THE ECONOMIC VALUE OF MT. PULAG: AN ECO-TOURISM PERSPECTIVE

by
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ABSTRACT

National parks or generally protected areas (PAs) normally hold a high value as a recreational resource or destination. Though in many cases no fee or charge is made to view or enjoy natural ecosystems, people still spend time and money to reach PAs. These costs of spending (for transport, food, accommodation, time, etc.) can be calculated, and a visitation rate can be compared to expenditures. These travel costs reveals the value that people place on recreational, tourism or leisure aspects of PAs. The paper estimated the value of recreational benefits from Mt. Pulag National Park (MPNP) of Cordillera Administrative Region (CAR), Philippines. The recreational value of Mt. Pulag was estimated using the individual travel cost method (ITCM). The data came from The linear recreational demand for Mt. Pulag is estimated as \( r = 3.67 - 0.000087tc \), where \( r \) stands for the number of days intended to stay in Mt. Pulag and \( tc \) the travel cost per day. The estimated aggregate consumer surplus and the recreational value of MPNP, were valued at ₱47,062,560.00 and ₱56,335,590.00 respectively. Of the total value which accounts for the estimated expenditures of the visitors, the study showed that visitors spent more on off-site than on-site tourism related activities and establishments, insinuating that tourism related establishments outside of the CAR benefited more from the recreational value of the MPNP than the host communities. The findings of the study provided several policy options for planners and decision makers in the Region. The estimated value gave a clear accounting of how much tourism tax could have been gained if a tax mechanism is properly in-place or lost because there is no mechanism to collect tourism tax. Tourism planning becomes also an area that needs re-engineering to insure that bulk of the tourist expenditures are spent on-site than off-site. Finally the paper provided a valuable insight on how much should really be collected for user’s fees to insure the sustainability of recreational aesthetics of the park; and how best the indigenous people benefit from their own resources.

KEY WORDS: economic value, eco-tourism, willingness to pay, consumer surplus, recreational value
I. Introduction

The relationship between man and the natural resources is a complex story of survival, and a confounding confusion of what is ideal and what is reality. The reality about human beings and natural resources is the continuous conquest of man for economic survival resulting to the degradation and depletion of natural resource; while the ideal state is for man to leave the natural resources on its undisturbed state, this way the natural resource can function better for what it is expected to be: a watershed; a habitat for wildlife; and even a recreational park.

But a more complex relationship between man and natural resources arises when individual and communal expectations do not meet, and are seen to be at an opposing ends of a fulcrum. Man ideally should be a steward of the resource and the resource will take care of his needs. The stark reality is: man cannot seem to rely on the expected functions of the resource to take care of his needs, more so, he does not regard himself as a steward of the resource, but as a beneficiary entitled to the last marginal profit that the resource can bring him for as long as the resource is free.

Ideally no one should own natural resource, but its being of on its own is also the cause of its destruction. Open access and property rights are real issues that needs to be addressed in natural resource management. The ideal state is made complex by property ownership. In particular, property ownership in natural resource based economies is strongly influenced by communal relationship and cultural homogeneity among indigenous people (IP). The cultural relationship of the indigenous people with the natural resource makes them a de-facto communal owner of the natural resource. The IP’s regard of the natural resource as a mirror of a Supreme Being insures the harmonious relationship between man and the natural resource.

But development changed this mind set. The advent of money economy gave a new meaning to economic needs. Natural resources lost its cultural meaning but had become economic goods that have to attain individual economic goals. This tipped the scale heavily to private ownership and entitlements than from communal ownership and stewardship.

The quest of the ideal state is not to separate man from the natural resource or vice versa. But the idea of an ideal state is to look at man and the natural resource in the same dimension, co-existing and complementing. This way we expect equilibrium where policy choices do not have to be the ideal or the reality.

It is at this juncture that we ask the question, where do we start to analyze economic behavior to help us understand an ideal state for man and natural resource? How do we measure value, so that we know what is too much and what is too little? Who is benefiting and who is not? The reality about man and natural resources has always been one-sided.

This need not be the case, policy makers need not be left with limited options between attaining what is ideal and accepting reality, both results to poor choices and trade-offs human benefit and ecological importance of the resource. There could be a third option. This is the motivation of this paper.

This study hopes to assist policy makers make enlightened choices and developed programs of a more sustained relationship between man and the natural resource. This paper brings to the fore the significance of economic valuation as a basis for policy options. It identifies policy variables and parameters, which policy makers can control to influence the
behavior of the society as a whole.

To address the philosophy from which the argument of the paper is developed, the research aims to estimate the value of the recreational benefits from a specific national park in the Cordillera Administrative Region (CAR), Philippines. The valuation uses the individual travel cost method (ITCM) which estimates the value of a non-market good like recreation, with a specific goal of estimating the quantity demanded for recreation from alternative forest land use.

Other output of this research is to provide an estimate of the spill-over benefits of recreation. The estimated value can be used to assess the economic impact of further development of the resource. The end of this paper is to assist forest policy and management systems become more attune to the customs and individuality of indigenous communities.

1. Rationale of the Study

At 2,922 m above sea level, Mt. Pulag is considered the 2nd highest mountain in the Philippines, next to Mt. Apo of Mindanao with only a few meters difference. It is considered as one of the most beautiful National Parks in the Cordillera Administrative Region (CAR). A major area of the mountain has been designated as National Park by virtue of Proclamation No. 75 dated 20 February 1987. Mt. Pulag in the international community is referred to as the seat of the culture of indigenous peoples of Benguet.

Mt. Pulag is typically different from the rainforest-mountains in the Philippines because of its open area (no trees mountain) that sometimes it is referred to as the Bald Mountain. The vegetative cover is classified as 50% mossy forest; 25% cultivated/residential; 20% pine forest; and 5% grassland. The mountain hosts 528 documented plant species. Among its native wildlife are 33 bird species and several threatened mammals such as Philippine deer, giant bushy-tailed cloud rat and long-haired fruit bat. Mt. Pulag is one of 18 sites identified as ecosystems and habitats containing high plant diversity in the country. It has floral affinity within continental Asia and Australia.

Mt. Pulag is important, to the indigenous inhabitant of the mountain and to the national economy. To the indigenous people, it is their major source of life support. From the slopes of Mt Pulag’s seven mountain peaks and unique vegetation zones comes the water that supports the life of the communities living within and outside the park. The dynamics of rain and the floral system brings springs, creeks, and rivers that provide water for domestic, livelihood, and irrigation purposes (DENR, 2004). The highly diverse plant and wildlife are sources of food, medicine, fuelwood, and timber for houses of the local community.

To the national economy, it contributes to tourism and energy generation. Mt. Pulag is highly valued by mountain climbers and trekkers, Filipinos and foreigners. It provides ecological recreation and is visited for its panoramic and breathtaking landscapes spread into three municipalities: Kabayan and Bokod both in Benguet and Kayapa, Nueva Vizcaya. The dynamics of rain and the floral system brings springs, creeks, and rivers that provide water for domestic, livelihood, and irrigation purposes. Its tributaries also drain into major river systems that feed into two hydro-electric power plants in the province of Benguet and one in the province of Isabela.

The economic importance of Mt. Pulag cannot be overlooked. Unprotected, it is prone to threats of expansion and encroachment of agricultural farms, timber poaching, wildlife hunting and bio-prospecting activities and piracy, unregulated tourism and infrastructure development.
Farm to market roads are constructed encroaching the National Park which may cause the loss of importance flora and fauna valued for their rarity.

Unregulated land use and conflicting laws are not only results political agenda, but it is attributed to the shortcoming of standard valuation methods and cost-benefit analysis. In the case of Mt. Pulag, there is no strong economic valuation undertaken so far to justify its existence as a National Park entitled to protection and conservation secured from land speculators, ecological hazards and unmitigated infrastructure development. This study takes the initiative of determining the true value of Mt. Pulag with a strong inclination on its recreational value. As an off-shoot of this study, it also estimates monetary values accruing to the municipalities hosting Mt. Pulag entry points and to bus and tourist operators arranging trekking activities to Mt. Pulag as the spill-over effects of eco-tourism in Mt. Pulag.

2. Research Problem

Mt. Pulag, as a National Park is encroached by development and ancestral claims posing a threat for loss of important flora, fauna and degradation of water tributaries feeding to the rivers of two major hydro-electric plants in the country. The lack of concrete justification to protect natural resources are often a result of lost cause, because of the inability of development and social planners to present a measurable value of the economic resource in question. The lack of a market for the recreational and aesthetic values of natural resources, such as the Mt. Pulag, results to poor policy options.

The research aims to justify the on-going concern on the protection and preservation of the Mt. Pulag as a National Park by conducting an ex-post economic valuation of the recreational value of Mt. Pulag. The over-all objective is expected to be attained by studying closely the following:

2.1 The willingness-to-pay (WTP) of the users of Mt. Pulag;
2.2 The estimation of a demand function for the recreational value of Mt. Pulag;
2.3 The estimation of the economic value of Mt. Pulag National Park; and
2.4 The spill-over effects of the recreation demand of Mt. Pulag.

3. Literature Review: Valuing Ecotourism

There is growing body of literature focusing on ecotourism valuation and protected areas in developing countries. This research is an ex-post of the Mt Pulag National Park (MPNP). The primary approach used in this study – travel cost method (TCM), which was introduced by Hotelling (Hotelling, 1947) – has been recently applied in developing country contexts. This paper is an attempt to design a theoretical and empirical basis for the recreational value of Mt. Pulag, following the established individual travel cost method (ITCM). Environmental resources are common goods that offer various types of services in tangible and intangible forms. Conservation and management of these resources are so high that most of the

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1 The ITCM assumes that various factors influencing visitors' travel costs (including direct costs and the opportunity costs of visitors' time) influence the length and frequency of park visitation. National parks or generally protected areas (PAs) normally hold a high value as a recreational resource or destination. Though in many cases no fee or charge is made to view or enjoy natural ecosystems, people still spend time and money to reach PAs. This costs of spending — for transport, food, accommodation, time, etc. — can be calculated, and a visitation rates can be compared to expenditures. These travel costs reveal the value that people place on recreational, tourism or leisure aspects of PAs.
time the benefits derived from there, are taken for granted specifically the intangible forms. There are also cases when development projects being implemented are sustainable. The opportunity costs of a protected area are the benefits that society or individuals lose when an area is not protected. The residents have to forego outputs that they have been usually receiving, which may be important to their livelihood (Gong, 2003). With increasing awareness of recreational values of forests natural resource, it is therefore needed to properly place a value of these natural resources for us to give basis whether certain development project is sustainable in the long run or not.

The study by Navrud and Mungatana (Navrud & Mungatana, 1994) shows that the Travel Cost (TC) and the Contingent Valuation (CV) methods can be applied to value natural resources in developing countries. These two methods were used to estimate the recreational value of wildlife viewing, which is a valid estimate of the total economic value of the wildlife species. The annual recreational value of wildlife viewing in Lake Nakuru National Park in Kenya was found to be $7.5-$15 million. The flamingos accounted for more than one third of the value. Viewing is becoming an important part of the global trend of increasing ecotourism shows that sustainable management of wildlife resources could provide a very significant and much needed revenue source for developing countries in the future. The challenge for the developing countries is to find ways to realize this economic potential to secure the preservation of wildlife.

A study conducted by Pedro (1995) at Lake Danao, Ormoc City entitled “Economic valuation of a protected area: Lanao Danao National Park”. Based from the findings of the study, variables affecting preservation demands and total WTP are age, household annual income, sex, rate of forest visit, WTP for entrance fee and concern of respondents towards environmental preservation. Option value was influenced by same variables as preservation values whilst existence value was affected by wilderness/biodiversity preference. Another study conducted by Van der Linden and Oosterhuis (1988) in Holland with an objective to estimate welfare loss for severe damage to forests and heather also employed WTP. Findings revealed that WTP is dependent on level of income and changes in income, number of forest and heather visits, perceives gravity of the acid rain problem, age education and social class. On the other hand, recreation and ecotourism valuation of Indonesian Mangrove Project was conducted using willingness-to-pay (WTP) values. The project begins with no visitors and increases to a stable level of 4,000 visitors in year 62.

A local study made in the CAR is the socio-economic valuation of the proposed BSU Biodiversity Centrum. A survey was done for Baguio/off-site and La Trinidad/on-site respondents on how much they are willing to pay for the Centrum. The research found out that Baguio and La Trinidad residents are willing to spend Php861.08/head/day and Php724.90/head/day respectively. The recreation demand curve was also determined to compute or estimate demand elasticity and change in consumer surplus. Finally, the research yielded the estimated economic value of the Centrum at Php2, 108,693,560.

The study conducted by Abala (1987) examined the factors that that influence willingness to pay for park services. The study revealed that certain factors may help explain people’s willingness to pay for the park services: the socio-economic characteristics of park users, and the physical attributes of the park itself. The result of the study further reveals that

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2 It was estimated that unit value used of the Indonesian Mangrove Project are: (1) $10.48 to $36.96 per visitor (ecotourism) (2) $10.00 to $26.25 per Indonesian visitor (recreation) and (3)$94.90 per foreign visitor (recreation). Ecotourism value varies with length of stay (one or two days). Recreation value reflects origin of the visitors (foreign or domestic).
animals per se do not seem to be significant in determining the users' willingness to pay for park services. It is also clear that the current gate charges should be raised to reflect the users' willingness to pay for park services, since this will not affect the visitation rates to the park. Econometric methods are applied to data from 333 Nairobi National Park users.

The methods and findings of these reviewed studies served as the foundation on which the current study is undertaken. Likewise, similar findings from these studies are aimed to be elicited from this research.

4. Scope and Limitation

In determining the willingness-to-pay (WTP), the study will rely on secondary data and records of the Mt. Pulag National Park Protected Area Office and the Wildlife Division, Department of Environment and Natural Resources (DENR)–CAR Regional Office and CENRO-Baguio. The probability of an undocumented park visitor is unlikely owing to the strict implementation of "no registry, no entry". The secondary data generated from these offices is the basis for determining the WTP and recreation demand. It cannot be used to consider some factors that cause the change in the quality of the recreation. The study does not intend to measure recreational quality, nor does it intend to relate recreational quality to environmental quality. The latter is not considered in the economic valuation of Mt. Pulag.

The data generated from secondary sources will be strengthened via interview with on-site visitors. Their responses shall not be used in the estimate of the WTP and recreation demand, but will be used to strengthen the economic argument of the study. Although, result of interviews to on-site visitors will be included in the analysis of the study, some socio-economic data may not be available during the data gathering, hence, these are not included in the study.

The tool used in this study provides only current value but it cannot insinuate anticipated gains and losses due to changes in the resource conditions and prices in the future. This study undertakes only estimates of consumer surplus for policy making, demand for recreation to establish a better approximate of entrance fees.

5. Theoretical and Conceptual Framework

The travel cost method is used to estimate the value of recreational benefits generated by ecosystems. It assumes that the value of the site or its recreational services is reflected in how much people are willing to pay to get there. It is referred to as a “revealed preference” method, because it uses actual behavior and choices to infer values. Thus, peoples’ preferences are revealed by their choices. TCM methods were revealed in a number of environmental valuation studies with economic approach to calculate welfare measurement. Grandstaff and Dixon (1986) and Kaosa-ard, et al., (1995) studies combined TCM with contingent valuation method (CVM). Both studies revealed direct benefit and translated in consumer surplus.

The basic premise of the travel cost method is that the time and travel cost expenses that people incur to visit a site represent the “price” of access to the site. Thus, peoples’ willingness to pay to visit the site can be estimated based on the number of trips that people make at different travel costs. This is analogous to estimating peoples’ willingness to pay for a marketed good based on the quantity demanded at different prices. The travel cost method is modeled on standard economic techniques for measuring value, and it uses information on
actual behavior rather than verbal responses to hypothetical scenarios. It is based on the simple and well-founded assumption that travel costs reflect recreational value.

According to Loomis, et.al, (1999) if recreation is the primary gain from ecosystems services, then the changes or variation in visitors’ travel costs to the resource can be used to trace out the demand curve for recreation. From this demand curve, the consumer surplus of the recreation can be estimated.

The number of visits from the point of origin to reach Mt. Pulag, with the selection of the individual’s trekking site, and the travel costs (off-site and on-site), are used to derive an aggregate demand curve for visits to the site, and thus for the recreational or scenic services of the site. This demand curve shows how many visits people would make at various travel cost prices, and is used to estimate the willingness to pay for people who visit the site (whether they are charged an admission fee or not). Other factors may also affect the number of visits to a site. People with higher incomes will usually make more trips. Part of the analysis considers personal characteristics, such as age, gender, educational attainment. A more thorough application will take these and other factors into account in the statistical model.

Welfare changes are important. We would like to measure changes in welfare when there are policy questions to consider. To weigh which decision is best, an economic efficiency criterion must be considered. Whenever an environmental policy is implemented there are winners and losers. The economic efficiency criterion requires that the gains to the winners exceed the losses imposed on the losers. Benefit-cost analysis is a method used to calculate and compare monetary gains and losses. One way to estimate benefit and cost is to use the consumer’s surplus or economic surplus.

The concept of "economic surplus is the basis for the theory of economic benefits. Considering a market good the consumer's economic surplus is the difference between what the consumer is willing (and able, in this case the entrance fee) to pay and the market price (amount actually spent, in this case the travel cost) for the resource good.

The consumer surplus is the difference between the consumer’s maximum willingness to pay and the market price. The consumer surplus is a monetary measure of the net benefit that the consumer gained from the transaction.

The consumer surplus for market goods is generally associated with using or consuming such goods. In contrast, consumer surplus for non-market goods such as recreation on a National Park can arise from two sources: use value and non-use value. In the case of recreational quality improvements, use value is the increase in consumer surplus arising from on-site use of higher quality recreation site.

The ITCM allows for the measurement of the recreational demand that reflects the individual’s willingness and ability to pay for visiting Mt. Pulag. With the aim of modeling the recreational demand for Mt. Pulag, we follow Khan (2004), assuming that the utility of the individual will depend on the total time spent (on-site and off-site) to visit Mt. Pulag, the individual’s perception of Mt. Pulag, and the quantity of the numeraire. Taking into consideration the number of days the individual intends to visit Mt. Pulag, the time spent can be represented by the number of hours.
The individual tries to maximize his utility and tries to solve his utility maximizing problem:

$$MaxU = (X, r : Z)$$ (1)

Subject to the twin constraints of money and time budgets:

$$W + p_w * t_w = X + c * r$$ (2)
$$t^* = t_w + (t_1 + t_2)r$$ (3)

Where

- $X$ = the quantity of the numeraire whose price is one,
- $r$ = the number of days intended to stay in Mt. Pulag,
- $Z$ = vector of the respondent characteristics,
- $W$ = exogenous income,
- $p_w$ = wage rate
- $c$ = monetary (economic) cost of the trip
- $t^*$ = total discretionary time
- $t_w$ = hours worked, $t_1$ round trip travel time, $t_2$ time spent on site

Time as a constraint suggests that both the travel to and from the site and time spent on time spent in the recreation activity (off-site and on-site). The individual is also assumed that she or he is free to choose the amount of time spent at work and that work does not convey utility (or disutility) directly. Thus, the opportunity cost of time is the wage rate. The opportunity cost is well emphasized in the study because it corresponds to the opportunity cost of income foregone by the present use of a resource (Cesario, 1976). In this study, the opportunity cost of time was both off-site and on-site was considered. This was well argued by McConnel (1992) in his study that the opportunity cost of on-site time should be included in the price variable.

In the framework of cost-benefit analysis, opportunity cost measures the value of what society must forego to use the input (Gong, 2003). The monetary cost of a trip to the site has two components, the entrance fee and the monetary cost of travel. Therefore, the monetary cost of the trip is the price paid per visit ($p_r$). Where $p_r$ is the full price of a visit, which is the sum of entry fee ($f$), $p_d$ is the per origin (in hours) cost of travel and $d$ is the point of origin, as shown in equation 4,

$$p_r = c + p_w(t_1 + t_2)$$ (4)

Finally, the full cost of the trip ($c$) is assumed to take the following form:

$$c = f + p_d * d$$ (5)

Therefore, the full price of a visit to MPNP takes the following functional form:

$$p_r = c + p_w(t_1 + t_2)$$
$$p_r = f + p_d * d + p_w(t_1 + t_2)$$ (6)

In the study, the individual's utility takes the form of a Cobb-Douglas utility function, as follows (subject to the twin constraints):

$$U = X^\alpha r^\beta$$  \hspace{1cm} (7)

The solution to constrained utility maximization requires setting a new function with the Lagrange multiplier. This new function is called the Lagrangian function.

$$L = X^\alpha r^\beta + \lambda (W + p_w t^* - X - p_r r)$$  \hspace{1cm} (8)

We linearize the utility function via the natural logarithm to allow for the calculation of the demand function ($r$).

$$L = \alpha \ln X + \beta \ln r + \lambda (W + p_w t^* - X - p_r r)$$  \hspace{1cm} (9)

With further manipulation from the equation, the recreational demand for Mt. Pulag is represented by:

$$r = \frac{\beta}{\alpha + \beta} \left( \frac{W + p_w t^*}{f + p_d d + p_v (t_1 + t_2)} \right)$$  \hspace{1cm} (10)

The basic demand framework used in the analysis for the valuation of Mt. Pulag recreational benefits we use the linear demand curve, as shown in Figure 1. The demand curve illustrates that each point along the demand curve represents the willingness to pay for visitation at Mt. Pulag (days intended to visit at Mt. Pulag) at a certain price (travel cost). The higher travel cost the less will be demanded for visitation at Mt. Pulag. The entire area under the demand curve approximates the gross willingness to pay to visit Mt. Pulag.

**Figure 1: Benefit Estimation from Demand Curve for Mt. Pulag Visitation**
In this graph, the gross willingness to pay for consuming \( q_1 \) is the area bounded by \( 0deq_1 \). If visitors are willing to spend \( q_1 \) days in Mt. Pulag, the total travel cost (inclusive of implicit value) is represented by the area \( 0ceq_1 \). Thus, the benefit (or consumer surplus) for park visitation, is the difference between the willingness to pay for that level of park visitation and the total travel cost to acquire this level. This benefit is translated as the enjoyment derived from paying to visit Mt. Pulag, or the existence value.

If only the explicit values (outright cash expenditure) are valued, we consider the off-site and on-site expenses to visit Mt. Pulag. The area denoted by \( 0bfq_2 \) represents the off-site travel cost per day. This amount is estimated to be the value of the spill-over effects of eco-tourism (such as, payments by visitors to transportation companies, service providers such as hotels, restaurants, tourist agencies, etc.). The on-site expenses, represented by the area \( 0agq_3 \), denote the estimated value revenue earnings by Mt. Pulag management, such as registration fee and green fee or user’s fee.

If Mt. Pulag is a free resource (zero price for park visitation), the estimated gross benefit for park visitation is the area represented by \( 0dh \). This amount is the total value of the enjoyment received by the individual for visiting Mt. Pulag.

The recreational demand will also allow for the estimation of: (1) gross revenue received by the local government unit from on-site expenses paid by the visitors; and (2) the value of the spill-over effects or benefits from off-site expenses paid by the visitors.

6. Research Methodology

6.1 The Research Area

The research site is located at Ambangeg, Daclan, Bokod, Benguet. There are three entry points to the Mt. Pulag National Park: Kabayan, Bokod and Nueva Viscaya. Bokod is chosen as the research site, because this is the nearest site from Baguio City and the usual exit of most climbers and trekkers.

The research site is traveled about 4-5 hours via rough road traversing the Ambuklao-Nueva Vizcaya road. The site can be reached by bus, vans and jeepneys.

6.2 The Questionnaire

To collect data a questionnaire was administered to at least 1,000 visitors during the months of April and May and November and December. The months were chosen based on the high influx of visitors during these months. The questionnaire is administered to the visitors after their orientation on the “do’s and don’ts inside the national park.” The enumerators, who were trained before the survey, personally administered the questionnaire on randomly chosen respondents. A visitor questionnaire collected data on origin, distance traveled, income and expenses.

The questionnaire contains the following: socio-economic profile of the respondents; point of origin; how much is spent for fare, accommodation, food and other miscellaneous expenditures; and a section of their opinion of protecting national parks as source of recreation and geo-tourism.
6.3 Data Gathering

Before the data gathering, a two-day orientation seminar on how the questionnaire will be administered will be conducted. Field enumerators were trained on how to conduct the survey. Local residents were identified by the DENR as enumerators. A 10-day data gathering for the peak months of park visitation (October, November, December and January) was conducted.

6.4 Statistical Analysis

The demand function is derived using micro-economic simulation models and estimated using ordinary least squared (OLS) method. The null hypothesis is accepted at a significant level of 0.05.

6.5 Econometric Methods

The basic functional form for the ITCM used in the study is the linear. The linear functional form was used in the study because it approximates the best fit of the data. Linear regression results were reported in this study. The estimated consumer surplus for an individual making \( r \) visits (number of days intended to stay in Mt. Pulag) to the site in a linear form is given by \( CS = -r^2 / 2\beta \) (Garrod, et. al., 1999). The linear functional form of the recreational demand implies finite park visitation at zero cost and has a critical cost above which the model predicts negative park visitation.

The basic model for recreational demand for Mt. Pulag depicts the number of days intended to visit Mt. Pulag as a function of factors such as the travel cost per day, time spent in traveling, monthly income, educational attainment, age, gender, occupation, nationality, and the individuals perception as to: (1) WTP to preserve Mt. Pulag; (2) presence of solid waste management (SWM) in Mt. Pulag (sanitation and pollution control); (3) reliable and courteous tourist guide and porters; (4) guidelines and procedures on the use of Mt. Pulag is strictly implemented; and (5) orientation is conducted by the Mt. Pulag staff for visitors to insure that safety and security measures are strictly adhered to. The demand takes the following functional form:

\[
r_{ij} = \beta_0 + \beta_1 tc + \beta_2 mi + \beta_3 tr + \beta_4 g + \beta_5 ed + \beta_7 occ + \beta_8 nat + \beta_9 vp + e_{ij} \tag{11}
\]

\[
r_{ij} = \beta_0 + \beta_1 tc + \beta_2 mi + \beta_3 tr + \beta_4 a + \beta_5 g + \beta_6 ed + \beta_6 ed_1 + \beta_6 ed_2 + \beta_7 occ_1 + \beta_7 occ_2 + \beta_7 occ_3 + \beta_8 nat + \beta_9 vp_1 + \beta_9 vp_2 + \beta_9 vp_3 + \beta_9 vp_4 + \beta_9 vp_5 \tag{12}
\]

Where \( r_{ij} = \) number of days intended to stay in Mt. Pulag by the \( i \)th individual

\( tc = \) travel cost per day (round trip total cost from an individual’s residence to and from the site and includes the opportunity cost of travel time and stay at the park)

\( mi = \) individual’s monthly income

\( tr = \) choice of trekking site (Akiki or Ambangeg)
The variables \( t_r, g, e_d, o_c, n_a, v_p \) were treated as dummy variables.

Table 1 summarizes the explanatory variables and hypotheses.

**Table 1: Explanatory variables and hypotheses**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Expected sign</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel cost</td>
<td>Negative</td>
<td>Includes round trip total cost to and from Mt. Pulag National Park including opportunity cost of travel time and time spent on site. The intended number of days of visit to Mt. Pulag and travel cost are inversely related.</td>
</tr>
<tr>
<td>Household income</td>
<td>Positive</td>
<td>Household average income and the intended number of days of visit to Mt. Pulag are hypothesized to be positively related.</td>
</tr>
<tr>
<td>Age</td>
<td>Negative</td>
<td>The visitor's age and the intended number of days of visit to Mt. Pulag is inversely related.</td>
</tr>
<tr>
<td>Gender</td>
<td>Positive</td>
<td>Gender and intended number of days to visit Mt. Pulag is positively related.</td>
</tr>
<tr>
<td>Education</td>
<td>Positive</td>
<td>The level of education of the respondents and the intended number of days of visit to Mt. Pulag are positively related.</td>
</tr>
<tr>
<td>Occupation</td>
<td>(Positive, negative)</td>
<td>The level of occupation of visitors can inversely or positively affect the intended number of days of visit to Mt. Pulag may be inversely related.</td>
</tr>
<tr>
<td>Nationality</td>
<td>(Positive, negative)</td>
<td>It is assumed that nationality of visitors and the intended number of days of visit to Mt. Pulag are inversely related.</td>
</tr>
<tr>
<td>Willingness to pay to preserve Mt.</td>
<td>Negative</td>
<td>It is hypothesized that the willingness to pay of the visitors and the intended number of days of visit to Mt. Pulag are inversely related.</td>
</tr>
<tr>
<td>Pulag</td>
<td></td>
<td>The presence of solid waste management (SWM) in Mt. Pulag reliable and courteous tourist guide and porters, guidelines and procedures on the use of Mt. Pulag is strictly implemented; and orientation is conducted by the Mt. Pulag staff for visitors to insure that safety and security measures are strictly adhered to, can positively or negatively affect the number of days of visit to Mt. Pulag.</td>
</tr>
</tbody>
</table>
Reviewed literatures, with certain similarity to the present study, are those studies conducted by Bann (1997), Bien (2001), and Sinoeun (2001). Bann argued that the information on the economic benefits and operational practices in the mangrove area in Koh Kong province might be employed in economically optimal management strategy. It has integrated certain forest management and how it will affect the demand for mangrove forest. Bien case study in North Upland Vietnam selected variables of socio-economics, environmental, and institutions to determine the value under certain regimes. Sinoeun advanced his arguments that cost and benefits analysis on the use of Sihanouk (Ream) National Park in Cambodia is viewed by different stakeholders. Sinoeun used CV surveys of tourist park visitor.

7. Results and Discussions

7.1 Descriptive Statistics of Respondents

Table 2 shows that the average age of the respondents is 27 years old, relatively young visitors, having a mean average of PhP27,086 monthly income. Respondents were mostly male, with single status, a college level of educational attainment, and professional Filipino citizens. The respondents were randomly selected according to their preference of hiking trail. 70.5% of the respondents had preferred and took the challenge of the difficult trail.³

<table>
<thead>
<tr>
<th>PROFILE</th>
<th>Descriptives</th>
<th>Mean</th>
<th>Mode</th>
<th>Standard Deviation</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td>26.88</td>
<td>25</td>
<td>6.951</td>
<td>13</td>
<td>59</td>
</tr>
<tr>
<td>Estimated household income per month</td>
<td></td>
<td>27,086.00</td>
<td>15,000</td>
<td>44,018.287</td>
<td>100</td>
<td>500,000</td>
</tr>
<tr>
<td>Gender¹</td>
<td></td>
<td>1</td>
<td>1</td>
<td>.479</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Civil Status²</td>
<td></td>
<td>2</td>
<td>2</td>
<td>.485</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Educational Attainment³</td>
<td></td>
<td>4</td>
<td>4</td>
<td>1.021</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Occupation⁴</td>
<td></td>
<td>4</td>
<td>4</td>
<td>1.839</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Nationality⁵</td>
<td></td>
<td>1</td>
<td>1</td>
<td>.170</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

¹Gender: (1) male (2) female; ²Civil Status: (1) married (2) single; ³Educational Attainment: (1) no education (2) primary education (3) high school (4) college level/vocational (5) college degree (6) post graduate; ⁴Occupation: (1) unemployed (2) farmer (3) labor/unskilled worker (4) government worker (5) professional (6) businessman (7) others; ⁵Nationality: (1) Filipino (2) foreigner

Observed hikers were mostly adults and took the challenge of the difficult trail. Relative to classification of wage earners, those earners above the minimum wage rate were the most enthusiastic trekkers and most of them took the difficult trail. This explains that the higher the income of the respondent, the higher the latter is willing to visit Mt. Pulag. Considering the civil status of the trekkers, most number of the trekkers was single, whereby majority of them

³ Starting point of the difficult trail is from Kabayan, Benguet. Hikers will take almost 10 hours to reach the grassland of Mt. Pulag. Trekkers will ascend the peak for another 2 hours. The easy trek’s starting point is from Ambangeg, Benguet. It will take approximately 3 hours to reach the peak of Mt. Pulag.
preferred the difficult trail. As to educational attainment, those of college degree were the most willing to visit the site and the difficult site. As to the occupation of the respondents, the professionals were of the greatest number of respondents who had visited the site. Majority of the respondents were Filipinos.

### 7.2 Estimated Travel Cost

To allow for the estimation of the recreational demand for Mt. Pulag, the survey provided the respondents' point of origin and their preferred trekking destination towards Mt. Pulag. This will provide information on the number of hours they have to travel to reach Benguet Province. Most trekkers were from Manila area (64% out of total respondents) with preference to the difficult trail. Other respondents are from the Cordillera Administrative Region (CAR) representing 22% of the total respondents. 14% of the total respondents represent other provinces. The estimation of the demand also used the following as provided in Table 3.

<table>
<thead>
<tr>
<th>Table 3: Descriptives of Travel and Visit to Mt. Pulag</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>Hours of travel</td>
</tr>
<tr>
<td>Number of times of visit</td>
</tr>
<tr>
<td>Intended number of days to visit Mt. Pulag</td>
</tr>
<tr>
<td>Total cost of visiting*</td>
</tr>
</tbody>
</table>

*Total cost of visiting Mt. Pulag represents only the explicit values.

The average number of hours to travel to reach Benguet province is 13 hours. Most trekkers had visited Mt. Pulag only once in a year and intended to stay there for approximately 3 days. With the information above, the calculated average cost per person of visiting Mt. Pulag is Php3,618.95.

### 7.3 Visitors' Perception

The recreational demand for Mt. Pulag was also estimated to determine the impact of the visitors' perception. Answers were elicited from respondents as to their willingness to re-visit and to pay to preserve Mt. Pulag and their perceptions on the four management areas at Mt. Pulag National Park. Answers revealed differences in visitors' perception. The survey reveals that most respondents are willing to revisit Mt. Pulag, such that 897 respondents or 89.7% of the 1000 respondents answered in the affirmative.

The respondents were asked to rate, in a scale of 1 to 4 (with 1 corresponding to the highest rating and 4 with the lowest rating) four management areas at Mt. Pulag National Park. The management services/activities are in the following areas: (1) presence of solid waste management, (2) reliable and courteous tourist guides and porters, (3) there is strict implementation of guidelines and procedures, and (4) orientation is conducted to visitors to ensure safety and security. All these areas were rated 1 by respondents and is equivalent to excellent.
7.4 Empirical Results

7.4.1 Test Statistics

The variables chosen in the study to estimate the demand follows the underlying economic theory. The chosen variables indicated in Table 1 were chosen in the analysis of the recreational demand for Mt. Pulag showing no problem of multi-collinearity in the data set (Loomis and Walsh, 1997).

Table 4: Estimated Results of the Linear Regression Equation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients (t-stats)</th>
<th>Coefficients (t-stats)</th>
<th>Coefficients (t-stats)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dependent Variable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of days intended to stay in Mt. Pulag (Difficult Trail)</td>
<td>3.40 (14.21)*</td>
<td>3.39 (3.79)*</td>
<td>3.67 (16.22)*</td>
</tr>
<tr>
<td>No. of days intended to stay in Mt. Pulag (Easy Trail)</td>
<td>-.000089 (-16.51)*</td>
<td>-.000061 (-3.53)*</td>
<td>-.000087 (-16.32)*</td>
</tr>
<tr>
<td>No. of days intended to stay in Mt. Pulag (All Sample)</td>
<td>.0000014 (1.58)***</td>
<td>.0000021 (.65)</td>
<td>.00000088 (0.98)</td>
</tr>
<tr>
<td><strong>Intercept</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Travel Cost Per Day</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Individual Monthly Income</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice of Trekking Site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Akiki</td>
<td>–</td>
<td>–</td>
<td>.221 (4.12)*</td>
</tr>
<tr>
<td>Ambangeg</td>
<td>–</td>
<td>–</td>
<td>.221 (4.12)*</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>-0.09 (-1.9)*</td>
<td>-0.25 (-3.05)*</td>
<td>-0.014 (-3.62)*</td>
</tr>
<tr>
<td><strong>Gender: Male (1)</strong></td>
<td>.257 (5.3)*</td>
<td>.467 (3.97)*</td>
<td>.289 (6.40)*</td>
</tr>
<tr>
<td><strong>Educational Attainment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College level</td>
<td>.200 (2.33)*</td>
<td>.420 (1.49)***</td>
<td>.201 (2.33)*</td>
</tr>
<tr>
<td>College degree/Post graduate</td>
<td>.247 (2.64)*</td>
<td>.613 (2.31)*</td>
<td>.284 (3.15)*</td>
</tr>
<tr>
<td><strong>Occupation</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>-.422 (-5.05)*</td>
<td>-.239 (-1.07)</td>
<td>-.447 (-5.60)*</td>
</tr>
<tr>
<td>Gov’t Employees</td>
<td>-.218 (-2.37)*</td>
<td>-.062 (-.32)</td>
<td>-.181 (-2.17)*</td>
</tr>
<tr>
<td>Businessman</td>
<td>.037 (.368)</td>
<td>.452 (1.99)*</td>
<td>.207 (2.25)*</td>
</tr>
<tr>
<td>Nationality: Filipino (1)</td>
<td>-.529 (-3.45)*</td>
<td>-.094 (-.12)</td>
<td>-.612 (-3.89)*</td>
</tr>
<tr>
<td>Visitor’s Perception(^1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WTP to preserve Mt. Pulag</td>
<td>-.059 (-1.26)</td>
<td>-.330 (-2.97)*</td>
<td>-.109 (-2.48)*</td>
</tr>
<tr>
<td>Presence of SWM</td>
<td>-.078 (-1.55)***</td>
<td>-.279 (-2.34)*</td>
<td>-.111 (-2.35)*</td>
</tr>
<tr>
<td>Reliable tourist guide</td>
<td>.169 (3.02)*</td>
<td>.118 (.916)</td>
<td>.168 (3.21)*</td>
</tr>
<tr>
<td>Strict implementation of rules</td>
<td>.031 (.560)</td>
<td>.423 (3.37)*</td>
<td>.117 (2.28)*</td>
</tr>
<tr>
<td>Orientation is conducted</td>
<td>.002 (.029)</td>
<td>-.482 (-3.43)*</td>
<td>-.146 (-2.41)*</td>
</tr>
<tr>
<td>R(^2)</td>
<td>.299</td>
<td>.308</td>
<td>.311</td>
</tr>
<tr>
<td>F-Statistics</td>
<td>23.01</td>
<td>6.17</td>
<td>27.74</td>
</tr>
</tbody>
</table>

\(^1\) Dummy Variable: (1) willing to pay to preserve Mt. Pulag and presence of the 4 management areas (0) otherwise

*, **, and *** indicate significance at 5%, 10% and 15% respectively

Table 4 reports 3 results of the travel cost regression models. The first and second regression results provide estimates for the recreational demand from visitors who have chosen
from two trekking sites namely difficulty trek and easy trek (difficult trek takes longer hours to reach the summit of Mt. Pulag than the easy trek). The last column presents regression estimates of visiting Mt. Pulag as a whole, which consists of two distinct trails.

In general, the higher the travel cost (on-site and off-site) spent to visit Mt. Pulag, the lower is the number of days intended to visit the park. Likewise, income of visitors positively affects the demand to visit the park. The respondents’ choice of trekking site positively and significantly affects the recreational demand for Mt. Pulag visitation.

With the results presented in Table 4 showing consistency with economic theory, the study further insinuates the following. A greater decline in the number of days intended to visit Mt. Pulag is manifested by those choosing the difficult trail than the easy trail, with respect to travel cost. Bigger influence of income over the demand for park visitation is observed from those choosing the shorter trail to reach Mt. Pulag. Though the income coefficients for all samples and easy trail trekkers are statistically insignificant, results are still in line with the economic demand theory.

The results further reveal that the age of respondents bears a negative sign to the recreational demand, showing higher degree of influence to demand for easy trek visitors. Thus, younger visitors are more inclined to visit the park with this trek. Male visitors show positive impact to park visitation with greater influence to the recreational demand for easy trek. Male are observed to be apt to visit and trek Mt. Pulag, given that they are adventurous and have the physical agility.

There is evidence of positive and significant effect of educational attainment over the recreational demand for park visitation. Visitors with college degree and post graduates studies are more inclined to visit Mt. Pulag, with greater degree of influence noticeable among trekkers who chose easy trail. On the other hand, the regression estimates reveal that students (high school and college level students) and government employees have lower visitation rates than businessmen. This result is expected, student usually trek in groups and spend less days in the park. This is also similar to government workers, who may stay only for a short period of time due to work. They are usually referred as week-end trekkers.

Surprisingly, Filipino visitors have shorter duration of visits than foreigners. This result is understandable. Foreigners may stay longer in the park, particularly if they are visiting the country only once, while Filipinos may visit only for short duration, aware that they could visit the park anytime.

The study also explored the possibility of affecting the recreational demand given the visitors' perception as to WTP (willingness to pay) to preserve Mt. Pulag and four management areas as to: (1) presence of solid waste management (SWM) in Mt. Pulag (sanitation and pollution control); (2) reliable and courteous tourist guide and porters; (3) guidelines and procedures on the use of Mt. Pulag is strictly implemented; and (4) orientation is conducted by the Mt. Pulag staff for visitors to insure that safety and security measures are strictly adhered to. These factors were created as dummy variables with 1 representing the visitors' positive response revealing the presence of the above mentioned areas, and 0 otherwise.

Respondents were asked if they are willing (or not) to pay in order to preserve Mt. Pulag as a national treasure and a cultural heritage. Results show that WTP to preserve Mt. Pulag negatively affects the demand for recreational visit to Mt. Pulag. This may probably be attributed to the visitors’ perception that Mt. Pulag is a free good, and therefore the local
government is seen as the entity to spend to preserve Mt. Pulag. Additional costs attributed to the preservation, such as introducing user’s fee, could significantly reduce the demand for Mt. Pulag visitation. Insignificant result however, is revealed among the visitors who had chosen the difficult trail.

Noticeably, the perception of visitors as to the presence of solid waste management in the area (specific to the summit), bears a negative effect to the demand for park visitation. This may possibly be attributed to the fact that facilities for sanitation and pollution control are still lacking in the area. On the other hand, visitors’ perception as to the presence of reliable and courteous tourist guides and porters reveals direct relationship to the demand for park visitation (insignificant finding, however, was observed among trekkers with preference to easy trek). Similarly, the presence of strict implementation of guidelines and procedures on the use of Mt. Pulag positively influences the demand for visitation. This only implies that the presence of management areas can increase the demand for park visitation.

There is an observed different effect of the visitors’ perception in terms of the fourth area of park management to recreational demand. The conduct of orientation by Mt. Pulag staff is positively related to the demand for park visitation, and this is observed among respondents who have chosen the difficult trail, however, statistically insignificant. The result also reveals the visitors’ perception about the conduct of orientation has a negative impact on the demand for Mt. Pulag. This was observed among all samples and among visitors who have chosen the easy trail. This may be credited to the view of respondents that orientation takes a long time and they are even more excited to trek Mt. Pulag than listen to the orientation.

7.4.2 The Recreational Demand for Mt. Pulag

Figure 2 presents the estimated recreational demand for Mt. Pulag, and equation 13 is the estimated linear recreational demand equation, \( ceteris paribus \).

\[
\begin{align*}
  r &= 3.67 - 0.000087tc \\
  (R^2 &= 0.311) \\
  (F &= 27.741)
\end{align*}
\]  

(13)

Assuming other factors are held constant, the intended \( r \) days to stay in Mt. Pulag increases by 0.000087 for every P1 increase in the total travel cost (\( tc \)) to visit Mt. Pulag. At zero travel cost, maximum number of days to stay in Mt. Pulag is 3.67. \( R^2 \) of 0.311 indicates that the 31% of the variation in \( r \) can be explained by \( tc \). The variables chosen to determine \( r \) in the regression equation proved to be significant at 5%.
7.4.3 The Recreational Value of Mt. Pulag National Park

From the recreational demand curve, Table 15 presents the calculated consumer surplus and total recreational value of MPNP for the year 2007. The aggregate recreational value equals the consumer surplus plus the total travel cost of the visit.

Table 5: Recreational Value of Mt. Pulag National Park, 2007

<table>
<thead>
<tr>
<th></th>
<th>Travel Cost (₱)</th>
<th>Consumer Surplus</th>
<th>Recreational Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Visitor Per Day (₱)</td>
<td>0</td>
<td>77,407.64</td>
<td>77,407.64</td>
</tr>
<tr>
<td>Total (₱)</td>
<td>77,407,640.00</td>
<td>77,407,640.00</td>
<td>77,407,640.00</td>
</tr>
<tr>
<td>Per Visitor Per Day (₱)</td>
<td>9,273.03</td>
<td>47,062.56</td>
<td>56,335.59</td>
</tr>
<tr>
<td>Total (₱)</td>
<td>47,062,560.00</td>
<td>56,335,590.00</td>
<td>56,335,590.00</td>
</tr>
</tbody>
</table>
If Mt. Pulag is assumed a free good (price paid to visit Mt. Pulag is equal to zero), visitors’ annual total recreational value is worth ₱77 million (approximately US$1.72 million). This value also represents the consumer surplus because travel cost is equal to zero. The estimated amount represents the monetary value of visitors’ enjoyment from park visitation (existence value). With the average travel cost per visitor valued at ₱9,373.32, the annual aggregate monetary recreational value of Mt Pulag National Park is estimated to be at ₱56 million (US$1.25 million), and the consumer surplus is ₱46 million. This is the value that the park yields every year for the economy. However, this value does not represent the total revenue of the park. This value is further divided into consumer surplus of the visitors and total travel cost of the visitors. Total travel cost includes the opportunity costs of time (implicit costs of time spent on- and off-site) as well as explicit costs, which includes the off-site expenses (payments by visitors to transportation companies, service providers as hotels, restaurants, tourist agencies, etc.) and on-site expenses (payments by visitors for green fee or user’s fee).

Consumer surplus or consumer benefit for visiting MPNP at price equal to zero is valued at ₱77,407.64 per visitor per day. With average travel cost incurred per day valued at ₱9,273.32 consumer surplus is estimated at ₱47,062.56. This shows the value of the benefit that visitors gain by visiting MPNP. The surplus also indicates the amount that the visitors are willing to pay to enjoy the park’s environmental resources such as air, birds, animals and, in general, scenic beauty. The difference between the consumer surplus at ₱0 and ₱9,273.32 travel cost is the estimated amount that goes to the market economy, i.e., ₱30,345.08. This excess amount represents the value of enjoying MPNP or what is known as the existence value of MPNP. This is also known as the bequest value. By bequest value we mean the amount an individual would pay for today, so that future generations can also enjoy. Collectively, existence and bequest values are sometimes called non-use or passive use values. While these benefits are often quite small per person, the non-rival nature of these public good benefits results in simultaneous enjoyment by millions of people. Therefore, the total social benefits can be quite large (Loomis, et.al., 1999).

The estimated demand for MPNP allowed for the calculation of the gross revenue from MPNP. Gross revenue is estimated to be ₱26,520.87 per visitor (₱26,520,865.80 annual gross revenue). But a portion of this revenue reflects implicit costs. Considering the outright cash expenditure, total on-site and off-site expenses per visitor are valued at ₱373.32 and ₱1,587.34 respectively. Total explicit cost per visitor is valued at ₱1,960.66 (=373.32 + 1,587.34). Implicit cost on the other hand is valued at ₱7,312.27, indicating that the opportunity cost of time spent to visit Mt. Pulag exceeds the explicit cost. Visitors are more than willing to sacrifice this amount per day just to visit MPNP.

Assuming that the average number of r days to stay in MPNP is 2.86, and the on-site expenses per day amounts to ₱373.32, total revenue per visitor is valued at ₱1,067.70. Total annual aggregate revenue from on-site expenses per day is estimated to be ₱1,067,695.20. This value represents the amount received by the local government unit for collecting entry fees and user’s fee or green fee that can be allocated for park management. On the other hand, off-site expenses per day amounts to ₱1,587.34. Given 2.86 average days to stay in MPNP, total revenue per visitor is valued at ₱4,539.79 and annual aggregate revenue is estimated to be ₱4,539,792.40. This value represents the market value of MPNP, i.e., the amount of economic spill-over effects or benefits for visiting Mt. Pulag (payments by visitors to transportation companies, service providers as hotels, restaurants, tourist agencies, etc.).
8. Conclusions and Policy Implications

There is growing interest of many developing countries to focus on eco-tourism as source of employment and income. Forests or protected areas are looked upon as alternatives for development strategies. Forest areas are increasingly valued more for their environmental benefits than for their timber, but there exists no markets for forest areas particularly protected areas. The application of valuation techniques has proved useful in identifying cases where there is potential to capture PA values through the development of new markets and prices, and thereby aid generate new sources of finance for PA management. This research is an ex-post of the Mt. Pulag National Park (MPNP) and the primary approach used in this study is the travel cost method (TCM) to analyze and measure the recreational value of the MPNP.

The individual travel cost method was selected in this study because the site is primarily valuable to people as a recreational site. There are relatively low expenditures for projects to protect the national park. Therefore, using a method that is relatively inexpensive like the individual travel cost makes the most sense. There are alternative approaches to estimate the WTP and the recreational demand for Mt. Pulag, such as the contingent valuation or contingent choice methods. While they might produce more precise estimates of values for specific characteristics of the site, and also could capture non-use values, they would considerably be more complicated and expensive to apply. The method is based on actual behavior rather than stated willingness to pay. On-site surveys provide opportunities for large sample sizes, as visitors tend to be interested in participating. The results are relatively easy to interpret and explain.

However, the travel cost method is limited in its scope of application. There is a possibility of undervaluation of the site for some reasons. TCM requires user participation. The use of the TCM in this study did not use to assign values to on-site environmental features and functions that users of the site do not find valuable. There is no attempt to measure nonuse values. The result of the TCM valuation cannot be used to value off-site values supported by the site. Ultimately, the purpose of this travel cost study is to arrive at an estimate of the consumer surplus, translated as the value of the site to society during the period of time of the study. The value derived is recreational value only, and not environmental or intrinsic value.

The result of the study reveals that most of the coefficients of the demand determinants have the expected coefficients, with income statistically insignificant in the analysis. Accurate information on individual’s monthly income was difficult to obtain, with a considerable number of students as respondents. Visitors’ perceptions as to WTP to preserve Mt. Pulag, presence of solid waste management and MPNP staff conduct of orientation can significantly reduce the r days of stay in Mt. Pulag. This analysis calls for MPNP management to improve on the provision of solid waste management in the area, and ways to entice visitors to listen to the orientation.

Whereas, visitors’ perception as to the presence of reliable tourist guides and porters and strict implementation of guidelines and procedures on the use of Mt. Pulag can significantly increase r days of stay in Mt. Pulag. This analysis shows that MPNP managers can capitalize on tourist guides and porters to attract more visitors and continue the strict implementation of guidelines and procedures on the use of MPNP.

The estimated aggregate consumer surplus and the recreational value of MPNP, year 2007, were valued at P47,062,560.00 and P56,335,590.00 respectively. Greater market values are generated from off-site expenses than from on-site expenses. This only implies that there is
indeed an evidence of growing commercialization of the natural resource. These values are therefore important to incorporate into resource management decisions at the government or the community level. Recognition of these values may help expand government policy for example tourism taxation to generate revenues for the host community and allocate it for tourism development. Allowing for a greater role of the community areas in the protection and provision of eco-tourism can enhance or assure communities income security and equity.

The value of MPNP could also be important in terms of its contribution to the market economy. These values may determine that marketing of eco-tourism is a viable supplement or even alternative to household agricultural production. Informal markets already exist such as the cost of hiring porters or tourist guides and lodging establishments within the protected area. With government intervention, formal or informal markets may emerge where they were absent before, therefore opening new opportunities. Community controls and incentives to conserve the national park may reduce exploitation, if they were made aware of the value of the protected area.

Very little research has been done on the valuation of national resources in the Philippines. Valuation of natural resources, particularly those declared as national parks, is a relatively new area of investigation in the country. The application of ideas and methodologies needs to be adapted and explored with the country’s resource issues, which are not captured in this research. Future research should have clear policy links and focus on issues that are relevant to policy decisions. As in the case study conducted by Benitez (Benitez, 2001) of the Galapagos National Park in Ecuador, two most significant means of support have been the revenue generated through non-extractive use of the protected area. The increase in user fees in the park has not affected the number of visitors, which supports the idea that at unique sites higher fees can be associated with little or no effect on visitation levels.
REFERENCES


