for by the real score of the "underlying construct." Construct is the hypothetical variable that will be measured (Santos, 1999).

Santos (1999) stated that the reliability of factors draw from questions with two possible answers or multi-point formatted questionnaires or scales (i.e., rating scale: 1 = poor, 5 = excellent) are described by Alpha coefficient ranges in value from 0 to 1. The higher the score, the more trustworthy the generated scale is. It is also indicated for 0.7 to be a fit and good reliability coefficient; however lower thresholds are sometimes used in the literature.

SWOT Analysis

SWOT analysis was conducted in order to investigate the potential of ecotourism development and management in the future in Kadamaian. This analysis tested the internal factors including strengths and weaknesses as well as external factors which are opportunities and threats in this region in terms of community ecotourism and strategies. Values of factors were identified by the environment, local community and economy in regards to successful factors of ecotourism (Parker & Khare, 2005).

Results and Discussion

Cronbach's Alpha

Table 2. Results of reliability Cronbach's Alpha for the variables

Variables	No. of Items	Cronbach's Alpha
Perception of Local Community on Ecotourism and Conservation	9	.865
Demographic Variable	5	.853
Government Policy	5	.764
Benefits of Ecotourism (Economic & Environmental Conservation)	7	.831

The Cronbach's Alpha values of the questionnaire were above the acceptable level, at a value range of 0.764 - 0.865. The second independent variable, government policy, was found to be the lowest in terms of reliability among other variable with 5 items: $\alpha = 0.764$. The third independent variable, that is the benefit of ecotourism (economic and environmental conservation), showed an average reliability with 7 items: $\alpha = 0.831$. The first independent variable, the demographic variable, was found to be the highest and with good reliability among independent variables with 5 items: $\alpha = 0.853$. Meanwhile, the dependent variable, perception of the local community on ecotourism and conservation, which consisted of 9 items, showed excellent reliability among all variables, with a reliability value of 0.865.

Demographic

The relationship of gender on the preparedness of the local community for ecotourism and conservation is very important in order for them to understand and to be more aware of the environment instead of self-development. Figure 2 shows the awareness of both genders on the four items of the perception of ecotourism and conservation. The spider chart shows that males have higher information and understanding about ecotourism and conservation with a mean of 5.54 on the demographic variable, 5.245 on government policy, 5.542 on benefit of ecotourism and conservation (economic and environmental conservation) and the independent variable 5.254 which is the perception of local community on ecotourism and conservation. However, females have an average understanding and information with the mean for each dependent variable for demographic variable at 5.068; 5.085 for government policy, and 5.102 for benefit of ecotourism (economic and environmental conservation) and

the dependent variable with a mean of 5.254 for the perception of the local community on ecotourism and conservation.

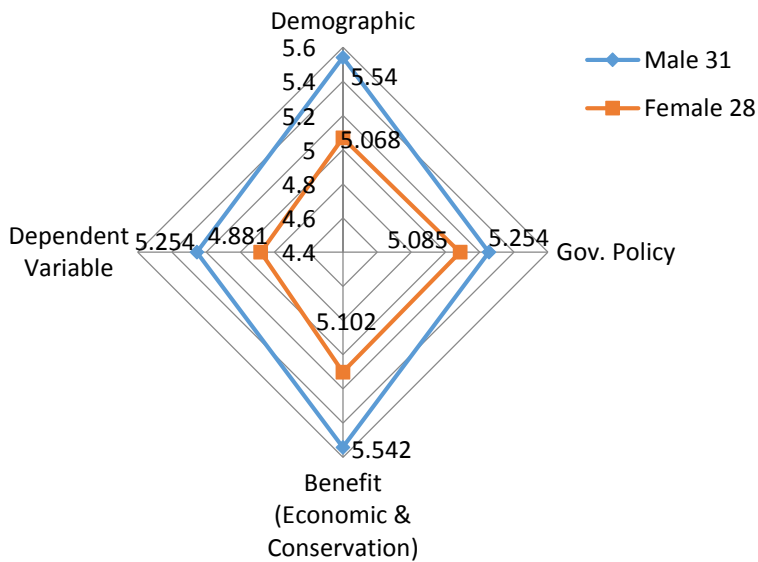


Figure 2. The relationship of gender on the perception of local community on ecotourism and conservation.

Establishing relationships between the same variables in two populations or between two or more variables in the same population is known as correlational research (Curtis, Comiskey & Dempsey, 2016). Correlation can refer to a single digit that explains the degree of relationship between two variables. In order to identify the relationship between two variables, coefficient is used and described by a unitary value.

There is a statistical technique to identify the connection between two quantitative and continuous variables. It shows how strongly pairs of variables are related. The result of a correlation is called correlation coefficient, with ranges from -1.0 to +1.0.

Table 3 shows that demographic variables and perception of local community on ecotourism and conservation were statistically significantly correlated, $r = 0.635$, $p < 0.01$. The correlation coefficient indicated a moderate association between the demographic variables and local community perception.

There was a statistically significant correlation between government policy and perception of local community on ecotourism and conservation with $r = 0.501$, $p < 0.01$. The correlation coefficient indicated a moderate association between government policy and the perception of local tourists.

Table 3. Result of Pearson Correlation Analysis

	Perception of Local Community on Ecotourism and Conservation	Demographic Variables	Government Policy	Benefits of Ecotourism and Conservation
Perception of Local Community on Ecotourism and Conservation	1	0.635**	0.501**	0.758**
Demographic Variables	0.635**	1	0.619**	0.651**
Government Policy	0.501**	0.619**	1	0.626**
Benefits of Ecotourism and Conservation	0.758**	0.651**	0.626**	1

**Correlation is significant at the 0.01 level (2-tailed).

The benefits of ecotourism and the perception of local tourists towards ecotourism destinations in Malaysia were statistically significantly correlated, $r = 0.758$, $p < 0.01$. The correlation coefficient indicated a moderate association between benefits of ecotourism and local tourist's perception.

In a nutshell, demographic variables, government policy and benefits of ecotourism were significantly correlated with the perception of local community on ecotourism and conservation with moderate relationships.

Internal Factor Estimate Matrix (IFEM)

There were 15 factors to strength this study; the effectiveness score ranged between 2 and 4. Geographical features, biodiversity of forests, traditional and cultural experience activities, community motivation and the organization of ecotourism in the community had the highest weight. In regards to weakness,

the highest weight was no disposal plans and the lowest was lack of travel and ecotourism agencies. The final score was 3.44, which is larger than 2.5; SWOT analysis shows that if the value is less than 2.5, it means that there are fewer opportunities than threats. If the value is greater than 2.5, the opportunity is greater than the threat, which indicates that the value has a high potential for the internal development of the tourism industry and can be explained in the external development. (Ganjali, 2014; Ghorbani, 2015).

Ecotourism sustainable development strategies using SWOT and QSPM model: A case study of Kaji Namakzar Wetland, South Khorasan Province, Iran.

Table 4. Internal Factor Estimate Matrix

No.	Strength	Weight	Effectiveness score	Final Score
1.	Well maintained road to access, not far from city; i.e. 1 hour to Kota Belud & 2 hours to KK city centre. Tourists do not need to travel far to experience ecotourism.	0.05	3	0.15
2.	Near Mount Kinabalu, the forest ecosystem is very well protected, cool temperature weather. Abundant topography, river, waterfall, forest, mountain.	0.06	4	0.24
3.	Various wild flora and fauna (large ferns, tuhau, butterflies etc.) including protected species (Pangolin & Rafflesia spp).	0.06	4	0.24
4.	Special landscape featuring, many different types of waterfall and river, different scenery in each trail.	0.03	2	0.06
5.	Big camping sites are ready for tourist usage; on flat high land close to the river. Well built restrooms available with proper sewage system.	0.03	2	0.06
6.	Clean, piped water available at tourist centre as well as houses within the villiage. Power supply is sufficient for tourist usage in the camping area.	0.04	4	0.16
7.	Attraction signs have settled along the trail based on its different natural geography feature. Trails with proper resting place for tourists.	0.03	2	0.06
8.	Developed homestay, advertisement on social media, with experienced guide, detailed map and trail route.	0.04	3	0.12
9.	There are four (4) main hiking trails determined by locals themselves. Local guides will explain the flora and fauna to tourists along the trail.	0.05	3	0.15
10.	Traditional and cultural experience activities that enables tourists to learn from local community; including making handcraft, traditional food and cultural night.	0.06	3	0.18

11.	Other tourism packages provided to enrich activity, such as visiting bee farm, buffalo riding, rafting and karaoke and BBQ.	0.03	2	0.06
12.	Local communities are actively involved in the tourism activities & are trained regarding environmental education. They are also known as Citizen Scientist.	0.04	3	0.12
13.	High level of community awareness & compliance regarding biodiversity conservation.	0.05	4	0.2
14.	Community has high motivation to improve their economic situation through ecotourism; as well as the drive to implement their plans for the benefit of the environment and the peoples' socio-economic condition.	0.06	4	0.24
15.	Well organized community towards building ecotourism in their locality, willingness to learn and share experiences with community's vicinity kampungs.	0.06	4	0.24
No.	Weaknesses	Weight	Effectiveness score	Final Score
1.	Trails are not user friendly to beginners and poor strength people, as the routes are difficult for trekking.	0.05	4	0.20
2.	Unpredictable weather easily interrupts activity.	0.05	4	0.20
3.	Shortage of shelter for resting and rain along the trail.	0.04	4	0.16
4.	Facilities are not well maintained along the trail, i.e. stairs are too old and broken.	0.05	4	0.20
5.	Lack of travel and ecotourism agencies.	0.02	2	0.04
6.	No disposal plans, may cause waste pollution if increase tourism activities.	0.06	4	0.24
7.	Limited knowledge of fauna and flora in terms of sustainable ecotourism.	0.04	3	0.12
Total		1		3.44

External Factor Estimate Matrix (EFEM)

Seven factors were identified to opportunities and 6 factors to threats. Research and educational potential and increase conservation awareness of the ecosystem to local community had the highest weight. Promotion of sustainable tourism to the public had the lowest weight. Threat to local ecosystem conservation and habitat disturbance and risk of local resources destruction and land use issues regards of tourism development had the highest weight in terms of threats. The lowest weights of threat were inconvenience for foreign tourists such as language barriers and the local community losing its traditional way of life. The value of external factor was 3.27 interpreting that opportunities were more than threats. Hence, Kadamaian area seems to have significant potential for ecotourism development, however, there are still many facilities and conservation management that need to be improved.

Table 5. External Factor Estimate Matrix

No.	Opportunities	Weight	Effectiveness Score	Final Score
1.	More potential attraction can be explored in various landscape.	0.07	3	0.21
2.	Research and educational potential according to sustainable ecotourism.	0.10	4	0.40
3.	Increase conservation awareness of ecosystem to local community through tourism.	0.10	4	0.40
4.	Job opportunity and economic development for local community.	0.09	4	0.36
5.	Example of ecotourism management and market for neighbor community around Mt. Kinabalu Park.	0.06	3	0.18
6.	Promotion of sustainable tourism to public.	0.05	2	0.10
7.	Enhance culture and traditional context conservation.	0.07	2	0.14
No.	Threats	Weight	Effectiveness Score	Final Score
1.	Threat to local ecosystem conservation and habitat disturbance.	0.10	4	0.40
2.	Risk of local resources destruction and land use issues regards of tourism development.	0.10	4	0.40
3.	Lack of environmental impact assessment for ecotourism facilities.	0.08	3	0.24
4.	Shortage of pollution treatment for waste disposal, i.e. hotel, food, vehicle.	0.08	3	0.24
5.	Inconvenience for foreign tourists such as language barrier.	0.05	2	0.10
6.	Local community lose their traditional way of life.	0.05	2	0.10
Total		0.93		3.27

Internal and external factors in the matrix of SO, ST, WO and WT strategies were done for the Kadamaian community. Table 6 below shows sustainable tourism development strategies in Kadamaian.

Table 6. Strategies of internal and external factors

SO strategies
Consider the area climate and weather which affects the potential activities when planning for ecotourism tours.
More conservation research and education should be conducted in this area increasing local community knowledge and awareness.
Consider particular ecosystem environment of Kadamaian, special geographical features and biodiversity should be developed for this.
Consider developing ecotourism management in future in order to enhance the tourism industry for the local community.
Education of teaching and training tourism skills provide more opportunities for the local community.

ST strategies

Government making management plan and strategies to avoid negative impact of tourism on the local ecosystem and biodiversity.
Improving infrastructure to have better service and facilities to attract tourists.
Increasing conservation activities to improve conservation capacity and awareness.
Conducting Environmental Impact Assessment to prevent landscape exploitation and habitat disturbance.
Develop more traditional activities to keep local culture and marketing.

WO strategies

Design proper trails for safety and for tourists who are not strong enough.
Establish shelter and maintaining facilities along the trails for resting and visiting.
Environmental education and culture building through public media, academic conferences, and NGOs.
Cooperate with tour agencies to promote ecotourism package tours for the local community.
Communicate and introduce ecosystem attractions by using well-designed education packages.
Consider the plan to deal with waste disposal for mass tourism.

WT strategies

Plan alternative tourism packages in case of unexpected weather.
Getting funds from stakeholders to continue maintaining facilities.
More conservation knowledge education taught by professional experts to local guides.
Government makes regulations and laws preventing negative impacts by tourism.
Environmental impact management formulated for increasing number of tourists in the future.
Waste treatment system planned for accommodation and other activities.

Conclusion

The community preparedness in ecotourism and their role in maintaining the natural resources are still under study, and more studies are needed. After considering the result from the study, it has contributed preparedness of the local community on ecotourism. The main purpose of this study is to ensure natural resources are well managed and aware about environmental issues. Subsequently, Kadamain has significant potential for ecotourism development. The natural geographic features and biodiversity lay the foundation for the tourism industry. However, there is still lack of infrastructure and promotion of this area. The local community has potential to do ecotourism, the perception for conservation and their awareness show they are prepared to do this. In addition, the government and organizations need to support policy and other aspects for better management and development. It is of utmost importance to conserve and maintain the ecotourism industry in Sabah, not only for sightseeing, but to also maintain the existence of the natural resources which has value not only for tourists but also for the local community.

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