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POTENTIAL VARIABLES OF PICNICKING PSYCHOLOGICAL CARRYING CAPACITY AT IR. H. DJUANDA GRAND FOREST PARK BANDUNG

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ABSTRACT

Ir. H. Djuanda Grand Forest Park, Bandung is a conservation forest area that became one of many destinations in Bandung suitable for picnic activities. Quietness, comfort, and solitude are psychological elements pursued by tourist in forest area. Therefore, ecotourism carrying capacity including picnic in a conservation forest area should be measured by psychological carrying capacity. This study aimed to identify the potential variables of picnicking psychological carrying capacity in Djuanda Grand Forest Park, and to measure the satisfaction of visitors who had picnicked in Djuanda Forest Park based on those variables. There were 50 attributes from 3 principles (naturalness of natural resources; solitude of social experiences; and environmental and social friendly management) of psychological carrying capacity. Data were collected through closed questionnaire and were analyzed using Likert Scale, Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA) methods. 42 attributes (84%) are classified as potential variables of picnicking psychological carrying capacity at Ir. H. Djuanda Grand Forest Park Bandung. The Customer Satisfaction Index of picnic at Ir. H. Djuanda Grand Forest Park is 78%. This result indicates that visitors feel satisfied picnicking in Djuanda Grand Forest Park. To increase visitor's satisfaction based on psychological carrying capacity in Djuanda Grand Forest Park, managers should pay more attention to ungulates, amphibians, trash bins attributes, and tour guide's uniform sub-attributes.

KEYWORDS: Djuanda Grand Forest Park, picnicking psychological carrying capacity, potential variables.

INTRODUCTION

Ir. H. Djuanda Grand Forest Park has interesting natural attractions such as natural sceneries, floras, faunas, with fresh and cool air. Few of tourism objects found in Djuanda Grand Forest Park are Ir. H. Djuanda monument, museum, deer captivity, caves of the Dutch and Japanese relics, and several waterfalls. This tourism potential is what causes the Djuanda Grand Forest Park to be one of the most frequently visited destinations for many recreational activities in Bandung, such as picnicking activity. The forest setting is ideal for picnicking in that it is shady, pleasant, and in some cases quiet.[1] Quietness, comfort, and solitude are psychological elements pursued by tourist in forest area. Therefore, ecotourism carrying capacity including picnic in a conservation forest area should be measured by psychological carrying capacity.

Tourist psychological carrying capacity is the maximum degree to which a visitor can tolerate the environment of the destinations.[2] The psychological carrying capacity is thus affected by the quality of the tourism environment and the tourists' prior expectations, images, preceptions and evaluations of experiences that arise from their interactions with the physical nature of the place and with the people encountered at that place.[2] Based on this statement, the psychological carrying capacity concept also meets the three carrying capacity dimensions of park, namely the natural resources dimension, social experiences dimension, and management dimension.[3]

This study aimed to identify the potential variables of picnicking psychological carrying capacity in Djuanda Grand Forest Park, and to measure the satisfaction of visitors who had picnicked in Djuanda Grand Forest Park based on those variables. The results of this research are expected to provide information about potential variables of picnicking psychological carrying capacity in Djuanda Grand Forest Park, including visitors' satisfaction based on the factual conditions of potential variables so then it can be used as a reference in the improvement of picnicking management in Djuanda Grand Forest Park. In addition, this research is expected to become a new concept and approach in determining and managing the picnicking psychological carrying capacity in a conservation forest area.

MATERIALS AND METHODS

This research was conducted at Ir. H. Djuanda Grand Forest Park, Bandung, Indonesia in June to July 2018. The tools used in this research are questionnaire tally sheets, stationeries, camera, and laptop with IBM SPSS, Ms. Excel, and Ms. Word software. The respondents were determined by purposive sampling, one of the sampling methods by selecting samples according to the objectives of the research.[4] Therefore, the respondents/ objects in this research were the visitors who were picnicking in Djuanda Grand Forest Park. There were 30 respondents from 30 different picnic groups. Sample size of thirty is held by many to be the minimum number of cases if researchers plan to use some form of statistical analysis on their data.[5] The main and supporting data types along with the methods used for each data in this research are presented in Table 1.

Table 1 Data types and collecting methods.

Data Types	Collected Data and Information	Data Resources	Collecting Methods
Main data	Variable importance level's scores of natural resources which indicate the naturalness principle	Visitors	Closed questionnaire
	Variable importance level's scores of social experiences which indicate the solitude principle	Visitors	Closed questionnaire
	Variable importance level's scores of management which indicate the environmental and social friendly principle	Visitors	Closed questionnaire
	Variable's actual scores (variable satisfaction level)	Visitors	Closed questionnaire
	Respondents' characteristics	Visitors	Questionnaire
	Picnic activities	Field	Observation, documentations
Supporting data	Djuanda Grand Forest Park's general conditions	Djuanda Grand Forest Park Management Center	Interview, literature review

Data of variable importance level were analyzed using Likert Scale. Variable score intervals and their categories of Likert Scale are shown in Table 2.

Table 2: Variable score intervals and Likert Scale.

Variable Score Intervals	Likert Scale of Variable Importance Level
1 - < 1.8	Very unimportant
1.8 - < 2.6	Unimportant
2.6 - < 3.4	Quite Important
3.4 - < 4.2	Important
4.2 - ≤ 50	Very Important

Potential variables are the variables categorized in the important and very important level, which scored >3.40. The data were then analyzed using CSI (Customer Satisfaction Index). CSI is an index to determine the level of overall customer satisfaction with an approach that considers the importance level of measured attributes.[6] The first step of CSI is to calculate the average satisfaction and importance scores of each variable, or it can be written as the following formulas:

$\bar{X}$ = Average satisfaction score of variables

$\bar{Y}$ = Average importance score of variables

$\sum x$ = Total satisfaction score of variables

$\sum y$ = Total importance score of variables

n = Number of respondents

$$\bar{Y} = \frac{\sum y}{n} \qquad \bar{X} = \frac{\sum x}{n}$$

The average satisfaction and importance score of each variable is divided by number of variables to get the average satisfaction and importance score of all variables, or it can be written as the following formulas:

$$\bar{\bar{X}} = \frac{\sum \bar{x}}{k} \qquad \bar{\bar{Y}} = \frac{\sum \bar{y}}{k}$$

$\bar{\bar{X}}$ = Average satisfaction score of all variables

$\bar{\bar{Y}}$ = Average importance score of all variables

$\sum \bar{x}$ = Total average satisfaction score of variables

$\sum \bar{y}$ = Total average importance score of variables

k = Number of variables

The next steps of CSI calculation,[7] are written as follows:

1. Calculate the Weighting Factor (WF) by changing the average importance score of variables into a percentage number of total average importance score of all variables, so that the total WF is 100%.
2. Calculate the Weighting Score (WS) by multiplying the average satisfaction score of each variable by the weighting factor of each variable.
3. Calculate the Weighting Total (WT) by summing the weighting score of all variables.
4. Calculate the satisfaction index, namely the weighting total divided by the maximum score of the

scale (in this research the maximum score is 5), then multiplied by 100%.

There are five categories of CSI ranging from the lowest (very dissatisfied) to the highest (very satisfied), as shown in Table 3.

Table 3: Customer's Satisfaction Index.

No	CSI (%)	Categories of Visitors Satisfaction
1	81 – 100	Very Satisfied
2	61 – 80	Satisfied
3	41 - 60	Quite Satisfied
4	21 – 40	Dissatisfied
5	0 – 20	Very Dissatisfied

The next analysis method in this research is the Importance Performance Analysis (IPA) method. The IPA method is used to determine the connection between the importance and satisfaction level of variables. The results of the average variable's importance and satisfaction from the previous calculation are placed on the Cartesian Diagram so that each variable occupies one of the four quadrants as shown in Figure 1.

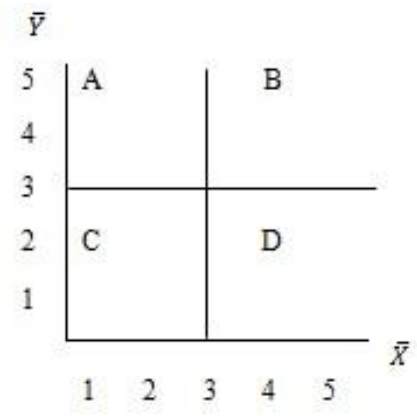

Figure 1: Cartesian Diagram.

Interpretation of each quadrant[8] is written as follows:

A. Concentrate here. Visitors feel that the variables are very important, but indicate low satisfaction with the variables' performance/ condition.
B. Keep up the good work. Visitors value the variables and are pleased with the performance/ condition.
C. Low priority. The Djuanda Grand Forest Park is rated low in terms of the variables, but visitors do not perceive those variables to be very important.
D. Possible overkill. The Djuanda Grand Forest Park is judged to be doing a good job of the variables, but visitors attach only slight importance on them.

RESULTS AND DISCUSSION

General Conditions of Research Location

Djuanda Grand Forest Park administratively located in 6 village areas, namely Ciburial Village, Cimenyan Sub-district, Bandung Regency; Mekarwangi Village, Cibodas Village, Langensari Village, and Wangunharja Village, Lembang Sub-district, West Bandung Regency; and Dago Village, Coblong Sub-district, Bandung City. Djuanda Grand Forest Park has an area of approximately 526.98 hectares of secondary natural forest and forest plantations.[9] Djuanda Grand Forest Park has many attractions that make it suitable for recreation, such as Lembang fault, Dutch and Japanese caves, museum and information center, Keraton cliff, and several waterfalls including Omas Maribaya, and Koleang waterfalls. Beside those attractions, Djuanda Grand Forest Park also has various facilities and infrastructures to support recreational activities including picnic, such as direction signs, information and interpretation medias, toilets, prayer rooms, parking lots, food stalls, and shelters/resting places.

Characteristics of Respondents

Out of 30 respondents, 80% of them are female and the majority of respondents' profession is as a student (33%). The majority of respondents' last education is high school (40%). As many as 77% of respondents came from Bandung Raya which includes the Bandung City, Bandung Regency, West Bandung Regency, and Cimahi City. Respondents in the late adolescent years (aged 15-25 years old) were the majority age of respondents (40%). Youth groups often participate in recreational activities in the wildland-urban interface, which aid in child development. [10] Respondents generally do picnicking in Djuanda Grand Forest Park along with their friends (46%) and families (37%), with the majority number of picnic members is ranging from 2-10 people (70%).

Potential Variables of Picnicking Psychological Carrying Capacity

A total of 28 attributes (56%) categorized in the very important category and as many as 14 attributes (28%) categorized in the important category. These mean that 42 out of 50 attributes were classified as potential variables of picnicking psychological carrying capacity. Attributes that characterize the naturalness of natural resources, solitude of social experiences, and environmental and social friendly management that are classified as potential variables are presented in Table 4. Out of 42 potential variables of picnicking psychological carrying capacity, 5 attributes are not available in Djuanda Grand Forest Park. Those attributes are water springs, wells, view of rice fields, natural caves, and trash bins.

Table 4: Potential variables of picnicking psychological carrying capacity.

Principles	Very Important Attributes	Important Attributes
Naturalness of natural resources	Trees	Sandy soils
	Shrubs	Clay soils
	Grasses	Boulders
	Birds	Bigger gravels
	Primates	Gravels
	Butterflies	Ungulates
	Water springs	Amphibians
	Rivers (water sources)	Wells
	Mountain views	Ricefield views
	Valley views	Natural caves
	River views	
	Waterfall views	
	Waterfalls (natural phenomena)	
Solitude of social experiences	Number of visitors	Vandalism
		Seen by other visitors
		Heard by other visitors
Environmental and social friendly management	Mileage	Tour guide personnels
	Safety of access roads	
	Convenience of access roads	
	Direction signs	
	Interpretation (information) medias	
	Toilets	
	Trash bins	
	Worship places	
	Parking lots	
	Resting seats	
	Food stalls	
	Ticketing personnels	
	Security personnels	
	Janitor personnels	

There were 3 attributes where all respondents categorized them as very important so that the average importance score of these attributes were 5. The 3 attributes were trash bins, toilets, and worship places. A research stated that the availability of worship places, the availability of toilets, and the availability of trash bins were three of several elements of supporting facilities to increase the convenience of tourist in recreation. [11]

The four attributes of personnel elements (ticketing, security, tour guide, and janitor) are composed of 5 sub-attributes (friendliness, neatness, responsiveness, intelligence, and uniform) of those personnels so that the total sub-attributes of personnels are 20 variables. All the sub-attributes were classified as potential variables of picnicking psychological carrying capacity. A research concluded that the service quality of personnels has positive influences on visitors' satisfaction.[12]

Customer Satisfaction Index (CSI)

The results of the CSI calculations were 78%. This value implies that visitors feel satisfied picnicking in Djuanda Grand Forest Park (Table 3). It is generally agreed that post consumption consumer satisfaction/dissatisfaction can be defined as the consumer's response to the evaluation of the perceived discrepancy between prior expectations (or some other norm of performance) and the actual performance of the product as perceived after its consumption.[13]

Importance Performance Analysis (IPA)

Cartesian diagram for 38 potential attributes is shown in figure 2 and later explained in table 5.

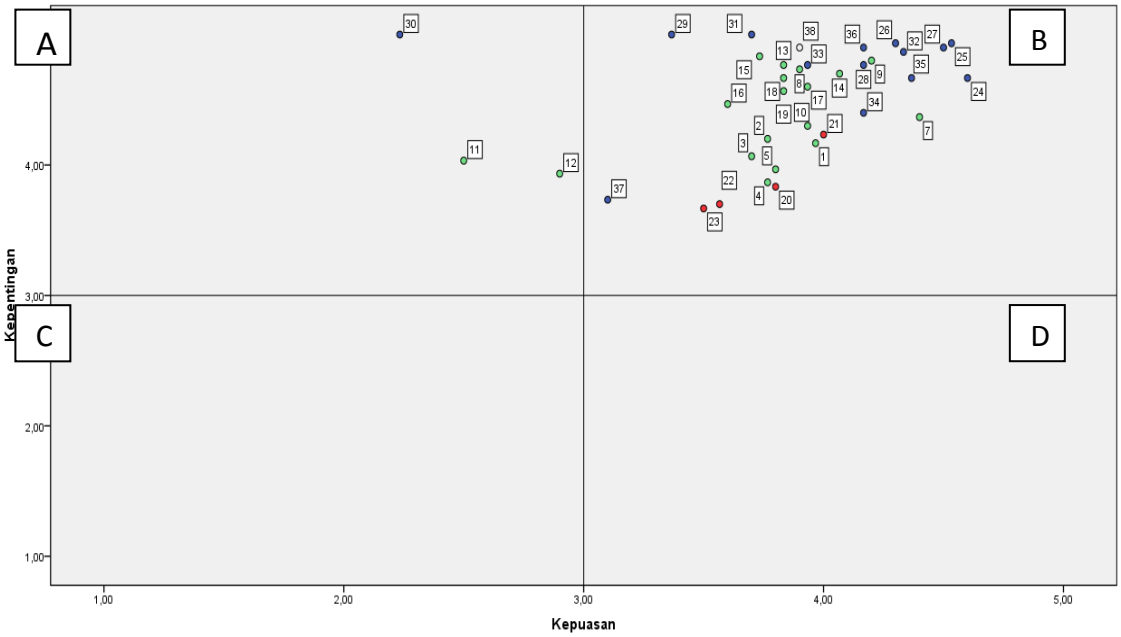

Figure 2: Cartesian diagram for attribute variables.

Table 5: Position of potential variables of picnicking psychological carrying capacity in attributes level.

Principles	Quadrant A	Quadrant B	Quadrant C	Quadrant D
Naturalness of natural resources	Ungulates	Sandy soils		
	Amphibians	Clay soils		
		Boulders		
		Bigger gravels		
		Gravels		
		Trees		
		Shrubs		
		Grasses		
		Birds		
		Primates		
		Butterflies		
		Rivers (water sources)		
		Mountain views		
		Valley views		
		River views		
		Waterfall views		
		Waterfalls (natural phenomena)		
Solitude of social experiences		Vandalism		
		Number of visitors		
		Seen by other visitors		
		Heard by other visitors		
Environmental and social friendly management	Trash bins	Mileage		
		Safety of access roads		
		Convenience of access roads		
		Direction signs		
		Interpretation (information) medias		
		Toilets		
		Worship places		
		Parking lots		
		Resting seats		
		Food stalls		

		Ticketing personnels		
		Security personnels		
		Tour guide personnels		
		Janitor personnels		

There were 3 attributes placed in quadrant A that show high importance but low in visitors' satisfaction, so that management needs to prioritize these attributes, namely the ungulates, amphibians, and trash bins attributes. There is a deer captivity in Djuanda Grand Forest Park which located 2,8 km from the main gate. Because of the considerable mileage, only a few visitors picnicking around the deer captivity. A research stated that only 17% visitors of Djuanda Grand Forest Park make the deer captivity as their main tourist attraction. The rest of the visitors (83%) put the Dutch and Japanese caves, along with the Keraton cliffs as their main destinations in Djuanda Grand Forest Park.[14]

Based on field observations and respondents' information, amphibians are rarely to be found around picnicking areas in Djuanda Grand Forest Park. Many species of Amphibian are secretive or are active at times when they are not readily observed.[15] Human disturbance indirectly affected the amphibian habitats. Human activities that pollute the waters, and make changes in vegetation around the river will likely result in changes of habitat constituent components. These activities affect the quality and quantity of amphibians.[16]

According to one of the personnels in Djuanda Grand Forest Park, management does not provide trash bins due to a policy that requires visitors to bring back their trash. This policy is widely applied in many forest recreation areas, one of which is the policy implemented in the Forestry Commission of South Carolina, United States.[17] However, not every visitor obeyed the policy. According to some respondents, trash bins should still be provided by management, especially in picnicking which produce large amounts of waste. Therefore, respondents' satisfaction of trash bins variable was fairly low.

Based on field observations and information from respondents, tour guide personnels in Djuanda Grand Forest Park do not wear uniform. Respondents assess the uniform for each personnel is necessary because it serves as an identity that distinguishes the personnels from visitors. The results of a research by concluded that every sample group agree with wearing the same uniform in conducting tours can to identify the tour guide's profession and their order.[18] Because of respondents' satisfaction didn't meet the high importance of the tour guide personnels' uniform, this variable placed in quadrant A of the Cartesian diagram sub-attribute level, as shown in figure 3.

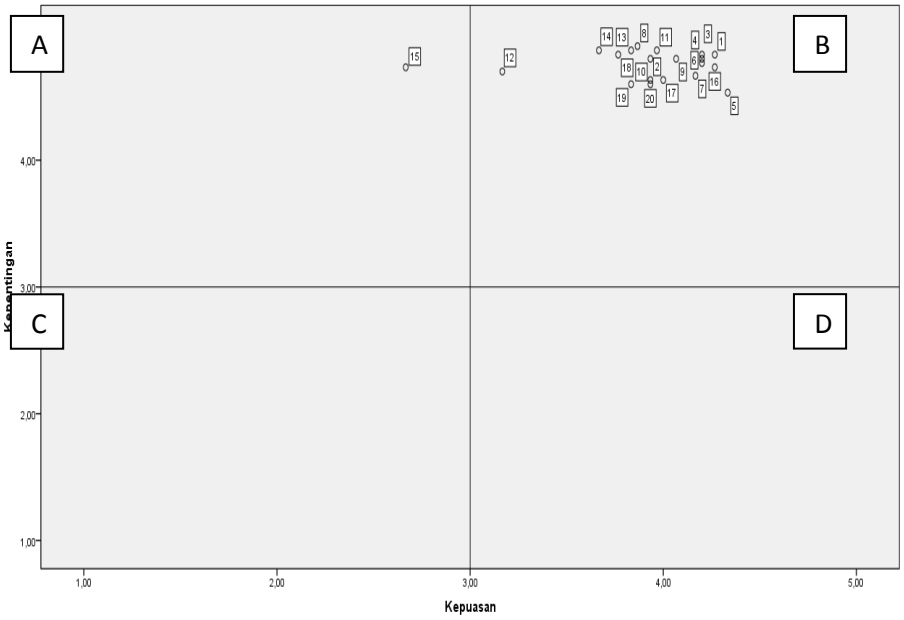

Figure 3: Cartesian diagram for sub-attribute variables.

CONCLUSION

The results of the study indicate that 42 attributes (84%) are potential variables of picnicking psychological carrying capacity. The customer satisfaction index of attribute variables is 78%. It means visitors feel satisfied picnicking in Djuanda Grand Forest Park. Variables that need to be prioritized by the management because of high importance level but low in satisfaction level are ungulates, amphibians, trash bins, and tour guide's uniform variables.

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