

Water Concessionaires' and Tourists' Willingness to Pay for the Rehabilitation and Preservation of Ipo Watershed

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ABSTRACT

The Ipo watershed's 6,600 hectares of forest provides fresh water to more than 13 million people in Metro Manila. The estimated remaining forest cover of this protected area is 30%. The study aims to know the willingness to pay of water concessionaires and tourists for the rehabilitation and preservation of the area and to determine the different factors affecting their willingness to pay. Mixed-mode data collection methods were used in administering the survey questionnaires for 151 tourists and 158 water concessionaires. Relationships of different variables were measured using Structural Equation Modeling (SEM). The study revealed that majority of the water concessionaires are willing to pay an average of additional 61.24 pesos per month and 36.8 pesos for tourists per visit. Water concessionaires' education, age and water bill have a significant effect with their willingness to pay while tourists are only affected solely by education. The hypothetical willingness to pay value can be basis for Maynilad Water Services Incorporated (MWSI) and Mt. Balagbag tourism authority in charging additional environmental fee which can support different NGO reforesting Ipo watershed.

Keywords: Ipo Watershed, Tourists, Water Concessionaires, Willingness to Pay.

1. INTRODUCTION

The globe's biological resources are vital to civilization's economic and social improvement. The United Nation realizes there is a rising recognition that natural diversity is a universal strength of incredible worth to present and future generations. The threat to species and ecosystems has been increasing enormously due to the consumption of the natural resources. Species extinction because of human activities continues at an alarming level. A Convention was proposed in 1988 and was signed in Rio de Janeiro on June 5, 1992. The Convention on Biological Diversity (CBD), known familiarly as the Biodiversity Convention, is a multilateral treaty of developing and developed countries which aims to conserve biological diversity (or biodiversity), the sustainable use of its components; and the fair and impartial sharing of benefits coming from the natural resources. The Convention was entered into force on December 29, 1993 (Convention on Biological Diversity 2017). Recent conventions related to biodiversity conservation has recognized the importance of Protected Area and became part of the Aichi Target, Target 11 states that by 2020, at least 17 percent of terrestrial

and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well-connected systems of protected areas and other effective area-based conservation procedures, and integrated into the wider landscapes and seascapes (CBD International, 2017).

In the April 2016 Protected Planet Report, the protected area coverage has totaled to 217,155 from 244 countries and territories using the World Database of Protected Area (WDPA). Two hundred two thousand four hundred sixty-seven (202,467) has been identified as Terrestrial Protected Area and 14,688 as Marine Protected Area. The dataset includes national level protected area, all of the areas under the regional agreements like Natura network – European Union’s largest network of Protected Area and areas covered by regional and international conventions or agreements, one of which are Natural World Heritage sites – listed by United Nations as a place of physical importance and special cultural heritage.

Philippine Protected Area

The country has been considered as one of the “Mega-diverse” country for hosting the most number of species. It asserts the highest levels of diversity and endemism of life forms and some of the most unique natural home in the sphere. The Philippines has identified 228 Key Biodiversity Areas (KBA) covering 7.6 million hectares, including 128 terrestrial and 100 marine sites in the country. The KBAs are habitats of 209 worldwide threatened species, 419 endemic species of amphibians, reptiles, birds, mammals, and freshwater fishes, and 62 congregatory birds’ species (UNDP 2012). Unfortunately the Philippine forest cover has declined from 17.1M hectares or about 57% of the land area in 1937 to approximately 8.0M hectares or 27% in 2015. Logging (40.58%) has been found to be the number one culprit of forest deforestation and degradation based from informants’ interviews, followed by “kaingin” making or shifting agriculture (16.98%), third by biophysical reasons (16.98%) such as climate change, typhoons, floods and landslides. Mining and charcoal making contributes 8.49% and 8.15% respectively (Apan, Suarez, Maraseni, & Castillo, 2017). Furthermore, Government forest rehabilitation is limped due to lack of funding in forest rehabilitation, it will take 280 years to reforest the country given the average budget allocation of about Php 300 million in the past 10 years (NEDA 2011). Although the country is endowed with abundant water resources, it still faces the threat of emerging water insufficiency. Deforestation and lack of effective management of forest and freshwater ecosystems have led to the further worsening of watersheds, restraining aquifer recharge and increases water runoff and soil erosion. Around two hundred sixty seven (267) watersheds with a total area of ten million six hundred (10.6M) hectares have been identified as needing immediate restoration (NEDA 2011).

As response to the threatening biodiversity degradation of the Philippines, the National Integrated Protected Areas System (NIPAS) has been enacted in 1992. Throughout the history of habitual practices and formal legislated norms for guarding our natural resources, including twenty years of executing NIPAS, the country has been able to identify 240 Protected Areas covering 5.4 million hectares of land and sea, or about 13.6% of the total land area of the country and only 0.64% of the enormous marine territory. Protected areas are places labeled for conservation because of their

documented natural, ecological and/or cultural values. Protected area designation and management are important for biodiversity conservation, and often make up the pillars of conservation strategies of countries and the international community (UNDP 2012). Under the NIPAS Act, the Integrated Protected Areas Fund (IPAF) has been created for the purpose of financing projects for conservation. IPAF is the body which receives donations, endowment and grants coming from local and international funders. All the income generated by the system shall be safe keep by IPAF; seventy five percent (75%) of the generated income shall be retained to the protected area management board to sustain the system as stated in Republic Act of 10629, September 26, 2013. Most common Protected Area fees collected are entrance fees and facilities user fees. Only 44 out of 240 PAs or 18% are charging entrance fees and 31 PAs or 13% are imposing facilities user fees. The table below shows the minimum and maximum value being charged to the tourists in the Philippines' Protected Area (Fontanilla 2014):

Table 1 Entrance and Facilities Fees of Protected Area in the Philippines

Types of Tourist	Students (PHP)	Adults (PHP)	Foreigners US\$	Senior Citizen (PHP)
Minimum Value	2	5	1	2
Maximum Value	50	500	75	10

In climbing mountains, based on actual interviews from the local authorities or the barangay, Hikers are charged with registration fees ranging from 20 up to 2,000 pesos. Majority of the fees are unregulated and unorganized. There is no assurance that the fees collected are for environment conservation and protection (Lasco 2017).

For water service user, environmental fees are only for the disposal of waste water, not the direct use of the environment. Under the DENR Administrative Order No. 39 series of 2003, Environment User Fee (EUF) is referred to as one of the market-based instruments applied by DENR in its permitting system, and is levied to dischargers for using the environment specifically the water and or land use resources for waste disposal purposes or receptacle facility according to each unit of discharge (DENR 2003). Maynilad, one of the pipe-in water supply providers in Metro Manila practices this environmental fee charge scheme. They charge their consumers 20% of the total water charge billed for the residential, business or industrial user, but the fees is only allocated in desludging and not directly in preserving and protecting the environment (MWSS 2017).

1.2 Statement of the Problem

With the progression of protected areas, funding provided by the government and international donors is increasingly inadequate. On an average, only 30% of the financial requirements for effective conservation of Protected Area in developing countries are being represented by its budget (Hein, Miller, & de Groot, 2013). It is timely to explore potential non-government and non-international funding in sustaining protected areas coming from its beneficiaries.

Specific Problems

1. Who among the water concessionaires, tourists are willing to pay for the rehabilitation and preservation of Ipo watershed?
2. How much are the beneficiaries of Ipo watershed are willing to pay for rehabilitation and preservation of the protected area?
3. What are the factors affecting the willingness to pay of the water concessionaires and tourists for the rehabilitation and preservation of Ipo watershed?

1.3 Significance of the Study

Protected Area (PA) such as watershed contributes to our social and economic well-being. These ecosystem services include air filtration, carbon storage, water filtration and storage, nutrient cycling, soil formation, recreation, timber and food. It has a huge impact in the economic growth of our country. Deforested or denuded watershed may lead to floods, high cost in water treatment, and climate change (US-EPA 2018). In 2017 the economic cost of Intertropical convergence zone and flashfloods amounted to Php 104.229 million. The annual cost of natural disaster to the Philippines is 0.8% of the gross domestic product. It affects mostly production of goods and investment, thereby affecting balance of payments, employment, exchange rate, and inflation. In the same year the government allotted Php 30.7B to the national disaster risk reduction and management fund (Cordero 2018). The study would like to contribute in the field of commerce by lessening the social and economic impact of natural disasters such as floods, air pollution and climate change thru environmental awareness and deriving at a hypothetical supplementary fees coming from two beneficiaries of watersheds; the water concessionaires and tourists. The model in the study can also be used in other types of Protected Areas such as Protected Landscape and Seascapes, Marine Reserves and Natural Parks.

2. REVIEW OF RELATED LITERATURE

2.1. Willingness to Pay of Stakeholders benefitting from the ecosystem

Willingness to Pay can be considered as the amount or price an individual is willing to commit for a designated development or remunerations like environment conservation and protection. It is also defined as a scale that indicates the propensity to act in monetary terms by an individual for the planned change or quality enhancement. WTP can be a helpful tool in evaluating the product or services like the environment which does not have a specific market or economic value. It is used in disseminating information about the importance of biodiversity conservation. Studies show that respondents increase their willingness to pay once they realized the impact of their contribution to conservation projects (Hamed, Madani, Van Holle, Wright, Milon, & Bossick, 2015). It changes the behavior of the tourists towards environmental points towards protection and preservation. The value of Willingness to Pay refers not only to the financial values to enjoy current remunerations given by the protected area, but also the value of preserving it for the upcoming generation (Ramdas et. al, 2014).

In a study by Florence Bernard Et Al in 2009, the total value of respondent's payment for ecosystem services such as maintenance of biodiversity, water supply and recreation tourism was estimated to be US\$ 2.5 million/ year. The WTP of the questioned stakeholder amounted to US\$ 339, 000/ year which is only 14% of the total value for the estimated payment for ecosystem services. The WTP of the respondents can almost

suffice the operating cost in managing the Tapanti National Park in Costa Rica amounting to US\$ 345, 000 / year.

Financial sustainability of protected areas is one of the main encounters of an organization like the National Elephant Conservation Center in Malaysia. In a study conducted by Sara Kaffashi Et Al, (2014), majority of the visitors are willing to pay an entrance fee to improve the management of the park. They concluded that the fee will serve as supplementary source of funding for the center and can also be used in the development of the ecosystem in the area. The Center's success in management and ecosystem preservation is highly dependent on the visitor's satisfaction; the supplementary fund will be used in protecting the satisfaction level of the guests which will sustain the visits.

It is also important to consider tourist visitation rate when measuring the WTP for sustainability. In Bonaire National Marine Park, a case study was conducted and showed that significant income for the park can be collected from the tourists via suitably tailored user fees. The estimated total amount to be collected has considerably exceeded the necessities of the management authority without adversely affecting the tourism in the area (Thur, 2009).

Willingness to Pay can be a supplement for international funding like the GEF (Global Environment Facility). Bosnia Herzegovina, a recipient country of this funding organization received 18.2 million Euros since 1990 for its national projects from the GEF (www.gefonline.org). Based on a study conducted by Mirza Dautbasic Et. al, (2010), the people of Bosnia Herzegovina are willing to contribute 15 million Euros annually in funding biodiversity conservation, it is in the dimension of the projected costs for representative network of protected areas and a full maintenance and protective program of the country.

Willingness to Pay value has not only been used in maintaining the protected area's ecosystem but also its development. In a study conducted by Richard T. Yao ET. Al, (2014) , New Zealand residents value biodiversity enhancement thru large planted forests. A usual respondent is willing to pay for such local development thru additional income tax. The collected taxes are placed in the planting of endangered tree species in New Zealand. The study also recommends that residents closer to such commercial forests must have a higher tax since based on the findings that distance has a significant effect in the Willingness to Pay of respondents. People near the forests appreciate the environmental goods they are receiving.

2.2 Socio Demographic Profiles of WTP respondents

In a study conducted by Aisa Manlosa, (2013), majority of the residents and local tourists in a rural community in Mindanao, declared their willingness to establish a watershed community conservation fund that will serve as conservation finance for reforestations, community-based water shed monitoring and guarding and development of alternative livelihood programs for the community inside the watershed. Mostly are females and married with an average age of 49 years and household mean of five (5). Majority of them are college educated and have experienced giving donations for a cause with an average monthly income of 10, 074 pesos. Tourists with higher level of

educational attainment have a higher probability of WTP. They are more aware of the importance of wildlife sanctuaries to conserve biodiversity. Income is also an important determinant of WTP, Overseas tourists are willing to pay more than the locals (Sara Kaffashi Et Al, 2014). Another study by Peng-Wei Wang Et. al, (2012) reveals that income and the awareness of being in a Protected Area were the most significant predictors of tourists' WTP, including educational level and intuitional trust.

3. THEORETICAL FRAMEWORK

3.1 Keynesian Theory

One of the most popular and widely used economic theories is the Keynesian Theory by Maynard Keynes. According to his General Theory (1936): “ The fundamental psychological law, upon which we are entitled to depend with great confidence both a priori and from our knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on the average, to increase their consumption, as their income increases”. It simply explains that real income of a person is directly proportional to his spending (Palley, 2008). In the context of this research the income of the respondents will be correlated to their Willingness to Pay (WTP).

3.2 Marginal Utility Theory

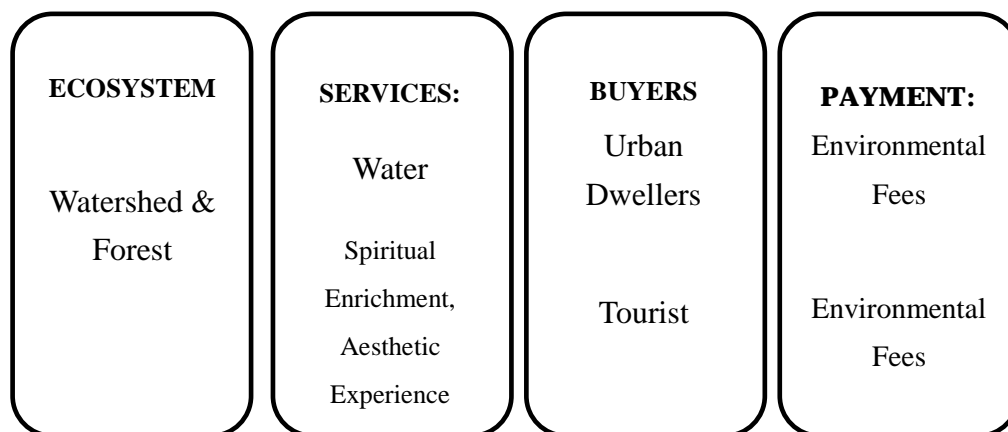
The theory by Alfred Marshall explains how a consumer allocates his income on different utilities based on the maximum level of his satisfaction. Utility as defined in this theory is the want satisfying power of a commodity; it is primarily subjective or not constant to all the consumers (Investopedia.com). In the context of this study, the natural environment will serve as the utility, it gives water to concessionaires and aesthetic experience and spiritual enrichment to the tourists. The water concessionaires are already paying for their water usage and the tourists for entrance and facilities fees. Since the WTP will be considered as supplementary fees, it will be considered as the marginal utility of both the concessionaires and tourists. Thus supplementary fee or WTP will be the payment for the maximum satisfaction of the respondents.

3.3 Payment for Ecosystem Services

In developing countries, only 30% of the financial requirements is being represented in effective protection and maintenance of biodiversity (Lan Hein Et. Al, 2013). Funds are commonly used in monitoring, regulating threats like poaching, restoration of the ecosystem, and for compensating local community within the peripheries of the Protected Areas (Lan Hein Et. Al, 2013, Laurence WF Et Al., 2012). Donor contribution has declined for the past decade, and local government funding has generally not been able to recompense for the lost funding from the international funders. In response to the above-mentioned problem in ecosystem conservation financing, PES is slowly being adapted by the different countries around the globe. PES is an innovative approach to nature conservation. It has been defined as a voluntary transaction in which a well-defined environmental service (ES), or a form of land and aquatic use likely to secure that service is consumed and purchased by at least one ES buyer from a minimum of one ES provider/ seller and only if the provider remains to supply that service. The ES provider/seller in this statement is the ecosystem like forest, mountains, wetlands, agricultural land which provides food, fresh water, good air quality, aesthetic experience, spiritual enrichment and also the ecosystem provides supporting services to maintain these services such as photosynthesis and nutrient

recycling. The ES buyer on the other hand is the beneficiaries of these services, the one who consumes the resources being rendered by the ecosystem - humans. The most common existing PES schemes being used globally is the Water – PES, It is thought that the water cycle delivers a good fit for the ecosystem service approach, as it clearly validates how changes of ecosystem functioning affect the provision of ecosystem services and thus human well-being (Ken Thomson Et. al, 2014).

Figure 1: Payment for Ecosystem Services Model



The diagram above illustrates the products/ services being rendered by the ecosystem and the direct beneficiaries. In the context of this study, the first line indicates that Watershed and Forest serves as the ecosystem services or the seller which provides water to the urban dwellers or buyers of the ecosystem services, and the environmental fees as the payment for the ecosystem services. The willingness to pay value of the beneficiaries or the buyer will be considered the remuneration for the ecosystem services provided by the forest and watershed. In the second line, Watershed and Forest serves as the seller, which renders spiritual enrichment and aesthetic experience to the tourists or the buyer and environmental fees will serve as the payment of the ecosystem in the form of willingness to pay value

3.4 Hypotheses of the Study

- H₁: Water concessionaires are more willing to pay than tourists in protecting and maintaining Ipo watershed.
- H₂: Income, age, gender, marital status, number of households, educational level attainment and water bill has significant effect with water concessionaires’ willingness to pay for the conservation of Ipo Watershed.
- H₃: Income, age, gender, marital status, number of households, educational level attainment and water bill has significant effect with tourists’ willingness to pay for the conservation of Ipo Watershed.

3.5 Conceptual Framework

Figure 2: Effects of Socio-Demographic Profile with Water Concessionaires' WTP

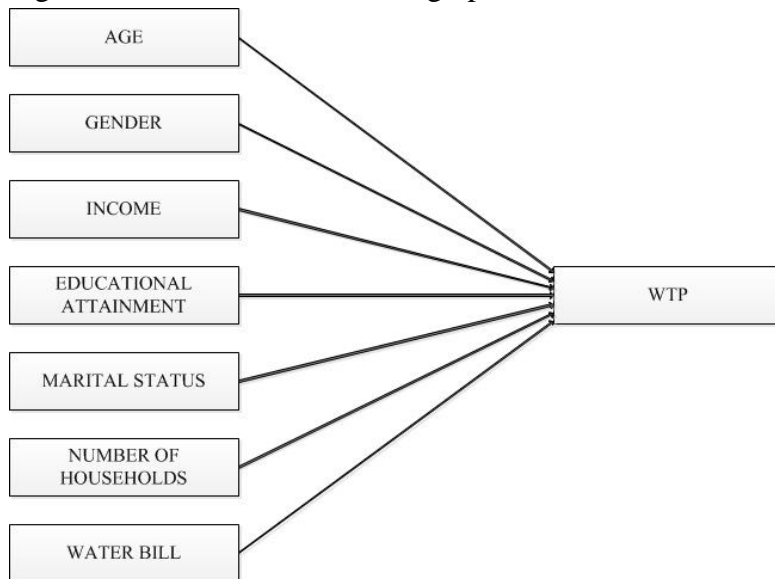
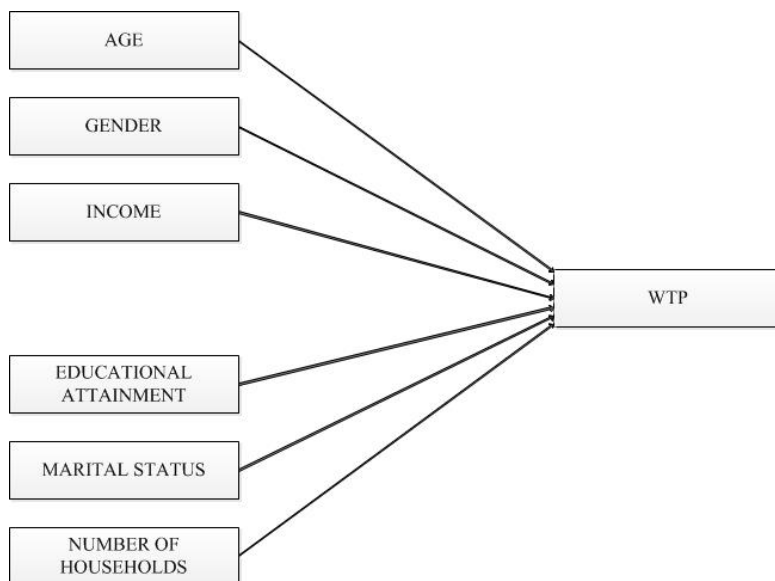


Figure 3: Effects of Socio-Demographic Profile with Tourists' WTP



The framework in Figures 2 and 3 measures the hypothetical willingness to pay (WTP) value of water concessionaires in Quezon City and Tourists in Mt. Balagbag. Willingness to Pay is commonly used to give value to ecosystem services given by a protected area like watersheds. The valuation of ecosystem services can contribute to better-informed decision-making and market-based instruments in promoting biodiversity conservation. The socio-economic factors affecting the water concessionaires and tourists' willingness to pay will be investigated. Previous studies have shown that income, age, occupation and educational attainment has positive direct relationship with their willingness to pay for environment protection.

4. RESEARCH METHODOLOGY

4.1 Research Design

The research will use correlation research since it wishes to measure and assess the relationship of the quantitative variables given in the study framework. Correlation research involves testing of expected relationships between and among variables and the making of predictions. It also assesses relationships of variables in everyday life events (Stangor, 2011).

4.2 Sample Size

Researchers suggest the use of the rule of thumb in determining the minimum sample size for a model. For example, notable researchers (e.g., Barclay, Giggins, & Thompson, 1995) suggested that a minimum sample size for PLS-SEM should be equal to the larger of the following: 1) 10 times the largest number of formative indicators used to measure a single construct, or 2) 10 times the largest number of structural paths directed at a particular construct in the structural model. Stated differently by Hair, Hult, Ringle and Sarstedt (2014), the minimum sample size for PLS-SEM should be 10 times the maximum number of arrowheads pointing at a latent variable anywhere in the PLS path model. Following this rule of thumb, the minimum and actual sample size used in the study is given below:

Table 2 Minimum Sample Size

Respondents' Description	Minimum number of respondents	Actual number of respondents
Water Concessionaires	70	151
Tourists	60	158

4.3 Study Site

4.3.1 Ipo Watershed

The Ipo River Watershed is a portion of a whole system of raw water supply that serves 95% of Metro Manila, which has a population of 13M (Corsame, 2016). Under Proclamation 391 of 1968 the watershed was established in 1920's. The Ipo watershed contributes 6.5 m³ /s to the water supply of Metro Manila (Calderon et. al, 2004). The administration of the dam was assigned to MWSS and DENR. The territorial authority on the other hand is distributed to the following municipalities:

4.3.2 Mt. Balagbag

A climbing destination preferred for its proximity to Metro Manila and located in Rodriguez Rizal. This mountain is part of the Sierra Madre range as it shifts into the plains of Central and Southern Luzon. At over 700 MASL, it is of enough elevation to offer views of some parts of Metro Manila, as well as the Ipo Watershed (Lasco 2017).

4.3.3 Quezon City

Quezon City has an estimated population of 2.94 in 2015, 22.84% or almost a quarter of Metro Manila's population. Quezon City has an annual growth rate of 1.17%. In 2010 the average household size of the city is 4.3 persons (PSA 2015). The estimated west zone concessionaire of Maynilad Water Services Incorporated (MWSI) is 1,336,566, certain portion of the Quezon City is part of the west zone concessionaires (Maynilad 2017).

4.4 Study Period

The data gathering commenced on September to December 2018.

4.5 Data Measure

4.5.1 Econometric model of willingness to pay

The mean WTP were calculated through the contingent valuation method. CVM is a questionnaire-based approach that directly asks respondents about their maximum or minimum willing to pay for the changes of the environmental quality (Rocio Moreno-Sanchez, 2012; Chea, 2019).

4.5.2 Measurement of coefficient correlation

The study used path coefficient in determining the relationship of different variables. It is considered more standardized than linear regression weights for it can be used in knowing the possible causal relationship between constructs in a structural equation model.

4.5.3 Measurement of structural model

In determining the suitability of the model, the “goodness of fit or acceptability of fit” will be measured thru the p-value and chi-square value and average AFVIF (Engel, 2003).

4.6 Data Gathering Procedure

A mixed-mode data collection method was used in this research; the Self-Administered Questionnaire (SAQ) using paper-pen and internet survey. The questionnaires were also translated to Filipino. The study used two (2) types of questionnaires:

- a. Water concessionaire of Maynilad residing in Quezon City,
- b. Visitors of Mt. Balagbag.

4.7 Survey Questionnaire

The questionnaire explains the purpose of the study, followed by the pictures showing the actual image of the Ipo Watershed to emphasize how badly reforestation is needed. This section will enlighten the respondents on their responsibilities and the need to contribute in rehabilitating and maintaining Ipo. Selection Bid was used to determine the mean willingness to pay of water concessionaires in Quezon City based on the previous study of Calderon et. al., (2004). The ten bids are Php5, 10, 15, 20, 25, 30, 50, 70, 100, 150 and 200 per month. While the bid for tourists will be 5, 10, 15, 20, 30, 40 and 50 pesos, based on the average environmental fees being charged for mountaineers in the Philippines (PinoyMountaineer.Com), the value is within the minimum and maximum entrance and facilities fees being charged in Protected Area in the Philippines which is 5 to 500 pesos (BMB,2014). Respondents for water concessionaires were informed that the mandatory fixed payment scheme will reflect on their monthly water bill as supplementary environmental fees. While the additional environmental fees for tourists will be charged per visit.

4.8 Ethical Consideration

The highest ethical standards were upheld during data gathering. Since the research involves participation of human; the researcher abides by the standard treatment of social research. The study has been sensitive on two issues: informed consent and confidentiality protection.

4.8.1 Informed Consent

The researcher provided enough information about the objective of the research and how it will be processed. The information given to the respondents was assured that it has been understood by the participants and the environment of the participants is free from unwarranted influence and coercion. Participants were informed before the actual survey to expect questions such as their age, income, educational attainment and marital status. Vulnerable population like minors or young people under 18 and person with psychological incapacity were excluded in this study. No monetary incentives were given to influence respondents in participating the survey.

4.8.2 Confidentiality Protection

The most serious risk of harm to which respondents in survey are exposed to is the breaches in confidentiality. To avoid such dilemma, the names, addresses, telephone numbers and other personal detail were excluded in the questionnaires. After the forms are encrypted, the hard copies were shredded. Online survey was converted to excel file together with the encrypted ones, data were protected by password.

5 RESEARCH FINDINGS

5.1 Water Concessionaires

5.1.1 Descriptive Statistics

Seventy nine percent (79%) of water concessionaires benefitting from Ipo watershed are willing to contribute for its rehabilitation and maintenance. The average Willingness To Pay of respondents for this part of the study is Php 61.24 per month. Given the above-mentioned willingness to pay rate, Php 42, 809, 676.19 hypothetical amount per month can be generated from the supplementary environmental fee of 699, 048 households in Quezon City.

Table 3: The rate of Willing to Pay

	Frequency	Percentage
No. of Respondents	158	100%
Willing To Pay	125	79%
Not Willing To Pay	33	21%

Socio-Demographic Profile of Water Concessionaires

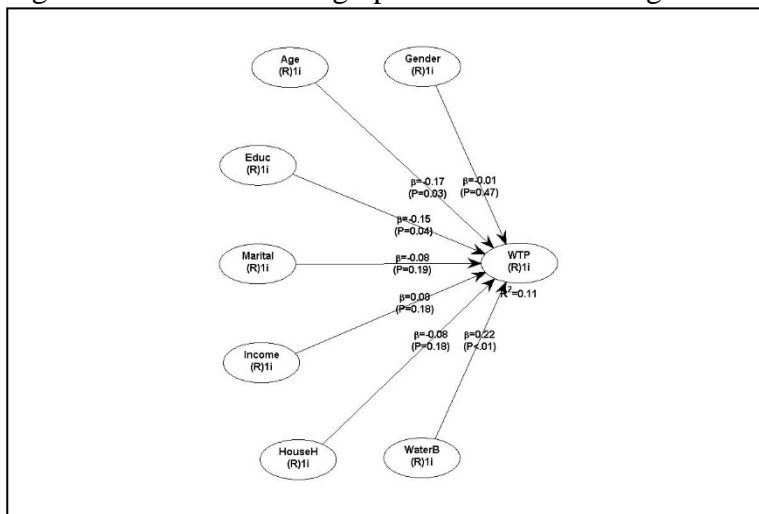
Majority of the water concessionaires' respondents are female (77%), with the age range of 31 – 42 (50%), half are bachelor's degree holder, almost half are married and single, with an extreme income range of 24 % earns below Php10, 000 and 22.4% grosses Php50,001 and above. The average household is 3-4 which is close to Quezon City's average 4.3.

Table 4 Socio-Demographic Profile of the Water Concessionaires

		(n = 125)	
		Count	%
Gender	Male	49	39%
	Female	76	61%
Age Bracket	18 - 30	33	26%
	31-42	62	50%
	43-60	27	22%
	61 and older	3	2%
Educational Attainment	Elementary	0	0%
	Secondary	19	15%
	Vocational	17	14%
	Bachelor's	62	50%
	Masteral's	22	18%
	Professional	4	3%
Marital Status	Doctorate	1	1%
	Single	55	44%
	Married	56	45%
	Separated	6	5%
Monthly Income	Widowed	8	6%
	below 10,000	30	24%
	10,001 - 20,000	22	18%
	20,001 - 30,000	15	12%
	30,001 - 40,000	19	15%
	40,001 - 50,000	11	9%
	50,001 & above	28	22%
No. Of Households	1 – 2	18	14%
	3-4	54	43%
	5-6	42	34%
	7 and above	11	9%
Water Bill	less than 500	41	33%
	501 – 1000	43	34%
	1001 – 1500	18	14%
	1501 – 2000	10	8%
	2001 – 2500	6	5%
	2501 & above	7	6%

5.1.2 SEM Results for Waters Concessionaires

Figure 3 Effects of Demographic Profile to Willingness to Pay



Model fit and quality indices:

Average R-squared (ARS)=0.105, P=0.048

Average adjusted R-squared (AARS)=0.051, P=0.049

Average block VIF (AVIF)=1.069, acceptable if ≤ 5 , ideally ≤ 3.3

Average full collinearity VIF (AFVIF)=1.213, acceptable if ≤ 5 , ideally ≤ 3.3

Tenenhaus GoF (GoF)=0.324, small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36

Table 5 Effects of the demographic variables on the WTP

	Path coefficient	SE	p-value	f ²
Gender → WTP	-0.006	0.089	0.475	0.000
Educ → WTP	-0.153	0.086	0.039	0.018
Age → WTP	-0.166	0.086	0.028	0.022
Marital → WTP	-0.079	0.088	0.185	0.003
Income → WTP	0.081	0.088	0.179	0.009
HouseH → WTP	-0.082	0.088	0.177	0.006
WaterB → WTP	0.217	0.085	0.006	0.047

Notes: f² is the Cohen’s (1988) effect size coefficient: .02=small, .15=medium, .35=large. SE = Standard Error.

Table 5 revealed that on education, age and water bill have significant effects on Willingness to Pay. The findings show that water concessionaires benefitting from Ipo watershed with low education attainment, younger and has high water bill tends to pay more for the protection and maintenance of Ipo watershed. The result negates other literature where education and age are directly proportional with their willingness to pay. The findings on this study can be attributed to the awareness of people to environment degradation in the Philippines due to internet and social media access. Only 23% or 3 out of 10 Filipinos finish college (Philippine News Agency 2017) but sixty-seven million or 7 out of 10 has access to the internet thru mobile phones and computers from age bracket 18 – 24 (Porcalla 2018).

5.2 Tourists

5.2.1 Descriptive Statistics

Nine out of ten (90.1%) tourists in Mt. Balagbag are willing to pay Php 36.8 per visit. The average hiker per month of mountain is 20,000 according to the collection officer of Sitio Balagbag, of Barangay San Isidro. The total willingness to pay value of tourists for the rehabilitation and maintenance of Ipo watershed with the assumption of one visit per year is Php 736,000.

Table 6: The rate of Tourists Willing To Pay

	Frequency	Percentage
No. of Respondents	151	100%
Willing To Pay	136	90.1%
Not Willing To Pay	15	9.9 %

Socio - Demographic Profile of Tourists

Majority of the tourists respondents are female (57%) and are from the millennial generation with age range of 18 – 42 (96%). Travelling is a common characteristic of this generation, where their main objective is to have a transformational, health and cultural experiences. Sixty six (66%) are bachelor's degree holder and 83% are single. The 68.4% of the respondents earns below 10, 000 to 30, 000 per month.

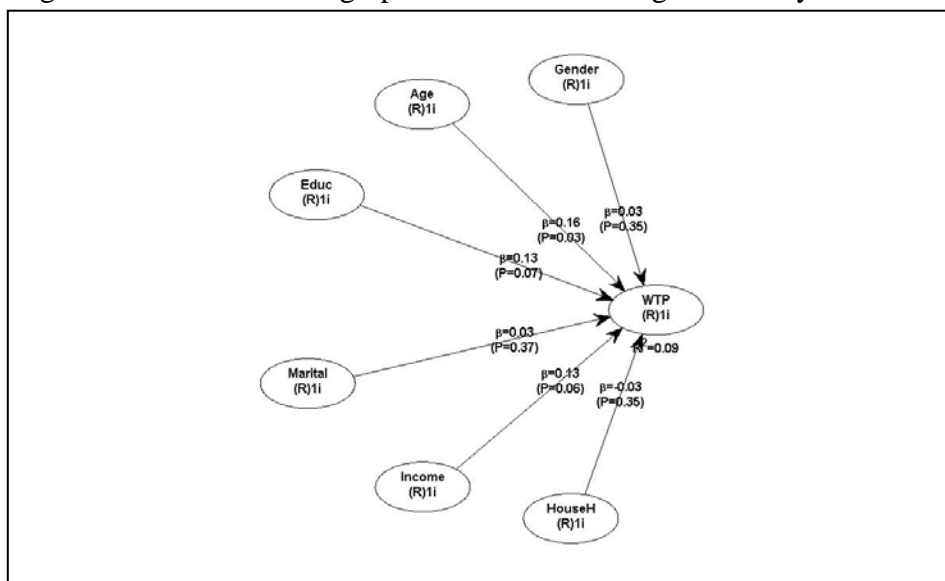
Table 7 Socio-Demographic Profile of the Tourists

		(n = 136)	
		Count	%
Gender	Male	59	43%
	Female	77	57%
Age Bracket	18 - 30	76	56%
	31-42	54	40%
	43-60	5	4%
	61 and older	1	1%
Educational Attainment	Elementary	7	5%
	Secondary	5	4%
	Vocational	13	10%
	Bachelor's	90	66%
	Masteral's	16	12%
	Professional	4	3%
	Doctorate	1	1%

Marital Status	Single	113	83%
	Married	23	17%
	Separated		0%
	Widowed		0%
Monthly Income	below 10,000	33	24%
	10,001 - 20,000	32	24%
	20,001 - 30,000	28	21%
	30,001 - 40,000	13	10%
	40,001 - 50,000	5	4%
	50,001 & above	25	18%
No. Of Households	a. 1 – 2	17	13%
	b. 3-4	50	37%
	c. 5-6	40	29%
	d. 7 and above	29	21%

5.2.2 SEM Results for Tourists

Figure 4 Effects of Demographic Profile to Willingness to Pay



Model fit and quality indices:

Average path coefficient (APC)=0.084, P=0.047

Average R-squared (ARS)=0.087, P=0.048

Average adjusted R-squared (AARS)=0.045, P=0.049

Average block VIF (AVIF)=1.234, acceptable if ≤ 5 , ideally ≤ 3.3

Average full collinearity VIF (AFVIF)=1.256, acceptable if ≤ 5 , ideally ≤ 3.3

Tenenhaus GoF (GoF)=0.295, small ≥ 0.1 , medium ≥ 0.25 , large ≥ 0.36

Table 8 Effects of the Demographic Variables on the WTP

	Path coefficient	SE	p-value	f ²
Gender → WTP	0.032	0.085	0.353	0.001
Educ → WTP	0.155	0.083	0.031	0.029
Age → WTP	0.126	0.083	0.067	0.027
Marital → WTP	0.028	0.085	0.372	0.000
Income → WTP	0.130	0.083	0.060	0.030
HouseH → WTP	-0.034	0.085	0.347	0.002

Notes: f² is the Cohen's (1988) effect size coefficient: .02=small, .15=medium, .35=large. SE = Standard Error.

Tourists are more immersed in the natural world compared with water concessionaires. Education has effect on tourists' willingness to pay for the reforestation and protection of Ipo watershed which is consistent with other Asian studies (Kaffashi, 2014 and Pei-Wei Wang, 2012). This can be attributed to the fact that educated people has a better understanding of the importance of biodiversity conservation to sustain the ecosystem services rendered by watersheds.

5.3 WTP of Water Concessionaires Versus Tourists

Table 12: The rate of WTP compared with Highest Bid

	Mean WTP (Pesos)	Highest Bid (Pesos)	Percentage
Water Concessionaires	61.24	200	30.62 %
Tourists	36.8	50	73.6 %

The current environmental fee for Maynilad concessionaires is 20% of the basic charges, Based on the data gathered 84% of the respondents has an average bill range of below Php 500.00 to Php 1,000. If we will use Php 500.00 per month as the average bill, the concessionaire pays Php 100.00 for the environmental fee which is higher than 61.24 - the supplementary fee derived from study. The authors see no significant effect to the concessionaires for the average spending of Filipinos is Php 17, 916.67 per month (PSA 2015). While the current environmental fee rate in Mt. Balagbag is Php 30/ hike, this is higher than the willingness to pay value derived from the survey which is 36.8. The proposed additional fee will give a Php 66.8/ hike, there will be more than 100% increase, but the author sees no effect on the rate of climbers once additional fee is imposed since the average environmental fee range in Rizal and Bulacan province is Php 50 – 100/ hike. This research revealed that in general tourist respondents are more willing to pay than water concessionaires. The average value of tourists' willingness to pay is 73.6% of the highest bid given in the instrument compared with 30.62% of water concessionaires.

5.4 Non-Response Rate

Non-response rate are high in water concessionaires and tourists due to internet survey. The low response rate maybe the result of poor internet connection since majority is sent thru messenger. Lack of time of the chosen respondents and non-interest regarding the topic can also be a factor.

Table 9 Non-Response Rate

Respondents	No. of Sent Questionnaires	No. of Respondents	Response Rate
Water Concessionaires	197	158	80.2%
Tourist	233	151	64.8%

5.5 Willingness to Pay value versus Estimated Cost of Ipo Watershed Maintenance

Table 10: Supplementary Fees from two beneficiaries of Ipo Watershed

	WTP Value (Pesos)	Population	Annual Contribution (Pesos)
Water Concessionaires	61.24	699,048	513,716,114.29
Tourists	36.8	20,000	736,000.00
		TOTAL	514,452,114.29

Note: Population for Water Concessionaires is the number of households and for the Tourist is the average number of hikers per year in Mt. Balagbag.

Table 11: Cost of Maintaining Ipo Watershed (Calderon et. al, 2004)

AREA	COST/ AREA PER YEAR	COST PER YEAR
6,600 ha	17,600.00	116,160,000

The estimated cost of maintaining Ipo watershed per year is Php 116, 160, 000 based on the study of Calderon et. al (2004) and can be sufficed by the supplementary environmental fees in this study of Quezon City water concessionaires and hikers of Mt. Balagbag amounting to Php 514, 452, 114. 29.

5.6 Not Willing To Pay

Majority of respondents not willing to pay view that environment protection is government responsibility, some can't afford additional payment and lack of confidence on the management of funds to be collected which is not new since the Philippines ranked 111th out of 180 countries by Transparency International in 2017 (Transparency.org, 2018) . The results also show that significant number of Ipo Watershed beneficiaries is not aware that environment conservation is their responsibility.

6 CONCLUSION

The payment for the maximum satisfaction of the water concessionaires and tourists as buyers of ecosystem services are Php 61.24 per month and Php 36.8 per hike respectively. The hypothetical willingness to pay value can be a basis for Maynilad Water Services Incorporated (MWSI) and Mt. Balagbag tourism authority in charging additional environmental fee that can aid different NGO reforesting Ipo watershed. People benefitting from the watershed must realize that they are the buyers of ecosystem services and the water, fresh air, enrichment of spirit and aesthetic scenery of the place are the product and services being rendered by the protected area. It is their duty to pay for these product and services to sustain the area. Willingness to Pay has been used by several authors as a tool to inform respondents regarding the current state of a protected area, where they are the beneficiaries. The respondent's environmental consciousness increases after knowing the condition of the area. The government must also look into innovative strategies in disseminating information that environment conservation is the responsibility of all the stakeholders; beneficiaries, community and the government.

7 APPENDIX

Appendix 1 Summit of Mt. Balagbag (Ambrosia 2018)



Appendix 2 Illegal Wildlife Trading (Bravo 2011)



Appendix 3: Rampant Illegal logging inside Ipo Watershed (Ochavo 2013)



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