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Economic Assessment of Touristic Resources- Case Study: National Recreation Area Santay Island (NRASI)

The paper aims to economically value the tourist resources in the National Recreation Area Santay Island (NRASI) to use them as a sustainable development tool. Economic valuation allows taking advantage of the benefits derived from current ecosystem services and helping future generations solve environmental, economic, and social problems. We estimated the value of NRASI by the Contingent valuation method (CVM), which involves asking people for their willingness to pay (WTP) on a specific scenario. Additionally, the data were analyzed using multiple regression.

Keywords: Touristic Resources-Economic valuation, Ecosystem services, Contingent valuation, Sustainable development, Willingness to pay

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Introduction

Wetlands have been significant zones linked to the historical and geological development of the planet. They rank among the most productive ecosystems on Earth because of their ecological and environmental roles. Therefore, generating goods and services; can represent benefits for society that are measured in monetary terms. Widney, Kanabrocki, Ehman, Hackney, & Craft; (2017) mentions that wetlands provide many valuable ecosystem functions such as sediment and nutrient retention, high biological productivity and biodiversity, flood control, and opportunities to recreate. Despite its importance, estimating the economic value of NRASI is difficult due to its goods and ecosystem services, therefore, becoming undervalued, which eventually causes their deterioration.

NRASI was declared a RAMSAR site by the Wetlands Convention on October 10th, 2000, and has since become a part of the Protected Areas of Ecuador National System (PAENS). They offer protection against erosion and possess important ecological characteristics. NRASI belongs to the district of Duran, located on the Guayas River, 800 meters away from the urban perimeter

of Guayaquil, in the Guayas province. It is essential to mention that this is the most important river system in the Gulf of Guayaquil and the largest on the western coast of South America. NRASI is formed by 4705 hectares; it is the home of many species and biological diversity, another reason why the area is a Ramsar site.

The purpose of this paper is to determine the economic value of the NRASI as a touristic resource using the Contingent Valuation method, which, according to Lomas et al. (2017), is the most frequently used method when it comes to finding out the valuation of conservation, as well as recreative and landscape values. CVM is extremely useful when it comes to a decision-making process related to touristic policies since these will adequately contribute to the economic development at PAENS and reduce poverty in local communities. As Sanjuro & Islas (2009) mentioned, the advantages are a fixed rate for park entrance, penalty fees, compensation amounts, diagnostic elements, policies, and environmental services payments.

This not only deals with the conservation issue but also minimizes any damage to the natural richness of the land and creates social benefits. The methodological design of this investigation significantly contributes to other analyses of eco-systemic services at different protected areas since it can be applied at other locations and uses homogeneous variables and indicators. Our research will also generate a sustainable environment and an equilibrium for these ecosystems, deriving, thus, unique environmental benefits.

Firstly, we describe the background of NRASI, their environmental services, and the kinds of species, and finally include the tourist activities that visitors can do.

The second part focused on protected areas, precisely the “sustainable development” concept and all the dimensions this term covers; the management plan, like a tool for the

administration of the NRASI, is also mentioned, and both total economic value framework is analyzed and including a description of the willingness to pay. Finally, this is divided into three sections. The first one describes the economic valuation methods' classification from the environmental perspective, the second analyzes the stratigraphic method used in the investigation, and the last part presents the results obtained using the SPSS 21 program, which analyzes data from a survey.

Background National Recreation Area Santay Island

Management Plan from the studied area.

According to the Ecuadorian Environmental Ministry (EEM), through Ministerial Agreement number 21, dated February the 20th, 2010, the National Recreation Area Santay Island was created, with an extension of 2214 ha. The primary purpose of this plan is to “preserve the ecological and biodiversity integrity of the ecosystems of the National Recreation Area Santay Island and Gallo, and improve a long-term harmonious, equitable and solidary development for the benefit of the entire community.” (Ecuadorian Ministry of Environment, 2010).

The management proposal determines that the National Recreation Area Santay Island and Gallo have a high degree of environmental importance and a significant capacity to function as a recreational place due to its vast biodiversity, natural resources, beautiful landscape, and historical and cultural value. Also, being a “RAMSAR site, it focuses on worldwide interest, and its preservation is essential.” (Ecuadorian Ministry of Environment, 2010).

Its biodiversity is characterized by the presence of a large number of bird species. Whenit

comes to floristic aspects, it's a diverse ecosystem that has been altered by humans, and "it is currently undergoing a recovery process by promoting a sensible, equitable, caring and sustainable usage of the goods and services located within." (Ecuadorian Ministry of Environment, 2010).

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The wetland ecosystem of NRASI is rich in biodiversity; there are 65 species of plants, nine insects, two fish, four amphibians, 16 reptiles, 25 mammals, and 138 birds, the last representing 53,3% of biological groups total. (Table 1)

Table 1 Number of species found in NRASI

Biological groups	Number of species	% Percentage
Plants	65	25%
Insects	9	3%
Fish	2	1%
Amphibians	4	2%
Reptiles	16	6%
Mammals	138	53%
Birds	25	10%
Total	259	100%

Source: information elaborated by Environment Ministry in 2010

Management of protected areas based on conservation and ecological integrity is a strategic approximation to conserve globally and safely the biodiversity of an ecological system since it focuses on the characterization and conservation of all biophysical processes that bind species with their habitats (underground water flow, nutrient flow on hillsides, ocean current systems, and more). (Ecuadorian Ministry of Environment, 2010).

Ecological health refers to the social value of ecosystems. It is interpreted as the capacity that ecological systems possess with integrity to provide, in a sustainable way (that is, without interruption, weakening, or loss), a rich and assorted flow of goods and services to society. (Ecuadorian Ministry of Environment, 2010).

The only means of communication is the river itself; therefore, access to the area could only be done with canoes. There is paid-for raft transportation that connects Guayaquil and the protected area. As a result, on June 3rd, 2014, the Ministry of Environment inaugurated an 800-meter-long by 4 meters wide bridge connecting the city of Guayaquil with the island. Moreover, to promote ecotourism on Santay Island and generate income sources for the community, the protected area was also put at risk because visitors increased a 3.118% higher than in 2013. (Table 2)

Table 2 Number of visitors to the NRASI

Year	Number of visitors
2012	900,00
2013	22.309,00
2014*	717.818,00
2015	491.715,00
2016	363.205,00
2017	337.356,00

Source: Environment of Ministry, (2016), quoted by Suleen Diaz-Christiansen, Jesús C. Pérez-Gálvez y Mariella Ortega Correa (2017)

Besides, “three eco-villages were also created, for a total of 56 houses made of ecological wood. This allowed the improvement of the quality of life of the island’s residents”. (Dominguez, 2017).

NRASI is widely recognized as a touristic destination, although the infrastructure service,

walking trails, interpretation panels, and eco-guides are still limited. The local economy thrives on agriculture, fish, and tourism.

The offer ecotourism of the NRASI is heterogeneous due to some activities, such as birdwatching, walking, trails, biking, and scuba-diving. There are six cottages, including solar panels and wastewater treatment, a tourism office, a restaurant, a souvenir shop, an information center, a medical center, a recycling center, and a park-guard house.



Figure 1: the National Recreation Area Santay Island (NRASI)

Environmental Services

According to the RAMSAR Convention, wetlands are "extensions of swamps, or surfaces covered by water, whether they are natural, artificial, permanent or temporary, stagnant or running, salty or not, including those extensions from seawater, as long as they are no deeper than six meters during Low tide" (Ramsar, 1971).

Constanza et al. (1997) mentioned that *environmental services* are defined as the processes or ecological functions of a determined ecosystem, generating economic, social, and environmental benefits to humanity. These "benefits" need to be determined, quantified, and appraised in order for them to be commercialized. When this happens, its protection can be promoted, the environment is preserved, and the local community's livelihood improves.

The concept of the economy service (ES) addresses both "managing socio-ecosystem and highlighting human-nature interdependence" (Lebreton et al., (2019). According to Millennium Ecosystem Assessment (MEA) (2015) are benefits that humans using the natural environment free from a good ecosystem. Therefore, "the economic valuation (EV) of ecosystem service is an effective way to regard the importance of understanding the benefits provided by them" (Guo et al., (2001). Mehvar et al. (2018) explained that the EV is based on people's preferences and the highest monetary value a person is willing to pay to obtain a particular service.

However, "human activities and our impacts on the natural world are not considered like market prices, under such the policymakers and private sector makers are interested in this issue" (Tinch et al., 2019). The critical outcome of valuation studies is to illustrate the importance of a "healthy ecosystem for socio-economic prosperity and to monetize the gains one may achieve or loss due to a change in ecosystem services" (Sukhdev, Witmer, & Miller, 2014). For the authors, the ES of wetlands are essential because their benefits contribute to human welfare, besides, can provide both direct and direct economic benefits.

Table 3, ecosystem services are based on goods and services. Direct economic values include trekking, bird watching, and cycling, and Indirect economic value include water conservation and soil conservation. The benefits of ecosystem services are water retention,

reduction of soil disuse, oxygen supply, and carbon fixation.

Table 3 Santay Island ecosystem services

Types	Benefits	Service
Ecosystems good value	Direct economic	Trekking Bird watching Cycling
Ecosystems service value	Indirect economic	Water conservation Soil conservation

Source: own field research

Literature Review

Tourism in Natural Areas

The previous literature mentions that ecotourism has been considered within tourism studies in the last 20 years; consequently, its definition has changed too. Cuka & Osuch (2018) mention that ecotourism is a broad terminological, methodical and practical phenomenon. In fact, “tourism in protected natural areas is also known as “ecotourism” (Weaver & Lawton, 2007). The term originated during the 1980s and has become an activity practiced by millions worldwide.

In 1995, the first World Conference on Sustainable Tourism was celebrated in Lanzarote, an island of the Canaries, Spain, in the Atlantic Ocean, and in 1997 the World Tourism Organization (WTO) published the “Practical Guide for the Development and Usage of Sustainable Tourism Indicators.” That same year “the Berlin Declaration on Biological Diversity and Sustainable Tourism appeared in order for it to be added to the 1992 Agreement held during the Rio de Janeiro Summit” (Blasco Lazaro, 2005).

“Ecotourism can be encouraged in protected areas to achieve sustainability” (Bego & Maltezi,2011). Sustainable development became the solution for a vast number of environmental problems as a result of international cooperation, not only from local governments but also from businessmen, “institutions and the society itself, shifting then the obsolete economic system, with a sustainable and conscious development one.” (Ochoa & Suarez, 2011).

Environmental Sustainability, Social and Cultural Sustainability, and Economic Sustainability represent dimensions of Sustainable Development. Under such circumstances, “ecotourism’s attractions should be based on learning or education, experience and nature, because these three principles are associated with sustainable development” (Weaver & Lawton,2007). However, López, Martín, Negrodo & Poyatos (2005) mention that badly properly managed tourism deteriorates surroundings and social and cultural issues, resulting in an unequal distribution of wealth.

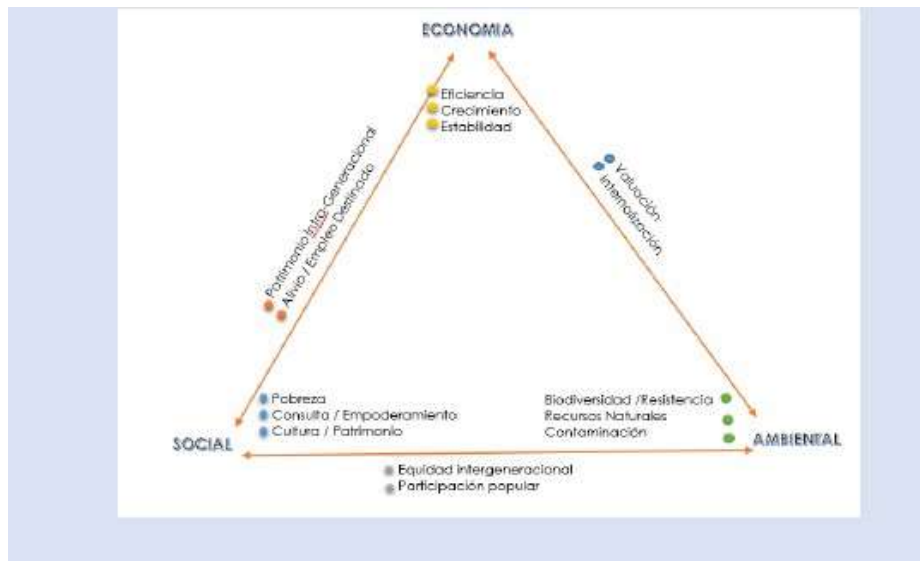


Figure 2: Sustainability triangle

Figure 2 represents the sustainability triangle and its three dimensions: economic, social, and environmental. Adapted from Munashinge (1993). The sustainable model focuses on stable economic growth and preserving ecological processes, allowing social development based on cultural and patrimonial empowerment.

Impacts of the Ecotourism

From the ecological perspective, human observation is the most critical impact because some studies identify that distance between the viewer and viewed causes wildlife stress. Buckley, 2004b; McClung, Seddon, Massaro, & Setiawan, (2004); Mullner, Linsenmair & Wikelski, (2004); Constantine, Brunton, & Dennis, (2004); De la Torre, Snowdon, & Beharano, (2000); Duchesne, Cote & Barrette, (2000). Although, Fowler, 1999; Nevin and Gilbert (2005) concluded that there are benefits in proximity between humans to wildlife.

Management of the ecotourism experience is another criterion; Rodger & Moore (2004)

suggest the management is up to the ecotourism site; Hunter & Shaw (2005) include a discussion about the lack of application of ecological footprinting to ecotourism scenarios, Blangys & Mehta, (2006) propose the use of case studies to demonstrate the ecotourism to encourage habitat restoration. Finally, Fennell and Weaver (2005) regard the establishment of a network of ecotourism in order to enhance and rehabilitate the park habitat.

Sociocultural perspective, an ecotourism site is related to community empowerment and the equitable generation distribution of surplus revenue due to the community being touted as a potential solution and being associated with factors such as internal collaboration, external partnership, secure access to venues, and effective leadership. Recent contributions have demonstrated that cultures demand participation in the management of parks, although Belsky (1999) mentions that external support creates discrepancies and internal conflicts within the community.

Economic perspective is related to establishing the monetary value; Dixon & Sherman (1990) considerate that the contingent valuation method (CVM) is a tool in which a target audience is willing to pay to use or not use an environmental service; Navrud & Vandalia, (2005) suggest that application the CVM include the calculation of a high entry fee at an ecotourism site.

In 2010, the Ecuadorian Ministry of Tourism proposed the economic value of seven protected areas, justifying this study on the Biological Diversity Agreement, based upon the seventh conference that would guarantee sustainability. This study provided two critical methodologies: **sustainability threshold and complementary opportunities.**

The first part requires visits to protected areas; this means adequate financing of essential

services, infrastructure, and any other aspect that would protect the well-being of biodiversity and the visitors, according to the allowed activities from the visiting sites management plan.

The second part includes allowed activities on the management plan, like providing lodging, food, and boat or bike rental. The development of these would increase profits simultaneously, enhance the visitor's experience, and create opportunities for both the tourist industry and local communities.

According to previous concepts, this case study determined the investment and the current expenditure required by each area through an entrance fee. Besides the Monitoring and minimization of environmental impacts, plant, services, and infrastructure; information, interpretation, and promotion; security; salaries, training, and management were criteria used to achieve our objective. Based on this study and the measured data, it can be concluded that the mentioned methodology is necessary for the country.

The Constitution of Ecuador allows the State, according to art # 1, to establish free entrance to protected areas, except for Galapagos. As a result, in 2012, the mentioned methodology changed the calculations used for incomes and current expenditures. The intervention made by the State was not only because it is in charge of regulating tourist activities but also because it must provide all necessary resources to be used by tourists in public spaces.

In 2006, Executive Order # 27, approved by the President at that time, stated, in its fifth part, that: National Environment and Tourism Authorities had 60 days after the publication of the mentioned regulation on the Official Register to expedite the Inter-Ministerial Agreement that would set the daily entrance fee in order to visit Heritage of Continental Protected Areas of the

State (*PANE* in Spanish). The current fees will remain from the moment of the regulation's publication until the Inter-Ministerial Agreement is expedited. Based on the above statement, the authors justify using the methodology in question and not just considering it a proposal.

The economic assessment began due to previous failed conservational policies to stop biodiversity loss and the little or no concern shown by local governments since they were more interested or responded only to issues that would eventually represent wealth. "The new method showed the necessity of focusing on environmental problems, and in the commitment required from political organizations, i.e., working to find a solution became a priority" (Gavilan, Grau, & Oberhuber, 2011).

Total Economic Value Theory

The value of a particular site determines the definition of economic value; under such, Bal & Mohanty (2014) determine that damages from an ecosystem are avoided by the measurement; however, Lebreton. et al. (2019) warn that there is a cost due to lack of conservation; Suerias & Martínez (2010) quoted (Mazadiego, Llamas, De Górgolas, Pous, & Puche, 2019) mention that deterioration increases not only for the absence of the economic valuation but also lack of natural places protection.

The importance of the environment for the economy was studied by regulating economic activity, Lebreton. et al. (2019) adopt practices for the benefit of the environment; Mazadiego. et al. (2019) suggest environmental policies in order to decisions making. According to Tinch et al. (2019), policies may control failures (including changing prices, controlling quantities, and

restricting activities and technologies); Liu, Lin, Chen, & Hsieh (2019) policies promoters can determine the size of their contribution to green space maintenance.

One of the most complicated tasks a person faces when using an instrument to measure externalities is the difficulty of taking the measurement itself. For measuring those activities that generate an environmental externality, the total economic value theory, “also known as TEV, is used, knowing the set of values that contain these functions and the benefits they represent for a community” (Aznar & Estruch, 2012). According to the number of benefits a determined ecosystem provides to society, several value types can be deduced.

The types of values and methods will be integrated to calculate the total value. (TEV) corresponds to what is known as preference approximations “since they represent individual preferences, as well as social preferences. Initially, it is made up of a usage value (UV) and a no usage value (NUV)” (Lomas et al., 2017).

“The no-value use is the assessment given to the existence of ecosystems or the desire to pass on the benefits of the mentioned ecosystems to future generations from individuals or the society itself. This is divided into the legacy value (VL) and the existence value (VE)” (General Directorate of Evaluation, Assessment, and Financing of Natural Heritage, 2015).

Figure 3 shows the total economic value (TEV), usage value (VU), and no usage value (NUV)- The usage value is made up of the direct usage value (DUV) and the indirect usage value (IUV), while the no usage value is made up of the current value (EV) and the legacy value (LV). (Teeb, 2010 b; Pearce & Turner 1989) quoted by Lomas et al. (2017).



Figure 3: the total economic value (TEV),

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The values are divided into direct use (DU) and indirect use (IU). DU is related to the goods and services an individual or a society obtains from an ecosystem. “A clear example of the consumption of a biological resource is represented in the food it provides, wood production, fishing exploitation, meat, furs and other products that come from animals or vegetables, firewood gathering, or the use of these ecosystems in the form of ecotourism or recreational activities” (De Alba & Reyes, 1998).

The IU of value refers to those benefits that not only belong to a particular individual but also expand and benefit other individuals from different societies. i.e., the environmental services given by ecosystems and habitat functions. Some examples are the services provided by forests, as they protect against erosion, the regeneration of grounds, etc. “The difference between these two is that the indirect use of value generally unrequired an individual to access the natural resource physically, but it does demand the physical existence of the resource in good conditions” (De Alba & Reyes, 1998).

Continuing with the conception of the General Directorate of, Assessment and Financing of Natural Heritage, 2015, the legacy value (LV) assesses the direct or indirect benefits from ecosystems that future generations will inherit. In contrast, the existence value (EV) is the assessment given to ecosystems given by individuals for the simple reason of their existence, no matter if they are not used or whether they have not received direct or indirect benefits from them.

Economic valuation methods

Values of the goods or services are traded in the market through prices, but when "there is a market failure, the prices can be adjusted to reflect social benefits and cost" (Liu et al., 2019). However, whether the market value cannot be adjusted, there are two main approaches to valuation: Revealed Preference (RP) (income compensation) and Stated Preference (SP) (expenditure function). "RP analyses the relationship between demand for some market goods and preference nonmarket goods/service; on the other hand, SP is based on a survey which creates hypothetical markets for respondents to express their preferences" (Tinch et al., 2019).

Their purpose is to partially establish a good or service's monetary value when it comes to

the environmental economy. Azqueta & Oyarzun (2012) mentioned that Travel cost (TC), Hedonistic prices (HP), and Contingent valuation (CV) are methods that permit to provide the value of environmental services. "The main objective of these methodologies is to designate a reference value to environmental goods and services, the way a hypothetical market would, besides, provides an estimate based on the demand of such goods or services" (Cristeche & Penna, 2008).

Guo et al. (2001) mentioned that Travel Cost (TC) determines the demand for a recreational site based on the number of visits per year; Mehvar et al. (2018) consider the paid by tourists and visitors to the recreation site; Tinch et al. (2019), assesses the demand for a recreation site. Hedonic Pricing; Liu et al. (2019) assess the target value by leveraging the correlation between the environmental resources and other markets goods; Mehvar et al. (2018) used to value the ES contributing to amenities; Tinch et al. (2019) include the property and the labor market. In the previous paragraph, these methods are considered from revealed preference and have been used for diverse studies; however, the outcomes are distinct because each method is reduced by the employment of suitable variables.

Contingent Valuation Method

Aznar & Estruch (2012), Contingent valuation is a state preference method because it estimates the total economic use and no-use value. According to Cerda & García, (2009), the CVM consists in estimating the value given to excellent or environmental service by the people based on the degree of satisfaction it provides; besides, CVM has been used in various studies in the last 40 years; the first academic paper was in 1960.

According to Tonin (2019); Barbier et al. (1994); Perrings et al. (1995); Spash and Hanley

(1995); Nunes et al. (2003); Cardoso de Mendonca et al. (2003); Christie et al. (2006); Beaumont et al., (2008); Turner et al., (2010); Ressurreição et al., (2012a); Cárdenas et al. (2019); Mazadiego et al. (2019) mention that the CVM, is widely used in the context of tourism (wildlife resources, lakes, forest landscapes, national parks, and national forest recreation areas, biosphere reserve, green area, evaluating historical and cultural ruined properties) and biodiversity valuation (sanitation, water quality, contamination of groundwater, the protection of endangered flora and fauna, carbon emission offsetting and wetland conservation), is used to measure to the range of a loss of biodiversity and deciding public policies (urban planning ordinances and health economics).

Many studies have determined that CVM has limitations; for example: according to Sanjuro & Islas (2009), the market is not efficient enough when it comes to allocating environmental resources, and the fact that the function used to calculate value has a hypothetical nature; therefore it could be biased, time, ignorance of the good to be valued, finally, “it is also uncertain whether people are willing to pay the amount indicated in the survey; finally, the concept of biodiversity can result difficult for the surveyed individuals” (Nijkamp, Vindigni, & Nunes, 2008) (quoted by Romo- Lozano & Lopez-Upton, 2017).

Willingness to pay

Tonin, (2019). Weaver & Lawton (2007); Graham et al. (2019); Cárdenas et al. (2019); Sehreen et al. (2019) mention that CVM is used by directly asking people how much they are willing to pay (WTP) for specific environmental services. Diamond & Hausman (1993) CVM is frequently the only way to estimate the no-usage value. Weaver & Lawton (2007) WTP is a measure used to assess people's preferences, i.e., the maximum a person is prepared to pay for a

defined benefit, and at the same time, capture the unique value placed in monetary terms. There is a limited number of studies in Ecuador about WTP, and there is no evidence of population WTP, despite "Ecuador being one of the most ecologically diverse countries" (Gordillo et al.,2019).

Several studies have demonstrated some factors that have influenced WTP. Kosz (1996) discovered that the amount of WTP depends significantly on the professional standing of the respondent and on age and personal income. Lindsey & Holmes (2002) mention that The WTP for protection was highly influenced by education and income. Bal, & Mohanty (2014) there are seven predictor variables, such as the age of the respondent, the income of the respondent, the day spent on that spot, gender, and marital status. Cárdenas et al. (2019) mention that age, gender, education, and income can explain the WTP.

Table 4 Results of academic reviews about WTP in Ecuador

Author, year	Topic
Hardner, (1996)	Non-monetary WTP, in the form labor, for potable drinking water in Esmeraldas.
Herrera et al. (1994)	to value the specific outcome of a policy intended for the efficient management of canals in Santa Elena-Ecuador. Investigated the financial contribution from rural people in
Rodríguez et al. (2009)	Cotacachi. Analyzed the compensation required by landowners for their participation in environmental conservation programs in
Southgate et al. (2009)	Ecuador and Guatemala. estimated the economic value for the protection of two basins
Zapata et al. (2012)	in Loja-Ecuador.

Source: information was based on Gordillo, (2019)

Cuka & Osuch (2018) determine that the offer of services, the price, and the number of overnights during the stay influence WTP; Gordillo et al. (2019) consider higher mean income, age, and married persons as influenced variables. Weaver & Lawton (2007) defined age,

geographic segmentation, and especially gender due to the dominant female in ecotourism. Eagles & Cascagnette (1995); Wight (1996), (2001); Weaver & Lawton (2007) ecotourism tends to have higher levels of education and income. Graham et al. (2019) the Generation of birth, their gross income, education, health status; gender; and parenthood status. Liu et al. (2019) Gender, age, education level, monthly income, whether it is local, whether to participate in environmental groups, visit frequency, and stay duration. Kwak et al. (2013) gender, age, education, income (Ozor et al., 2013; Song et al., 2016; Rahman et al., 2017) level of education and (Rodríguez-Tapia et al., 2017; Moffat et al., 2011) Income.

For the authors, the season is another variable, although, in the above all mentioned, there is no included. We consider that season can influence WTP “as amount visitors can increase or decrease for that reason” (Tonin, 2019). The achievement of significant results in terms of conservation and protection of these environmental resources depends on increasing people’s awareness and Knowledge of the importance of ecosystem services and the goods they provide. The determinants for this study are income, age, sex, Knowledge of benefits, season, education level, place of residence, and frequency to visit.

Table 5 Description of variables

Dimensions	Independent variables	Observation
Socio-economic variables	Age (years old)	18-35
		36-60
		Over 60
	Gender	Female
		Male
	Education level	Senior
		College
Master		
Income	Below 394	
	396-800	
	Over 800	
Place of Origin	Local	
	Outsiders	
Recreation experience	Frequently to visit	Once a Month
		2-3 times a month
		Over 4 times a month
	Knowledge of Benefit	Yes
No		
Season	Summer	
	Winter	

Source: own field research

$$WTP = f (Y, SE, K, S, EL, F, PR)$$

Where INC = income; SE = socio-economic variables (age and sex); k = Knowledge; S=season; EL = education level; F = frequency of visit to NRASI; PR = Place of residence.

Methodology

We considered that CVM is a suitable method for defining the value of environmental

assets; besides, academic papers have demonstrated that CVM is widely used, as well as it has the following advantages Xiao et al., (2002):

1. field and non-field investigations can be conducted simultaneously.
2. It has less restrictive available information than other methods.
3. It can be used to estimate use and non-use value simultaneously.
4. The questionnaire that is employed can be varied depending on the length of the study.
5. Tourists have high praise for green spaces, and some are even willing to pay for green space benefit and amenities.

(Jim, & Chen,2006; Tyrväinen, 2001)

“CVM can be employed to evaluate a variety of entities; for that reason, there are four types of CVM such as the open-ended method, sequential bids method, payment card format, and the dichotomous choice method, and multiple bounded dichotomous choices” (Liu et al., 2019; Gordillo et al., 2019). However, there is a problem with the open-ended method, as their CVM responses can be considered like WTP zero. There are two distinctions: true zero and protest zero. True zeros represent the preference of the household for public goods; on the other hand, Protest-zero represents the rejection of some questionnaire components, such as: “disagree with paying.”

CVM presents a questionnaire that shows, in the most realistic way, a hypothetical market, defining options from which each individual can choose according to his or her willingness to pay for the improvement in quantity or quality of the excellent or eco-systemic service. CVM uses survey tactics to estimate the economic benefits of goods. “These surveys are carefully made to

simulate a market and ask people about the values they would give to goods or services” (Romolozano & Lopez-Upton, 2017).

“The questionnaires of CVM play an important role due to the supply being represented by the interviewer and the demand being embodied by the interviewee” (Mazadiego et al., 2019). However, the idea is to estimate the sum of money that people would pay to protect the NRASI against damages associated with tourism and understand how WTP for entrance fee (dependent variable) relates with the following independent variables (level of education, monthly income, age, place of resident, knowledge, sex, times of visit and season).

Questionnaire design

The research was conducted using a survey, i.e., a questionnaire made up of a closed-ended dichotomous format, easy to understand because the questions “require less effort from the survey respondents, since there is no need to write or verbalize thoughts, just select the option that summarizes best their answer” (Hernández, Fernandez, & Baptista, 2010).

The average amount of visits to NRASI per month is 28.113; the sample used was based on the probabilistic principle that all individuals have the same possibility of being chosen. Using a 95% trustworthiness percentage and an error range of 5% is necessary. After using the formula, the number of respondents was 379 people. There are two ways to connect from Guayaquil and Duran to NRASI: raft transportation and walking across the bridge; for that reason, the data was developed in situ.

The questionnaire was administered from January 6th to February 8th, 2019, and was distributed and collected through face-to-face interviews. The questionnaire has two sub-sections: The first section: the pilot survey, was developed to determine the willingness to pay,

which was used with those who use these attractions, that is, local and foreign visitors enjoying tourist activities in this area. We used a hypothetical scenario with three bid amounts (\$1,5, \$2,5, and \$4) to determine the amount visitors be willing to pay (WTP) to preserve the NRASI. We asked the following question:

P1. Which amount would you be willing to pay for an environmental improvement or to prevent environmental deterioration?

The second section was developed to determine socio-economics variables and recreational experiences, such as the frequency to visit, gender, monthly income, season, knowledge of benefits, education level, age, and place of residence. i.e., variables that permit to meet with the objective for this work and could determine whether the respondents adequately represented the general population.

Analysis and Findings

Descriptive Analysis

Table 6 Backgrounds of the respondents

Independent Variables	Description	Numbers	%	WTP			Total
				\$ 1,50	\$ 2,50	Over \$ 4	
Age (years old)	18-35	193	50,9	125	62	6	193
	36-60	147	38,8	97	44	6	147
	Over 60	39	10,3	21	3	15	39
Gender	Female	181	47,8	128	44	9	181
	Male	198	52,2	115	65	18	198
Education level	Senior	102	26,9	65	33	4	102
	College	198	52,2	49	13	17	79
	Master	162	42,7	129	63	6	198
Income	Below 394	88	23,2	57	29	2	88
	396-800	162	42,7	108	47	7	162
	Over 800	129	34,0	78	33	54	165
Place of Origin	Local	367	96,8	233	108	16	357
	Foreigners	12	3,2	10	1	3	14

	Once a Month	93	24,5	64	18	11	93
Frequently to visit	2-3 times a month	108	28,5	72	28	8	108
	Over 4 times a month	178	47,0	107	63	8	178
Knowledge of Benefit	Yes	310	81,8	198	91	21	310
	No	69	18,2	45	18	6	69
Season	Winter	162	42,7	109	40	13	162
	Summer	217	57,3	134	69	14	217

Source: own field research

Table 6 shows that 64% of the sample consider that \$1,5 is the sum of money people would pay to preserve the NRASI. Besides, the outcomes showed that the most representative socio-economic variable is the place of origin (95,5%), and the most representative recreation experience variable is knowledge of benefit (81,5%). In general, the results were expected, i.e., the people with higher (education levels and monthly income), and more (times of visit in the summer season) agreed to pay an amount to preserve the project area.

In table 6, most of the respondents are male (52,2%), age group to visit the NRASI is from 18 to 35 years old (50,9%). Almost 52,2 % of the majority of the respondents had a university or graduate institute education, and 42,7% had a high school diploma. The monthly income group of the whole sample was from \$396 to \$800 (42,7%). 81,8% of the sample declared that they know the NRASI benefits. Only 3,2 % of the respondents were foreigners. Overall, 47% of the sample visit over four times per month. Finally, 57,3% of the whole sample prefers to visit the NRASI from June to December, i.e., in the summer season.

In figure 4, the coefficient of determination, R^2 , is 0,226 for the Willingness to pay endogenous latent variable. i.e., the two latent variables (SEV and RE) moderately explain 22,6% of the variance in WTP. Besides, the inner model suggests that SEV has the most substantial effect on WTP (0,277), followed by RE (0,265). In conclusion, we can mention that SEV and RE are

both moderately strong predictors of WTP because these values are higher than the path coefficient.

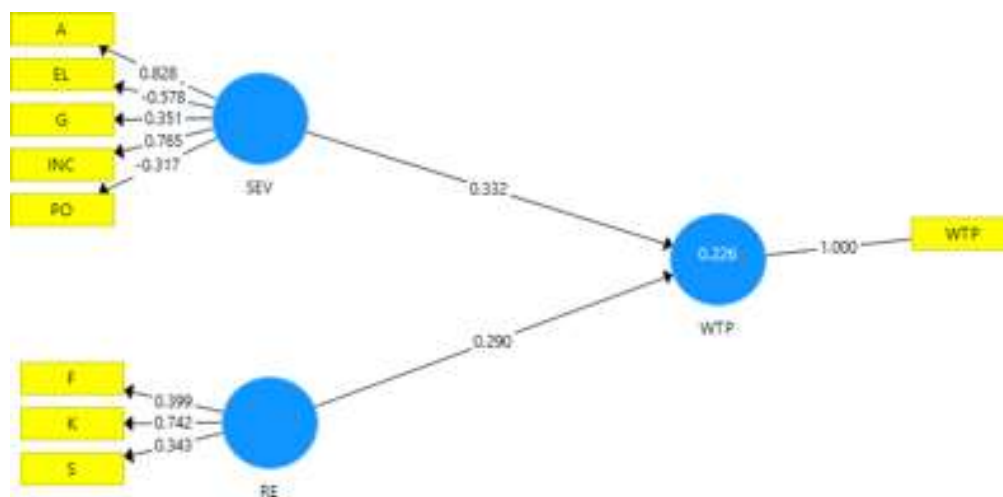


Figure 4, values obtained, Smart-pls

The results of the outer model explain that the values lower than 0,7 are considered unnecessary for the model. The following indicators would be isolated to the model, such as EL, G, PO, S, and F. Under such circumstances, our model considers the A, INC, and k predictor variables.

Table 7 Results summary for outer model

Latent variable	Indicators	Loadings	Reliability	AVE
SEV	Age	0,986	0,986	0,973
	Income	0,987		
RE	knowledge to benefit	1	1	1

Source: values obtained with smart-pls.

The composite reliability shows values larger than 0,6, i.e., the SEV (0,986) and RE (1) have demonstrated their reliability is consistency, as well as their contingent validity SE (0,973) and RE (1), are higher than an acceptable threshold of 0.5.

Table 8 Discriminant validity

Indicators	RE	SEV	WTP
RE	1		
SEV	-0,094	0,986	
WTP	0,239	0,252	1

Source: information obtained with SmartPLS

Table 8 the results indicate that discriminant validity is well established because square roots are more significant than the correlation values in the columns, such as RE (1) is more extensive than those in the row of RES, as well as SEV (0,986) the number is larger than the correlation values in the column of SEV (0,252), and also made for the larger than in the row of (-0,094).

Table 9 Bootstrapping: inner model

Variables	T-statistics
SEV-WTP.	4.754
EXP-WTP.	2.211

Source: own

Table 10 Bootstrapping. Outer model

Variables	SEV	ER
A	239.335	
INC	289.339	
K		0.000

Source: own

Using a two-tailed T-test with a significance level of 5%, the path coefficient will be significant if the statistics are more prominent than 1,96, inner model (table 9), both SEV-WTP and EXP-WTP

are statically significant. In the outer model (table 10), we can explore that A and INC are highly significant, and K is not significant.

Discussions and Conclusions

The methodology proposed by MINTUR (2010) has been unexecuted due to market inefficiency and state intervention, which indeed benefit the private sector. The ecological footprint framework is used in order to assess protected areas. Economic valuation through environmental and ecological approaches is considered the way to obtain sustainability; however, there are still failures and discrepancies over the appropriate method to value natural resources. The findings indicate that an excellent technique for this investigation is the (MVC), due to the main objective of this tool being to make a hypothetical market to estimate WTP, i.e., a reference value of the goods and environmental services.

The results concluded that the model proposed was accepted; however, we eliminated some indicators (EL, S, PO, F, A) due to these indicators being unnecessary. In contrast, the findings indicate a favorable attitude from tourists to pay \$1,50 for such a rate's purpose of improving the environmental quality and preventing damage. In other words, independently from their monthly income, everyone has the same possibility to contribute a representative amount to get a benefit financially. On the other hand, the results of the current study mention that income, age, and knowledge influence WTP, and besides age, income determines visitors' attitudes toward paying the entry fee for the protected area. In conclusion, NRASI has unique ecosystem services, and we considered the usefulness of monetary valuation to highlight human societies' dependence on nature.

Theoretical implications

The results of the findings have provided several significant contributions to the literature focused on the environment, sustainability, and the tourism industry, due to protecting areas with productive ecosystems and tourist resources. Indeed, this paper is the first study to propose the MVC as a tool to assess a RAMSAR area in Ecuador. Previous studies have established that this tool must be implemented in overall protected areas due not to trade their services and resources. The people are willing to pay a value to conserve globally and safely the biodiversity of an ecological system.

The study also describes the procedure for determining WTP as founded on understanding the preference of tourists on the importance of taking care environment and its resources, for that reason, to reduce the adverse impacts of touristic practice on protected areas. On the other hand, the technique focuses on obtaining values of goods and services where market transactions are absent. Finally, this method must take into account to be implemented by the government in managing the project-protected areas. i.e., charge an appropriate amount of enhancing fee for the visitors.

Practical Implications

This study provides practice implications to inform the government, touristic operators, local people, and foreigners. ANSRI is ideal for tourism due to its recourses; therefore, to manage these natural resources adequately, it is necessary to fulfill basic principles (conservation, ethics, sustainability, education, and community benefits) that will contribute to its development without affecting nature. All this is for the benefit of future generations. According to this study's findings,

the Ecuadorian market will not respond to programs that support sustainability; the socio-economic valuation showed that tourists are ready to pay a lower price for conserving protected areas. Besides these results, inform the government to use the payment to conserve ANSRI's resources.

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