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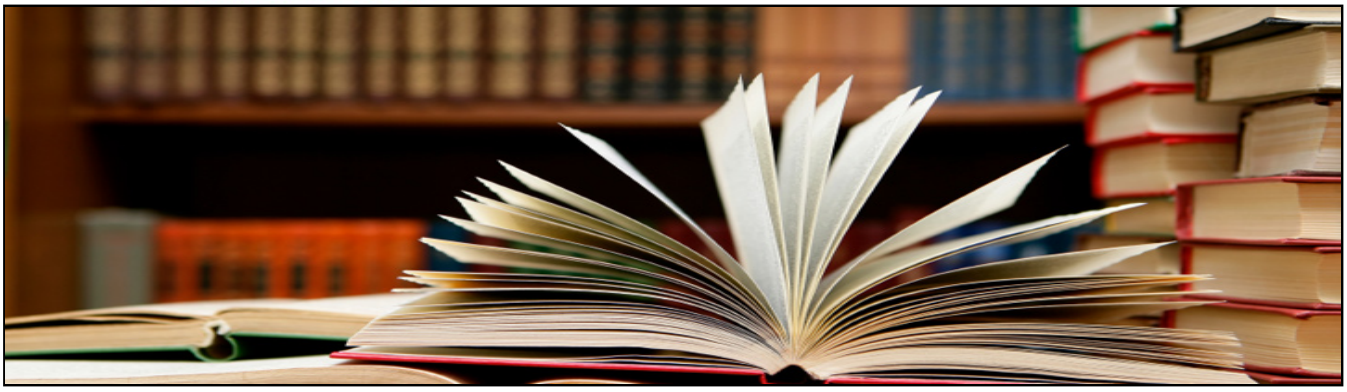

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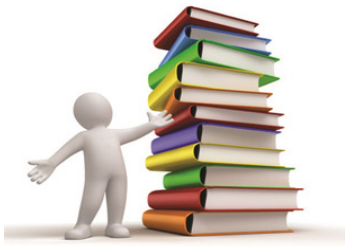

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The Carrying Capacity of Bunaken National Park Ecotourist Attractions to Achieve Sustainable Ecotourism Development and the Impacts of Ecotourism Activities on the Surrounding Community

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ABSTRACT

This study aims to analyze the carrying capacity of the ecotourist attractions in Bunaken Island in order to achieve sustainable ecotourism development and the impacts of ecotourism activities. This research was conducted in the ecotourist attraction of Bunaken National Park in North Sulawesi, precisely in Bunaken Island, which is located in the north of Sulawesi Island, Indonesia. The population of this research is all the tourists visiting Bunaken National Park, and the surrounding community who live in Bunaken National Park, with a sample of 80 tourists and 40 local communities. The analytical tools employed were Factor Analysis with Sustainability Livelihood Approach (SLA) and Path Analysis. The variables used were ecological, social, economic, physical, and environmental carrying capacity, sustainable ecotourism development, and impacts of ecotourism activities. The findings suggest that the environmental carrying capacity seen from indicators such as accessibility, quality of the roads to the location, and availability of tour transportation is the most significant factor that will shape the carrying capacity of the ecotourist attraction. Therefore, to improve ecotourism, the main thing necessary to improve and to note is the carrying capacity of the environment. Furthermore, in the second, third, and fourth ranks are ecology, social, and economy, respectively. On the other hand, the physical carrying capacity is the lowest type of carrying capacity in the measurement of carrying capacity of ecotourism in Bunaken National Park. The path analysis shows that 69.3% of sustainable ecotourism development determinants is due to the existence of carrying capacity. Of the path coefficient with the highest value, it can be seen seen that the physical carrying capacity is the main carrying capacity which supports sustainable ecotourism development. Thus, it is necessary to investigate the appeal of beauty and facilities owned, as well as the cleanliness and sustainability in order to improve the quality of sustainable

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ecotourism development. Regarding the effects of carrying capacity and ecotourism development on the resulting impacts, it can be seen that by 84% of the impacts of ecotourism activities is affected by the carrying capacity and the outcomes of sustainable development. From the path coefficient with the highest value, it is obvious that the physical carrying capacity is the main carrying capacity for the resulting outcomes. The better the physical carrying capacity, the better or the more positive the impacts of ecotourism activities in Bunaken National Park.

1. INTRODUCTION

The current management and use of natural resources are intended to achieve the overall prosperity of the people (*economy*) that is fair (*equity*) and sustainable (*sustainable natural resources*). This is possible because natural resources are important capital for activating the development in an area, either in the context of a state, province, regency or city. Therefore, in utilizing natural resources, the aspect of strategic planning is a measure to determine the amount of revenue and the level of contribution to the collection of capital intended for development. Sustainable management is a management strategy that is absolute in nature, but provides a flexible threshold that can move according to the social and economic condition and the abilities of ecosystems and biosphere to receive the impacts of such management activities. Sustainable management is also a strategy for the utilization of natural ecosystems, where the functional capacity of an ecosystem is kept not to be disturbed and can provide benefits for human life in a sustainable manner.

One of the unique coastal and marine ecotourist attractions in the region of Indonesia is Bunaken marine national park area situated in the province of North Sulawesi. This ecotourist attraction is unique because it has coral reefs, mangroves, and seagrass beds that are beautiful and stretch as far as the eye can see with steep and deep typology of coral reefs, making it very suitable for diving, snorkeling and glass boating, swimming, sunbathing because it has white sand beaches and recreation along the coast. Tourist visits, both foreign tourists and local tourists, to the area of Bunaken national park from year to year continue to increase significantly, in 2001 as many as 15,066 tourists visited this area and then this number increases significantly in 2003 into 38,855 tourists. This means that within a period of two years an increase in the number of tourist visits as much as 157.89 tourists or approximately 78.94% per year has occurred. This condition is definitely potentially affecting the coastal and marine ecosystems in the tourist attraction of Bunaken national park.

The number of tourist visits to the location of Bunaken Island will certainly threaten the ecosystem and the preservation of natural resources and germplasm found in this tourist attraction. This lead to the value of ecosystem services that is likely to decline as a result of various activities carried out by visitors or ecotourists such as taking out the coral as souvenirs, waste that travelers throw away, oil spills of the motor boats and establishment of hotels near the beach. The increasing number of visits or visitors will also have an impact on government policy on the use of ecotourism, the demand and supply of environmental services and other factors that

influence them as well as changes in the management system that provide the basis for decision making. Environmental degradation as a negative impact of ecotourism activities has something to do with the environmental carrying capacity (carrying capacity). An excessive number of visitors are a major problem that is almost always found in the implementation of tourism activities in marine parks and national parks (Clark, 1991; 13). Water contamination by waste, soap, oil spills from motor boats and others are forms of pollution that reduces the convenience of the visitors who visit this area.

Based on the above background, the current research aims to analyze the carrying capacity of the ecotourist attractions of Bunaken Island in order to achieve sustainable ecotourism development and the impacts of ecotourism activities.

2. LITERATURE REVIEWS

Just like sustainable development, the definition of ecotourism is also hard to define in the operational phase. However, a number of parameters are commonly used to refer to sustainable tourism, including excursions with the minimum impacts on the environment which provide a beneficial impact on the community or the local community and provide conservation education for visitors (McMinn 1997). Yudaswara (2004) analyzes the policy of marine tourism development in the management of small islands in a sustainable manner (a case study of Menjangan Island in Buleleng Regency, Bali), it turned out that sustainable tourist attractions were chosen as an optimal scenario for the management of the area of Menjangan Island. In the island group in the Village of *Pulau Kelapa* (Coconut Island), the District of *Kepulauan Seribu* (Thousand Islands), the local community carry out economic activities that are closely related to the natural resources, i.e. fisheries and tourism, the local residents involved in tourism activities have better income (Ruyani 2003).

There is an interesting thing related to sustainable tourism, namely sustainable destinations. To date, there is no standard definition of what is referred to as a sustainable tourist destination since tourist destinations are unique (Lee 2001; Ryhannen 2001). Likewise, the criteria to refer to sustainable destinations vary, depending on the schemes or methods used to define a sustainable destination. However, Mc Minn (1997) suggests that the carrying capacity of the environment is one of the tools that can be used to measure the extent to which a destination is sustainable

Fennel and Eagles (1990) propose the presence of six important principles to be met by visitors in the organization of ecotourism with regard to the sustainability of the destination, which consist of: 1) To the fullest extent trying to avoid the negative impacts resulting from their presence on the environment of the tourist destination and on the local residents. 2) Doing this excursion in order to increase awareness and understanding of the nature and local uniqueness. 3) Participating in the attempts to maximize the initial and long-term participation of local communities, in the decision-making process concerning the organization of ecotourism. 4) Ideally, visitors contribute to the conservation efforts of protected areas. 5) Offering economic

benefits, not just diverting local communities from their traditional jobs. 6) Opening up opportunities for college students that are also the local community and tourist workers to take an advantage of the beauty of natural resources.

Based on the aforementioned concepts, it is obviously illustrated that in order to build a sustainable tourist destination, ecological integrity is necessary as an attempt to achieve the vision of sustainable development. The above model requires commitment of many parties to realize sustainable destinations in an effort to improve and to maintain the tourism sector, as part of the strategy of foreign exchange earnings. It is important to note that as a process, it requires a relatively long time. A degraded ecosystems require time to repair itself, including the abilities of its constituent biotic factors, namely plants and animals.

Carrying capacity is defined as the maximum intensity of the use of natural resources that continues on an ongoing basis without damaging the nature. Bengen and Retraubun (2006) define carrying capacity as the rate of use of natural resources or ecosystems on an ongoing basis without causing damage to these natural resources and their environment. Carrying capacity can be defined as the maximum condition of an ecosystem to accommodate the biotic components (living organisms) therein, by also taking into account environmental factors and other factors that play a role in the nature.

Another definition states that carrying capacity is a limit to a number or a mass of living organisms that a habitat can support. The limitation of the carrying capacity for human populations is the number of individuals that can be supported by a unit of area and environment in a prosperous state (Tantrigama 1998). Thus, carrying capacity refers to the number of constraints necessary to consider of the existence of a biota due to environmental constraints such as food, space or spawning ground, diseases, predator cycles, temperature, sunlight, or salinity. Environmental carrying capacity is closely associated with the assimilation capacity of the aquatic environment that describes the amount of waste that can be discharged into the environment without causing pollution (UNEP 1993).

Davis and Tisdell (1996), environmental carrying capacity is divided into two, i.e. ecological carrying capacity and economic carrying capacity. If associated with tourism activities, Mathieson and Wall (1989) in Zhiyong and Sheng (2009) define carrying capacity as the maximum number of people who can use an area without disturbing the physical environment and degrading the quality of the adventures that visitors obtain, and without any loss from the social, economic and cultural aspects of the local community (Inskeep, 1991, in Liu 1994). Tourism carrying capacity in practice is a broader concept that may includes three aspects: ecological carrying capacity, economic carrying capacity and psychological (social) carrying capacity (Zhiyong and Sheng 2009). Ecological carrying capacity refers to the maximum number of animals in an area that can be supported without causing death due to the density factor and permanent environmental damage (irreversible). This is determined by environmental factors. This is in line with Tantrigama (1998), the analysis of carrying capacity focuses on ecological, physical and environmental dimensions. Economic carrying capacity is the level of production (business scale) which provides maximum benefits and is defined by business objectives economically. In this case,

the parameters of business feasibility are employed based on the economic perspective. Pearce and Kirk (1986) in Wong (1991) explain several different types of carrying capacity (physical, environmental, and social) that can be applied to some coastal environment (land, dunes, beaches and sea)::

1. Ecological carrying capacity, according to McLeod and Cooper (2005), is the maximum level of use of an area or an ecosystem in order to remain sustainable, both in terms of the number of populations and activities accommodated therein, before there is a decline in the ecological quality of the ecosystem. The definition of carrying capacity according to Odum's theory, that the maximum limit biomass that can support a set of primary production and a variable of the structure of food chain obtained when the total respiratory system is equal to the amount of primary production and imports of detritus (Christensen and Pauly 1998).
2. Physical carrying capacity of an area is the maximum amount of use or activities that can be accommodated in the area without causing damage or loss of quality degradation to the area physically (Wong 1991; McLeod and Cooper 2005). This physical carrying capacity is the maximum amount of use or activities that can be accommodated without causing damage or quality degradation. Physical capacity is necessary to increase the convenience of visitors. Physical carrying capacity can be assessed through the magnitude of the capacity and coastal areas available to build tourism infrastructure for the convenience of tourists (Tantrigama 1998; McLeod and Cooper 2005). Cooper et al. (1998), physical carrying capacity is associated with the visitors' experience or is a maximum level that cannot be accepted with a decrease in the satisfaction due to excessive utilization.
3. The concept of social carrying capacity of an area is a picture of one's perception in making use of a space at the same time, or the perception of a user of an area on the presence of others at the same time in occupying a particular area. This concept has something to do with the level of comfortability and appreciation of the users of an area because of the occurance or the influence of over-crowding in a region. Social carrying capacity of an area is defined as the limit to the maximum level, in the amount and the level of use, in an area where in a condition that have exceeded the limit of this carrying capacity, a decrease in the level and quality of users' experience from or satisfaction of the region occurs. Beeler (2000) states that social carrying capacity is the maximum limit tolerated by one who acts as a host resident against the negative impacts of tourism activities.
4. economic carrying capacity is the level of production (business scale) which gives the maximum profit and is determined by business objectives of the management of the tourism businesses in an economic manner. In this case, the parameters of business feasibility from the economic perspective are employed, i.e. maximum profits, maximum absorbtion of employees by the activities of managing old tourist attractions, the length of the return of investments and the multiplier effects of the business (Tisdell 1998a; McLeod and Cooper 2005). Tourism products are derived from a combination of potential resources, capital, labor and abilities to manage (*management*) which will be marketed as an economic good. The ecotourism sector accounts for the economic role either at the micro level or at the macro level. Ecotourism activities in the micro-economic aspects result in a study

of tourism products, packaging, quality and quantity, actors and prices. Generally, tourism products have the same characteristics as those of consumer goods. The products are presented with very diverse characteristics, and are very flexibly chosen by tourists. Inn the macro-economic aspects, the ecotourism sector discusses the economic share, incomes and employment, as well as economic linkages.

5. Environmental carrying capacity is the level of environmental quality that provides the utility level of the environmental condition in order to support the activities surrounding the environment. There is a theory discussing the life cycle of a tourist attraction in connection with the carrying capacity of the environment that refers to the view of Buttler and Pitana (2005) that is divided into seven aspects: exploration, involvement, development, consolidation, stagnation, decline, and rejuvenation

3. RESEARCH METHODS

The current research was conducted in an ecotourist attraction, which is Bunaken National Park situated in North Sulawesi, precisely in Bunaken Island, in the north of Sulawesi Island, Indonesia. The island belong to the area of Manado city, the capital of North Sulawesi province. The time required to conduct this study is approximately 5 months, from April 2011 to September 2011.

The research population consisted of all the tourists who visited Bunaken National Park and the surrounding communities living in Bunaken National Park, with a sample of 80 tourists and 40 surrounding communities.

The analytical tools employed consisted of Factor Analysis with Sustainability Livelihood Approach (SLA) and Path Analysis. The variables used were ecological, social, economic, physical, and environmental carrying capacity, sustainable ecotourism development, and impacts of ecotourism activities.

4. FINDINGS AND DISCUSSION

4.1. Factor Analysis

The results of the factor analysis are presented in Table 1:

Table 1: Results of the Factor Analysis

Carrying Capacity	**Loading Factor**
Ecological	0.710
Physical	0.595
Environmental	0.798
Economic	0.667
Social	0.689
Eigen Value = 2.415, 0.781, 0.717, 0.624, 0.464 Percentage Of Variansi = 48.292	

From Table 1, it is clear that of the five variables of the carrying capacity, there is only one factor formed. It can be found from the fact that there is only one eigen value which magnitude is more than 1 (i.e, Factor 1 with an eigen value of 2.415). It means that the five type of carrying capacity are confirmed to form one factor, namely the Ecotourism Carrying Capacity factor (X). The amount of diversity that is formed from the five variables is equal to 48.292%, meaning that 48.292% of the five variables measures the Ecotourism Carrying Capacity factor (X). Thus, it can be said that the five variables, specifically Ecological, Physical, Environmental, Economic, and Social Carrying Capacity are significant for forming the Ecotourism Carrying Capacity factor (X).

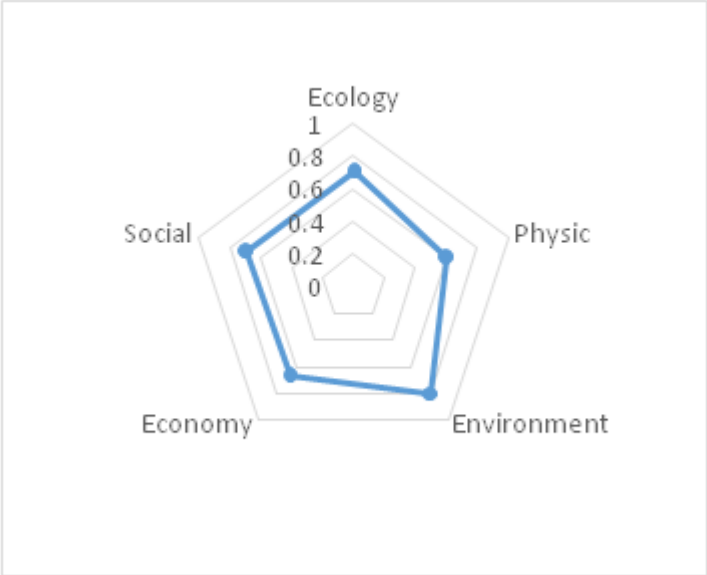

Figure 1: Results of SLA Based on the Loding Factor Using the Factor Analysis

Figure 1 shows that the environmental factor is the factor with the highest level of ecotourism carrying capacity (with a value of 0.798). This indicates that the carrying capacity of the environment seen from the indicators such as accessibility, quality of the roads to the location, and availability of tour transportation is the most significant factor that will shape the carrying capacity of the ecotourist attraction. Therefore, to improve ecotourism, the main thing necessary to improve and to note is the carrying capacity of the environment. Furthermore, in the second, third, and fourth ranks are ecology, social, and economy, respectively. On the other hand, the physical carrying capacity is the lowest type of carrying capacity in the measurement of carrying capacity of ecotourism in Bunaken National Park.

4.2. Path Analysis

Furthermore, path analysis was performed, in this case there are two path models. The first model is the effects of ecological carrying capacity (X1), physical carrying capacity (X2), environmental carrying capacity (X3), economic carrying capacity (X4), and social carrying capacity (X5) on Ecotourism Development (Y1). The

second model is the effects of ecological carrying capacity (X1), physical carrying capacity (X2), environmental carrying capacity (X3), economic carrying capacity (X4), and social carrying capacity (X5) on the Impacts of Ecotourism Activities (Y2). Table 2 presents the calculation results of the OLS for the first equation:

Table 2: Results of Path for the First Equation

Variable	**Beta**	**T_{count}**	**Sig t**
Ecological (X1)	0.199	2.419	0.018
Physical (X2)	0.300	4.275	0.000
Environmental (X3)	0.251	3.320	0.001
Economic (X4)	0.241	3.299	0.001
Social (X5)	0.217	2.899	0.005
$R^2 = 0.693$ $t_{table} = 1.992$ Dependent = Ecotourism Development (Y1)			

Table 2 shows that the R^2 is equal to 0.693 or 69.3%, meaning that 69.3% of the Ecotourism Development (Y1) is influenced by ecological carrying capacity (X1), physical carrying capacity (X2), environmental carrying capacity (X3), economic carrying capacity (X4), and social carrying capacity (X5), while the remaining 30.7% of it is influenced by other factors.

Based on the above table, the following is obtained: The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *ecological carrying capacity* equals to 0199, with a value of t_{count} by 2.419 and Sig t by 0.018. Because Sig t is < 0.05 (0.018 <0.05), it can be concluded that ecological carrying capacity (X1) affects Ecotourism Development (Y1). Because the path coefficient is positive (0.199), it indicates a positive relationship. This means that the higher the ecological carrying capacity (X1) the higher the Ecotourism Development (Y1).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *physical carrying capacity* equals to 0.300, with a value of t_{count} by 4.275 and Sig t by 0.000. Because Sig t is < 0.05 (0.000 <0.05), it can be concluded that physical carrying capacity (X2) affects Ecotourism Development (Y1). Because the path coefficient is positive (0.300), it indicates a positive relationship. This means that the higher the physical carrying capacity (X2) the higher the Ecotourism Development (Y1).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *environmental carrying capacity* equals to 0.251, with a value of t_{count} by 3.320 and Sig t by 0.001. Because Sig t is < 0.05 (0.001 <0.05), it can be concluded that environmental carrying capacity (X3) affects Ecotourism Development (Y1). Because the path coefficient is positive (0.251), it indicates a positive relationship. This means that the higher the environmental carrying capacity (X3) the higher the Ecotourism Development (Y1).

The magnitude of the path coefficient (based on the beta coefficient obtained from

the OLS results) of the variable *economic carrying capacity* equals to 0.241, with a value of t_{count} by 3.299 and Sig t by 0.001. Because Sig t is < 0.05 (0.001 <0.05), it can be concluded that economic carrying capacity (X4) affects Ecotourism Development (Y1). Because the path coefficient is positive (0.241), it indicates a positive relationship. This means that the higher the economic carrying capacity (X4) the higher the Ecotourism Development (Y1).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *social carrying capacity* equals to 0.217, with a value of t_{count} by 2.899 and Sig t by 0.005. Because Sig t is < 0.05 (0.005 <0.05), it can be concluded that social carrying capacity (X5) affects Ecotourism Development (Y1). Because the path coefficient is positive (0.217), it indicates a positive relationship. This means that the higher the social carrying capacity (X5) the higher the Ecotourism Development (Y1).

Table 3: Results of Path for the Second Equation

Variable	**Beta**	**T_{count}**	**Sig t**
Ecological (X1)	0.152	2.442	0.017
Physical (X2)	0.257	4.502	0.000
Environmental (X3)	0.211	3.573	0.001
Economic (X4)	0.216	3.791	0.000
Social (X5)	0.133	2.306	0.024
Development (Y1)	0.282	3.339	0.001
$R^2 = 0.693$ $t_{table} = 1.992$ Variable Dependent = Impact (Y2)			

Table 3 shows that the R^2 is equal to 0.840 or 84%, meaning that 84% of the Impacts of Ecotourism Activities (Y2) are influenced by ecological carrying capacity (X1), physical carrying capacity (X2), environmental carrying capacity (X3), economic carrying capacity (X4), social carrying capacity (X5) and ecotourism development (Y1), while the remaining 16% of it is influenced by other factors.

Based on the above table, the following is obtained: The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *ecological carrying capacity* equals to 0152, with a value of t_{count} by 2.442 and Sig t by 0.017. Because Sig t is < 0.05 (0.017 < 0.05), it can be concluded that ecological carrying capacity (X1) affects the Impacts of Ecotourism Activities (Y2). Because the path coefficient is positive (0.152), it indicates a positive relationship. This means that the higher the ecological carrying capacity (X1) the higher the Impacts of Ecotourism Activities (Y2).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *physical carrying capacity* equals to 0.257, with a value of t_{count} by 4.502 and Sig t by 0.000. Because Sig t is < 0.05 (0.000 <0.05), it can be concluded that physical carrying capacity (X2) affects the Impacts of Ecotourism Activities (Y2). Because the path coefficient is positive (0.257), it

indicates a positive relationship. This means that the higher the physical carrying capacity (X2) the higher the Impacts of Ecotourism Activities (Y2).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *environmental carrying capacity* equals to 0.211, with a value of t_{count} by 3.573 and Sig t by 0.001. Because Sig t is < 0.05 (0.001 <0.05), it can be concluded that environmental carrying capacity (X3) affects the Impacts of Ecotourism Activities (Y2). Because the path coefficient is positive (0.573), it indicates a positive relationship. This means that the higher the environmental carrying capacity (X3) the higher the Impacts of Ecotourism Activities (Y2).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *economic carrying capacity* equals to 0.216, with a value of t_{count} by 3.791 and Sig t by 0.000. Because Sig t is < 0.05 (0.000 <0.05), it can be concluded that economic carrying capacity (X4) affects the Impacts of Ecotourism Activities (Y2). Because the path coefficient is positive (0.216), it indicates a positive relationship. This means that the higher the economic carrying capacity (X4) the higher the Impacts of Ecotourism Activities (Y2).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *social carrying capacity* equals to 0.133, with a value of t_{count} by 2.306 and Sig t by 0.024. Because Sig t is < 0.05 (0.024 <0.05), it can be concluded that social carrying capacity (X5) affects the Impacts of Ecotourism Activities (Y2). Because the path coefficient is positive (0.133), it indicates a positive relationship. This means that the higher the social carrying capacity (X5) the higher the Impacts of Ecotourism Activities (Y2).

The magnitude of the path coefficient (based on the beta coefficient obtained from the OLS results) of the variable *Ecotourism Development* equals to 0.282, with a value of t_{count} by 3.339 and Sig t by 0.001. Because Sig t is < 0.05 (0.001 <0.05), it can be concluded that Ecotourism Development (Y1) affects the Impacts of Ecotourism Activities (Y2). Because the path coefficient is positive (0.282), it indicates a positive relationship. This means that the higher the Ecotourism Development (Y1) the higher the Impacts of Ecotourism Activities (Y2).

The final testing of the path analysis is the validity of the model. In the path analysis, the indicator for the validity of the model is the total coefficient of determination generated using the following formulas:

Total Coefficient of Determination

$R^2_{total} = 1- Pe_1^2 Pe_2^2$

$R^2_{total} = 1 – (1-R_1^2) (1-R_2^2) = 0.9509$

From the causal relationship among the variables in the path diagram, a total coefficient of determination by 0.9509 is generated or 95.09% of the information contained in the data can be explained by the path model. Hence, the results of the path analysis is quite feasible to use.

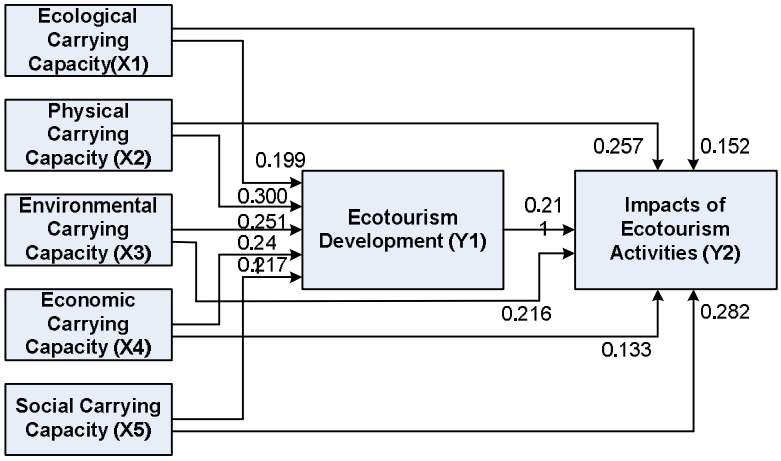

Figure 2: Results of Path Analysis

The path analysis reveals that 69.3% of the determinants of sustainable ecotourism development is due to the existance of carrying capacity. Based on the path coefficient with the highest value, it is suggested that physical carrying capacity is the main type of carrying capacity that supports sustainable ecotourism development. In so doing, it is necessary to investigate the appeal of beauty, facilities owned, and the cleanliness as well as preservation to improve the quality of sustainable ecotourism development in Bunaken National Park.

In relation to the effects of the carrying capacity and ecotourism development on the resulting impacts, it can be seen that 84% of the impacts of the ecotourism activity is affected by the carrying capacity and the outcomes of the sustainable development. Based on the value of the path coefficient, it is obvious that physical carrying capacity is the main type of carrying capacity for the resulting impacts. The better the physical carrying capacity, the better or the more positive the resulting impacts of ecotourism activities in Bunaken National Park.

5. CONCLUSIONS AND SUGGESTIONS

Based on the above testing results, the following can be concluded:

1. 69.3% of the determinants of sustainable ecotourism development is due to the existance of carrying capacity. Based on the path coefficient with the highest value, it is suggested that physical carrying capacity is the main type of carrying capacity that supports sustainable ecotourism development. In so doing, it is necessary to investigate the appeal of beauty, facilities owned, and the cleanliness as well as preservation to improve the quality of sustainable ecotourism development in Bunaken National Park.
2. From the effects of the carrying capacity and ecotourism development on the resulting impacts, it can be seen that 84% of the impacts of the ecotourism activity is affected by the carrying capacity and the outcomes of the sustainable development. Based on the value of the path coefficient, it is obvious that physical carrying capacity is the main type of carrying capacity for the resulting impacts.

The better the physical carrying capacity, the better or the more positive the resulting impacts of ecotourism activities in Bunaken National Park.

Suggestions provided for the Management of the ecotourist attraction of Bunaken National Park are to pay more attention to the carrying capacity of the area in order to maintain continuity for the future survival of this area. This study serves only as a model to optimize the utilization of the tourist attraction and can be that used as guidelines to assess and utilize of other tourist attraction. Also, parties or stakeholders who are directly involved in the management of these areas need to coordinate the managerial advancement of this area so that maximum benefits can be obtained without sacrificing the environment. Beautiful and sustainable conditions are assets for the future of our children and grandchildren.

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