

METHODOLOGICAL APPROACH IN ESTIMATING THE DEMAND FOR RECREATIONAL SITES¹

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Abstract

Basically, there are two main problems faced in the recreation location especially in outdoor. One side, the rate of visiting some tourism objects is still low until now. It raises an assumption that recreation location doesn't create any opportunity in regional and domestic economy. On the other hand, undervalue of recreation services, based on the willingness to pay caused a very low attractiveness of investment in tourism objects. To solve these problems, one should be able to predict the number of recreation location demand, so that a good planning and development could be implemented in this estimated area. One of the very common methods to calculate this demand is to use the travel cost methods. Many independent variable could be implemented in a multiple linear regression model, depends on the objective of the research. Somehow, a valid data is necessary in the application of statistical and quantitative analysis. Experiences showed a significant result of analysis using this travel cost methods.

Keywords: *Demand for recreation, Economy, Recreational site demand, Travel cost method*

INTRODUCTION

In general, the development of a location or tourism objects in one region will depend greatly on the economic contribution of those objects, for example the increasing of regional revenue (GDP). The emphasis on the economic aspect does not mean without paying attention to the important aspects of the environment which are that are intangible and priceless, but very beneficial for the life of living creatures and humans. In addition to the distinctive feature or the uniqueness of a tourist attraction, then development and management of that object will depend primarily, on the level of consumer demand. The estimation of this demand

can be approached with various quantitative and qualitative methods but mostly the results are still not satisfactory for various parties, depending on what side they refer at the analysis results.

Travel cost is one method that has been tested and it can be used to estimate the level of demand for leisure per unit of time by paying attention to the zoning of the consumer's destination and interest. This method is quite simple with the use of multiple linear regression analysis, where the independent variables can be selected in accordance with the needs of analysis. Here, is presented a theoretical-methodological-approach in measuring or estimating the level of tourism object demand.

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The use of this method is very important because the interest in public visits to recreational places is still low, so that the benefits of recreational services are often considered not to earn money, profits and jobs. Moreover, the low assessment of the economy in quantitative terms of the benefits recreational services based on willingness to pay, resulting a low investment in the construction of recreation objects.

DEMAND OF RESOURCES IN RECREATIONAL SITES

Essentially, there are many options of outdoor recreation objects, where people could choose it according to their preferences or willingness. Each resource of recreation would be a special option for any visitor, so this kind of request will also be specific. This could happen because each recreation site or location has different characteristics to one another. The characteristics of those recreational sites are facing directly to the consumer demand options. This is in line with the opinion of Charles W, (1999) in Field (2015) who said that the special request should be interpreted as a willingness to pay for the maintenance of an abandoned land.

The opinion was strengthened by Reksohadiprodjo, (2001) in Yoeti (2008) who said that the demand of a special nature is addressed to a unique environment which is no substitutes. In economic terms, the demand or a specific location which provides pleasure, -in fact-will not have substitutes, so that it must be preserved. Thus, it is required a professional business management, in order that the carrying capacity of the site is not exceeded. James H., (1994), Soemarwoto (1999) in Yoeti (2008) provides an understanding of recreation as a type tourism activity done by people who wanted to utilize their leisure time to reduce physical fatigue and spiritual and at

same time to get the power and new spirit in the various activities in the future. In line with the above opinion, Sumarwoto says that recreation does not only mean "fun" but should be interpreted as a re-created. So with the recreation, people want to re-create or restore their strength, both physical and spiritual. After the recreation, usually one will feel him or herself fresh or even recover and ready to do its job back. Therefore, the demand for recreation can be understood as a request regarding as specific environmental services due to needs of people to restore the freshness of their physical and spiritual condition.

The demand of recreation location is strongly influenced by the level of people income. The higher one's income, the greater the demand for leisure goods will be. It means also that the number of people visits to recreation location or attractions is influenced by the travel cost, which consists of the cost of transportation, accommodation, and the cost of location entry or other charges. The greater the travel cost the lower the visit of the recreation location by the community. Thus, it can be said that the level of regional income per capita influence significantly to the number of location visits. The greater the income per capita level the greater the number of visits per 1,000 populations. Based on the location demand analysis, it is found that the cost of entry ticket is still under the optimal price that people have to pay in most of the recreation locations.

According to Hakim (2011), the probability of individuals to be willing to pay a certain nominal value for environmental quality improvement are nominal amount bid, income, and education. Then, the determinant of the number of visits experience, travel costs, income, age, and perception. In line with that opinion, Field (2015) states that, the demand for recreation are influenced by

increase in revenue, specific attraction, leisure time, increased mobility, the high level of income, proximity of cultural and physical recreational sites, recreational facilities, promotion, good exchange rate of national currency good, including and stability of national security. Other factors associated with the recreation demand are accommodations (rest areas, hotels, inns, motels and lodging), and other things such as food, drink, clothing, shops, services, infrastructure and transport facility. It can be said that –mostly- in all outdoor recreations seems to be a packet deal which includes the recreation anticipation, trip to the recreation site, the journey home and finally, impression and memories of recreation trip.

ASSESSMENT OF RECREATIONAL LOCATION

A place or location of recreational area economically can be assessed because –in fact- the total costs spend for recreation site and its attractions are greater than its entry ticket or admission. Furthermore, the cost of entry ticket does not reflect the overall budgets to obtain a package of memories from the visit recreational object and location. Travel cost methods commonly more used to assess the overall costs incurred because economically, could measure the level of recreational location demand. One of the methods can be used is the prediction of the demand curve of consumer users of recreational services by measuring the willingness to pay of consumers against the recreational objects.

Kimberly and Shaykewich (2008) said that the approach of willingness to pay to determine the demand for public goods is real based on the equation for determining the demand of the market. Measuring the influence of demand for a value of goods with a wide range of individual income is a pleasure and a willingness to contribute to the value of the

goods. Travel cost approach also was stated by Dixon (2005), whose said that the degree of visits per 1000 population is a function of factors such as the travel cost, the time required for the journey, stop-over place and average income. This approach was operated by Tazkiaand Hayati (2012), which further states that estimating the value of recreation benefits is done using the travel cost, which is essentially estimating the demand based on the willingness to pay of the visitors with the form of the following equation:

$$V = a + b_1C + b_2I$$

V = Recreational demand or the number of visits per 1000 population

C = The average of travel cost of each zoning or site

I = Income per capita

To estimate the value of recreation benefits, one should use the expansion of the travel cost by using the simulation of the ticket price, in order to obtain the annual demand curve of recreation for the entire location.

TRAVEL COST METHOD

According to Jalaand Nandagiri (2015) in Firman, *et al.* (2017), one technique of economic valuation that can be used to assess the environmental services in the form of natural beauty which is used as the tourism object can be done with the travel cost method (TCM). The basic premise of the travel cost method stated that the time and cost of travel incurred by individuals to visit a site represent the price to access the location / site. Travel cost method can use two approaches, namely the cost of the trip based on the zone (Zonal Travel Cost

Method) and the cost of individual travel (Individual Travel Cost Method).

In the last two decades, individual travel cost method (ITCM) is more widely used given the advances in information technology and its advantages to be able to photograph the socio-economic characteristics of visitors such as age, income, and education. This information is difficult to obtain if using the travel cost method, based on zone (Blackwell, 2007 in Tietenberg and Lewis(2017). Dixon, (2015) stated that the cost of travel related to breadth of use to estimate the benefits of environment of recreation facilities, such as parks, lakes and others. This method confirms the assessment of the amount of money and time used in recreational areas to predict the willingness to pay in

recreation site. The true cost of a visit should be based on the ticket price plus the other costs in money value plus the revenue forgone in order to obtain recreation benefits.

Further, it is said that demand curve used to calculate the benefits of recreational areas and it shows the existing concept of consumer surplus. The derivative of the demand curve (marginal demand) is an important category to define the family characteristics of consumers such as income, education level, social status and other factors, associated with recreational facilities. The demand curve can shift if the recreational facilities are fixed. The benefits of improve the facilities of a recreation areas are showed in demand curve in Figure 1.

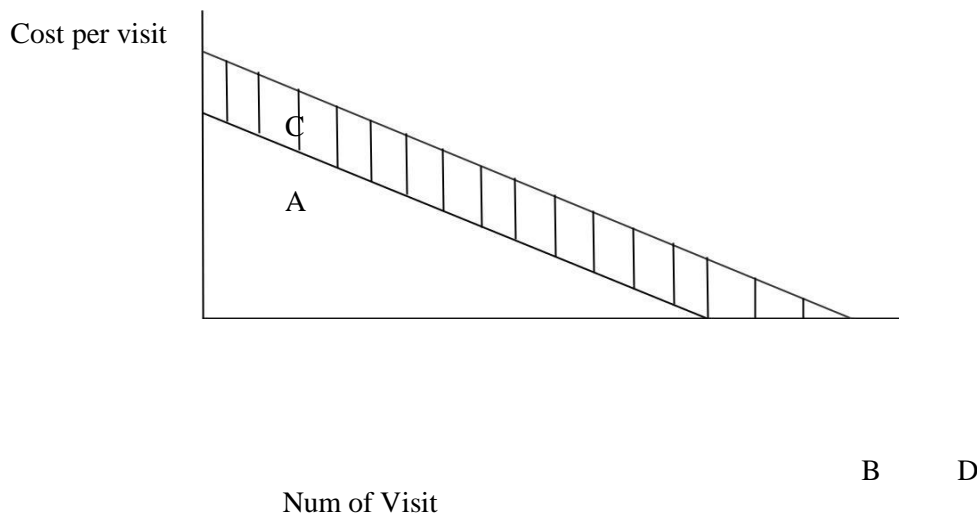


Figure 1. Demand curve of the rehabilitation of recreational facilities

The line AB (the line in the bottom of shaded area) is the demand curve before the repair and the CD (the line above the shaded area) is the demand curve after the improvement of recreational facilities. The benefits of consumer groups are the area of ABCD (area of the shaded region). The demand curve is used to predict the cost per visit to the recreational areas. The difference in the level of individual or family visits on different areas would be

determined by income, distance and other characteristics such as cost and travel time, household data, recreational facilities data, and special destination, everything is in relation with estimation of demand. The conclusion that the trip cost or travel is used as a tool in the assessment of the recreation benefits is at the distance from consumer residence towards the location of recreation. Data like this is quite adequate and easy to reach by researchers.

THE APPLICATION CONCEPT OF TRAVEL COST

Based on the theories cited, it could be proposed a multiple linear regression model to measure the level of visits or the level of demand for a recreation site as well as the factors that influence the demand. The model in question is as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + \varepsilon$$

Y = Annual level of visit to the recreation sites

X1 = Transportation cost
X2 = Accommodation cost

X3 = Distance between residence towards location

X4 = Expenditure for souvenirs and others

X5 = Completeness of facilities and supporting facilities

X6 = The services provided

X7 = Consumer income

b0 = Intercept

b1 - b7 = Regression coefficients

ε = errors

In addition to the 7 independent variables used in the above model, it can still be added or studied separately, the influence of the factors such as; education, number of family member, social background, age of respondents, type of work or profession, etc. Beside that, there are some independent variables in macro economic such as national economic conditions, security situation, criminal evidences, infrastructure condition, accessibility, etc. Those variables could be measured either in term of numerical or categorical methods. In this case, one should use regression analysis with numerical data (ordinal, interval and ratio) and in other case (using nominal or ordinal scale) is better to use non parametric methods.

Back to the above example, the multiple linear regression analysis is used to test whether the influence of those variables significant or not- to the level of visits to the recreation location or site. The rate of visits (Y) is the number of person or family visit or presence in the recreation object. The cost of transport (X1) is the amount of money / the cost for visitors to be able to arrive at the location of the recreation with the use of private or public vehicle which is expressed in value of money per year (Rp/Year). The cost of accommodation (X2) is the amount of money / the cost for visitors to stay or rest during their stay in a recreational location both individually or with a group / family which is expressed value of money per year (Rp/Year).

The distance to the recreation location with the respondent place of residence (X3) is expressed in kilometers. When there is a variation of the real distance then the data can be divided into category with Likert scale (1 = very close, 2 = close enough, 3 = close, 4 = far and 5 = very far). Expenditure for souvenirs (X4) is expressed in Rupiah per year. This cost could be zero, if the consumer never spends the money for that purpose. The cost of the photo and the printing can be included in the category of this variable.

Completeness means and supporting facilities (X5) refers to the standard minimum of requirements that must be existed in a recreational location, such as toilets, shelter, locker rooms, parking, restaurant, clean water, etc. Based on the availability of existing facilities whether in function or not, one could state the category of data into Likert scale (1 = incomplete, 2 = a lack complete, 3 = quite complete, 4 = complete, 5 = very complete).

The service received by the consumer at the location of tourist or recreational objects (X6). The difference between consumer expectations with the

reality would constitute the value of the satisfaction experienced by one visitor to a recreation site. This data should be categorized in Likert scale as follows: (1 = very bad, 2 = quite bad, 3 = bad, 4 = good, and 5 = very good).

Consumer income (X7) can be measured directly from the daily and/or monthly income which is then converted into Rp/Year. It should be added that the researcher must be astute enough to get information about someone's income. It is usually difficult to obtain a valid answer, especially if the identity of respondents is known. There are various approaches to measure the consumer fixed-income which is also can be approached from the expenditure per unit of time. Income will also provide an overview of the consumer willingness to pay the tariff or the price of the ticket to enter in recreation sites. Thus a recreation object must have its attractiveness and uniqueness, such that the consumer willingness to pay can also be increased positively.

The determination of the variable of this research is a combination of the variables that has been done by Tazkia and Hayati, (2012) in Firmanet, et al. (2017) with similar research topics. As for the research variables tested in this study include:

Dependent variable:

Y : Level of visit

Independent variables:

X1 : the total cost of travel

X2 : distance (km)

X3 : the level of income

X4 : duration of visit

X5 : the level of education

X6: age

X7 : the number of members

Indeed, after a measurement of all independent variables, so the proposed

model could be simplified by following travel cost methods as follows:

$$V = b_0 + b_1C + b_2I$$

V = recreation demand or number of visit per 1000 population

C = average travel cost per visited location (Rp/visit)

I = income per capita

b₀ = Intercept

b₁ and b₂ are regression coefficients

From the above model it can be measured the demand of recreation per 1000 population. The next issue is how to establish the area of origin of the visitors which could be made in various zones, depending on the purpose of attraction or recreation in a specific location. The cost of the trip is the cost incurred by visitors for recreational activities. The travel cost

includes meal, transportation, documentation and other expenses paid by visitors for one visit. Travel expenses of visitors are grouped according to each zone, and calculated for every person in one day. So trip cost refers to the cost of each person in a one-day visit which can be converted to months or years in accordance with the research operationalization.

The calculation is as follows:

$$BPR = TR + D + KR + BL + P + WR$$

BPR = Average travel costs (Rp/person/day)

TR = Transportation cost (Rp/person)

KR = Cost of consumption during recreation (Rp/person/day)

D = Cost of documentation (Rp)

P = Parking cost, etc

BL = Average of other recreation cost

WR = Cost and time in monetary term spent for recreation.

To calculate the cost of the time for recreation should be started from the assumption that it is spent for one day. Divide the income per year to the number of working day will obtain income per day. Income per day is a time value. In this calculation, the value of the time is a quarter of the income per day if visitors still work. The calculation is based on results of several researches regarding travel time and the cost of transport. Those works are to determine the shadow price for time. The conclusion is the value of time associated with travel without work is between a quarters to half of the level of wages. Travel cost data obtained from the questionnaire are classified from each zone and are used to determine the average cost of travel from each visitor zones of origin, by using this formula:

$$TC1 = \frac{C1}{N1}$$

Where:

TC1 = Average travel cost from each zone (Rp/person/visit)

C1 = Sum of travel cost on zone (Rp)

N1 = Sum of total visitors on zone (person/year).

The data needed to estimate the demand curve of recreation is as follows:

- a. The origin of the visitor
- b. Number of region population of visitor origin
- c. Visitor income per capita per zone
- d. The average travel cost of each zone
- e. Number of visits per 1000 population of each zone.

To test the influence of independent variables to dependent variable simultaneously one should use F test criteria while the partial test or the

influence of individual variable it should be student test. Decision-making criteria will follow the methods of data analysis in Statistical Methods.

CONCLUSION

Basically, the travel cost methods can be used to measure the level of demand of recreation or attraction objects. If the level of demand can be estimated then a development plan regarding these recreation sites should be associated with local revenue, state revenue and the taxes, etc. In addition, it can also be measured the opportunities for the creation of new jobs, labor absorption, including multiplier effects arising from the presence of recreation location demand.

Any sophisticated models or methods of analysis used, then the research result will be determined by the use of valid data and the instrument of the research, including the validity and thoroughness of the researcher work. Many studies mainly related to outdoor recreation such as tourism forest, national park, nature reserve, wildlife sanctuary and marine tourism prove that the travel cost methods is reliable enough to be used in estimating the demand level of a recreational location.

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