Scientific Publications

Research Journal of Ecology and Environmental Sciences, 2023, 3, 594
www.scipublications.org/journal/index.php/rjees
DOI: 10.31586/rjees.2023.594

Article

Socioeconomic Drivers of Conservation Commitment: Residents' Willingness to Pay for Ecosystem Services Provided by Beaches in Lagos State, Nigeria

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Abstract: Beaches are known for their ability to provide people with several services – these are generally referred to as 'ecosystem services' and they have been identified as one of the ways through which nature relates to humans. However, beaches in Nigeria are challenged by mismanagement caused by anthropogenic factors. It is expected that people will demonstrate a certain amount of dedication to protecting this ecosystem to address this issue. Sometimes, a person's commitment to conservation is based on the advantages they anticipate or are currently experiencing from the ecosystem, which are a result of their socioeconomic traits. Against this backdrop, this study captured individuals' commitment as their Willingness to Pay (WTP) for these ecosystem services, assessed their level of awareness of the various ecosystem services provided by beaches and investigated the impact of socioeconomic factors on participants' willingness to pay. Data were collected using a structured questionnaire and a total of 221 responses were analyzed using descriptive statistics, logistic regression and content analysis. The results revealed that the cultural service provided by beaches was the most common ecosystem service identified by the participants. Furthermore, most of the participants were willing to pay less than $3 for beach maintenance while the major determinants of WTP were age, household size and education. This study recommended that the government should work with other stakeholders to set up programs that would boost people's awareness of ecosystem services provided by beaches as well as reiterate the need to maintain this ecosystem to ensure continued enjoyment of the services provided.

Keywords: Conservation Commitment, Willingness to Pay, Beach, Ecosystem Services, Education, Lagos State, Nigeria

How to cite this paper:
UGBEKILE, P. C. Socioeconomic Drivers of Conservation Commitment: Residents' Willingness to Pay for Ecosystem Services Provided by Beaches in Lagos State, Nigeria. *Research Journal of Ecology and Environmental Sciences*. Retrieved from https://www.scipublications.com/journal/index.php/rjees/article/view/594

Academic Editor:
Carmelo Maria Musarella

Received: January 11, 2023
Accepted: May 5, 2023
Published: May 6, 2023

1. Introduction

According to Enriquez-Acevedo *et al*.[1], beaches provide several ecosystem services such as the deposition of wave-transported sediments, a center for tourist attraction, protection of residential areas from the impact of flooding in the coastal environment and habitat for various life forms. Their utilization by humans is largely determined by factors such as the availability of infrastructural facilities, their proximity to residential areas as well as the level of maintenance or management carried out on these beaches [2, 3]. It is therefore pertinent that people showcase a level of commitment to conserve this natural resource if they wish to continue benefiting from its ecosystem services, but where the environment has been negatively impacted by anthropogenic factors, renewal and restoration efforts should be advanced. This is because anthropogenic factors such as beach littering with plastics (cups, cans or straws), cigarette stubs, and food bags, as well as pollution of beaches with body waste like urine, have been reported as major threats

facing the marine and coastal environment globally [4, 5], making it a primary concern for environmentalists and policymakers [6, 7].

There have been reported cases of beach pollution in Nigeria [8] and apart from a negative environmental outlook, beach pollution adversely affects fauna and flora, impeding their growth and ability to be sustainable. Considering that human-induced pollution has been identified as the major contributor to the mismanagement of aquatic bodies in Nigeria, it is pertinent that the socioeconomic dynamism surrounding the interaction between humans and their environment be examined. This study examined restorative and renewal efforts through the lens of willingness to pay (WTP) for ecosystem services by addressing the following objectives:

- Identifying residents' awareness level of the ecosystem services provided by beaches.
- Examining the socioeconomic factors affecting the respondents' willingness to pay for ecosystem services.

1.1. Does Awareness of Ecosystem Services Provided by Beaches Affect Conservation Commitment?

Awareness of ecosystem services is a driving force for ensuring that policies around the preservation, protection and conservation of these ecosystems - in the case of this current study, beaches - are sustainable. This is the foundation on which this current study is built because an understanding of the various ecosystem services provided by beaches could influence people's behavior, which is seen in their conservation commitment measured as their WTP for these services. Broadly speaking, ecosystem services refer to how nature supports human survival [9, 10] and these contributions have been divided into the following categories: a). goods, which refer to the resources that nature provides for human consumption, such as food, drink, and raw materials for manufacturing; b). services, which describe the functions of the natural environment, such as tourism and recreation; and c). cultural contributions, such as religious objectives [11, 12].

This study investigated participants' awareness of ecosystem services by looking at them from four key perspectives. These dimensions—supporting, regulating, cultural, and provisioning services—were chosen because they offered a thorough framework for examining ecosystem services and useful criteria for separating them into different categories. The fundamental presumption guiding the adoption of these dimensions is that since cultural and provisioning services have a direct impact on people, people may exhibit a positive WTP. For services that are offered to protect the environment, such as provisioning and regulation, this can be different. This imbalance (between direct and indirect services) does not exist for those who have developed healthy relationships with the environment, and whose major objective is to ensure that the environment is protected. Additionally, the adoption of these categories was motivated by the study, which found that participants were more knowledgeable about the cultural and provisioning services offered by beaches than the regulating and supporting services [1]. This might have occurred due to a hazy distinction between regulating and supporting services. The likelihood of bias created by the heuristic rather than practical questionnaire design was another factor noted by the authors.

The questionnaire for this study was created to guarantee that participants understood the distinction between both services by striving to make a clear distinction between these qualities. Examples of phrases that illustrate both services used in this study include 'beaches serve as homes to different plants and animals (support)' and 'beaches help in controlling flooding and erosion (regulate)'. This was done to support La Notte et al.'s [13] contention that when categorizing ecosystem services, researchers must take into account the possibility that respondents might not be able to distinguish between supporting and regulating functions of the ecosystem. Herein lies the strength and reliability of this current study.

The participants' willingness to pay for these environmental services was reportedly influenced by their awareness level [1]. It has been suggested, nonetheless, that awareness alone is insufficient to compel people to behave in the intended way [14, 15]. This suggests that other latent variables, such as socioeconomic variables like age, gender, and income, may be contributing to people's WTP, even though Enriquez-Acevedo et al.'s [1] study found inconsistent results regarding the influence of socioeconomic variables on WTP. The next section examines the corpus of research as a source of data for examining the impact of specific socioeconomic variables like gender, income and age on people's WTP for ecosystem services provided by beaches.

1.2. Socioeconomic Factors Affecting WTP for Ecosystem Services

According to some studies [16, 17], people become more health conscious as they age, which increases their propensity to target ecosystem services that directly affect them. Additionally, it has been determined that education is a powerful instrument for encouraging sustainability [18, 19]. Interaction between humans and the environment, which is the bedrock of sustainability, fills the gap between direct and indirect ecosystem services. As a result, those who have this understanding would value both direct and indirect ecological benefits equally. At the time this research was conducted, there was hardly any study conducted in Nigeria on the impact of socioeconomic factors on people's WTP for ecosystem services compared to the tons of studies carried out outside Africa [20-23]. The analysis of some of these variables in the context of Nigeria was motivated by the varied perspectives characterizing the findings of earlier studies addressing the impact of socioeconomic variables on WTP.

Based on the presumption that older individuals would prefer an environment where they could escape the 'hustle and bustle' of Lagos State, the effect of age on WTP was examined in this study. The study by Arnberger et al., [24] that found older individuals are keener to visit coastal environments and green areas birthed the apriori expectation that older people would be more prepared to pay for these ecosystem services to continue enjoying the benefits. Arnberger et al., [24] stated that older people are most vulnerable to the impact of high temperatures and that one coping strategy is visiting coastal environments and green spaces, given that most major cities in Nigeria are susceptible to high temperatures due to the current environmental challenge posed by climate change [25, 26]. Herein lies the justification for including age as a factor in determining WTP. Diverse perspectives on the level of commitment of each gender type have been expressed concerning gender as a predictor of WTP. According to certain studies, males are more deliberate when it comes to making a financial commitment to protect the environment [27]. According to several sources [22, 23, 28], female people are more prepared to pay for services or programs that will eventually safeguard the environment. While other research has suggested that gender is a weak predictor of WTP [29, 30]. Despite these varied opinions, there is a distinct difference between the WTP for ecosystem services and the real price that people are prepared to pay for them. This study looked at how gender differs in the notion of WTP, from showing an interest in preserving the ecosystem to contributing money to its preservation. This study was inspired by Chiwaula et al.'s [31] findings, which looked at gender disparities in WTP for using specific technologies. They found that while female participants showed higher WTP for these technologies than their male counterparts, the amount they were willing to pay was less than that of the male participants. They linked this to several factors, including educational limitations and a lack of access to financial resources.

Since they are aware of the effects of overexploitation and other unfavorable environmental behaviors on the ecosystem, people with higher levels of education should be more environmentally aware and thus more inclined to safeguard the environment, according to the ex-ante assumption. The extent to which this has resulted in a monetary commitment by Nigerian citizens, however, is unknown, if at all. The lack of a significant

association between educational attainment and willingness to participate in beach clean-up exercises in the experiments done by Lucrezi and Digun-Aweto [13] makes it even more important to look into the relationship between education and WTP for ecosystem services in this current investigation. Would education make individuals pay for the upkeep of this ecosystem if it did not affect their intention to actively participate in beach clean-up exercises? In their study on the influence of education on Chinese citizens' WTP for environmental protection, Tianyu and Meng [33] found that the more educated a person is, the more ready they are to pay for environmental preservation.

The participants' income level was another important factor considered in this study. This element was added to investigate its relationship to the price that people are willing to pay for the environmental services that beaches offer. The rationale behind including this component is that ceteris paribus, individuals with higher incomes should be prepared to pay not only any amount but even more than those with lower incomes to maintain the ecosystem services provided by beaches. This is in response to reports from numerous studies showing WTP is restricted by individual income levels [34]. The majority of beachgoers in Nigeria are either middle- or high-income earners, according to a study on beach development [35]. This study investigated whether this claim translated into a higher WTP for ecosystem services offered by beaches to reaffirm it. The study by Ren et al. [36], which identified occupation and household size as predictors of WTP among other variables (government staff membership and educational level), provides support for this premise. Studies have also attempted to determine how household size and income relate to each other [37]. Gheblawi and Sherif [37] claim that, among other things, household size and income level determine how much money households spend to address specific demands. According to some studies, there is a negative correlation between household size and WTP. For a given level of income, an increase in household size is followed by an increase in the cost of meeting the needs of the household members, which are highly individualized and beach conservation may not be a top priority [38]. Most Nigerians place a higher priority on their needs for food, shelter, good health, and clothing than on any other need. Education is also a priority for families with dependents, and it may be difficult to pay for beach conservation given the country's rising living costs as a result of rising commodity prices [39]. Additionally, some other studies have indicated a favorable connection between household size and WTP [40, 41]. These many viewpoints support the inclusion of household size as a factor when examining the socioeconomic factors influencing WTP for ecosystem services offered by beaches.

All these socioeconomic factors were collectively considered because of the likely correlation between them and the tendency for such interaction to affect the overall WTP of an individual. Conclusive evidence showing the relationship between socioeconomic characteristics and WTP has not been drawn as the reports from several studies have shown different dimensions of association - positive, negative, significant or insignificant. This also agrees with Kang and Nicholls [29] who further stated that a definite understanding of this relationship is pivotal for implementing sustainable policies and programs. They also opined that additional analysis would be required to provide conclusive evidence on the relationship between these variables and reiterated the proposition by Luo and Deng [42] on the need to adopt the inclusion of socio-psychological in the investigation of this relationship. This study, therefore, assessed other motivating factors in the investigation of people's WTP for beach services.

2. Methodology

2.1. Study Area and Sampling procedure

The coastline of Nigeria is over 800km and this area is known to support various economic activities as well as a large population. In terms of beach characteristics, morphology and vegetation, the coastline is further divided into four zones: the strand coast, the transgressive mud coast, the barrier lagoon coast and the Niger Delta, with the Niger Delta being the longest (about 450km) with the largest number of biodiversity [43]. There are also several coastal cities and Lagos State has been identified as one of the coastal cities experiencing rapid growth in population as well as intensified push and pull factors in rural and urban areas respectively [43]. Among other states in Nigeria, Lagos State has the highest number of beaches, which include but are not limited to Oniru Beach, Tarkwa Bay Beach, Ilashe Beach, Landmark Beach, Elegushi Beach and Bar Beach. Lagos State is one of the 36 states in Nigeria. It is located in the southwestern region of Nigeria and is bounded in the north-east by Ogun State. It is divided into five (5) administrative divisions: Ikeja, Badagry, Ikorodu, Lagos [Eko] and Epe, twenty (20) local government areas and thirty-seven (37) local council development areas. This study adopted a mixed methods approach to data collection. Primary data was collected using a well-structured questionnaire and interview session, which were analyzed using quantitative and qualitative techniques. A pilot study was conducted to test the questionnaire's validity, reliability and simplicity of understanding. A total of 231 participants were recruited for this study, but data analysis was conducted using 221 questionnaires, which represented about 96 percent of the total questionnaires distributed for the study because of their completeness and accuracy. 13 participants indicated that they were interested in an interview session. The questionnaire obtained information on demographic characteristics such as age, marital status, educational level and household size, and the participants' awareness level of ecosystem services provided by beaches by asking them the extent to which they agreed or disagreed with certain statements like "beaches serve as homes to different plants and animals" and "beaches provide water for domestic purposes". A 5-point Likert scale ranging from strongly agree to strongly disagree was used to measure the extent of agreement with the statements in this section. The last section assessed their WTP. The participants were given an imaginary scenario to which they were asked to respond with a "yes" or "no." Those who responded "yes" were asked to choose from a list of possible amounts that represented their WTP for the ecosystem services offered by beaches, while those who responded "no" were asked to explain why they were not willing to make a financial commitment.

2.2. Data Analysis

Data analysis was conducted using IBM SPSS statistical software. Descriptive statistics like frequency, mean, and percentages were used to analyze the respondents' socioeconomic characteristics, WTP and awareness level of ecosystem services. Logistic regression was used to investigate the socioeconomic factors that affected the participants' WTP.

The logistic regression modeling adheres to the guidelines used by Al-Amin et al. [44]. This is shown as:

$$Log_e\left[\frac{\{P(Y=1)|X_1 \ldots . X_p\}}{1-P(Y=1|X_1 \ldots . X_p}\right] = Log_e\left(\frac{\pi}{1-\pi}\right) \quad (1)$$

$$= \alpha + \beta_1 X_1 + \cdots + \beta_p X_p \quad (2)$$

$$= \alpha + \sum_{j=1}^{p} \beta_j X_j \quad (3)$$

π= conditional probability represented by $P(Y = 1 | X_1 \ldots, X_p)$[2].

The above expression is the logit transformation of the conditional probability. This could also be expressed as:

$$\mathrm{P}\,(\mathrm{Y}=1|X_1,\ldots\ldots X_p=\left(\frac{1}{1+e^{\alpha+\Sigma_{j=1}^{p}\beta_j X_j}}\right) \quad (4)$$

With the non-response probability written as:

$$\mathrm{P}\,(\mathrm{Y}=0|X_1,X_p)=1-\mathrm{p}(\mathrm{Y}=1|X_1X_p)=\left(\frac{1}{1+e^{\alpha+\Sigma_{j=1}^{p}\beta_j X_j}}\right) \quad (5)$$

The simplified model can be written as:

$$\ln\left(\frac{p}{1-p}\right)=\beta 0+\beta iXi+\varepsilon \quad (6)$$

where:
p = the probability that a participant will be willing to pay
p/(1-p) = the odds of a participant's WTP
β_0 = constant term
β_i = vector of the predictors of WTP (socioeconomic characteristics - age, gender, educational level, household size, marital status, employment status and income)
ε = error term.
Finally, content analysis was carried out on the data collected through interviews to extract the emerging themes.

3. Results

3.1. Participants' Demographic Characteristics and Ecosystem Services Awareness

The results, as shown in Table 1, revealed that, of the 221 participants, 159 indicated a positive willingness to pay, 20 stated that they were not willing to pay, and 42 participants were uncertain about their WTP. The majority of the participants who were willing to pay for beach management were males (62.89%) and the mean age of the participants included in this study was 30 years, with approximately 50 percent of those who indicated positive WTP within the age bracket of 26-33 years. A greater proportion of the participants who were willing to pay for beach management were single and reported that they had undergone postsecondary education (91%). Furthermore, most of those with a positive WTP (76.73%) were gainfully employed, compared to the alternative of either being unemployed or self-employed. Approximately 82 percent of the participants who showed positive WTP earned above ₦50,000 ($120) monthly, which is higher than Nigeria's minimum wage of ₦30,000 (< $100). The mean household size was four people. The results in Table 2 also revealed that the participants were mostly aware of the cultural service (tourism) provided by beaches, with a mean value of 4.59/5.00 (91.76% score), followed by supporting services, regulating and provisioning services.

3.2. Socioeconomic Factors Affecting Willingness to Pay for Ecosystem Services Provided by Beaches

The results in Table 3 showed that out of the participants who were willing to pay for beach management (n = 159), most (41%; n = 65) were willing to pay less than $3. The result from the logistic regression is shown in Table 4. The model presented a likelihood ratio chi-square of 121.722 with a p-value < 0.001 which indicates the fitness of the entire model relative to a null model or model with no predictors. The Cox and Snell's R-Square value of 0.423 indicates that 42.3% of the variation in the model's dependent variable is explained by the multinomial logistic model. Also, the Nagelkerke R-squared value of

0.539, which is higher than Cox and Snell's R-square indicates a relationship of 53.9% between the independent and outcome variables. Furthermore, the McFadden score of 0.358 indicates a relationship of 35.8% between the independent and outcome variables.

Table 1. Distribution of Socioeconomic Characteristics by Participants' Willingness to Pay

	Yes (n = 159)		No (n = 20)		Maybe (n = 42)		
Variables	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Frequency**	**Percentage**	**Mean**
Age							
18 - 25	14	8.80	0	0.00	5	11.90	29.69
26 - 33	79	49.69	1	5.00	31	73.81	
34 - 41	46	28.93	5	25.00	6	14.29	
42 - 49	16	10.06	8	40.00	0	0.00	
Above 49	4	2.52	6	30.00	0	0.00	
Total	159	100.00	20	100.00	42	100.00	
Gender							
Female	59	37.11	7	35.00	20	47.62	
Male	100	62.89	13	65.00	22	52.38	
Total	159	100.00	20	100.00	42	100.00	
Marital status							
Single	87	54.72	2	10.00	29	69.05	
Married	67	42.14	17	85.00	11	26.19	
Co-habiting/Part-ners	5	3.14	0	0.00	11	26.19	
Widowed	0	0.00	1	5.00	0	0.00	
Total	159	100.00	20	100.00	42	100.00	
Education							
No formal education	2	1.26	9	45.00	0	0.00	
Secondary	12	7.55	5	25.00	0	0.00	
Post-secondary	145	91.19	6	30.00	42	100.00	
Total	159	100.00	20	100.00	42	100.00	
Employment status							
Unemployed	7	4.40	1	5.00	4	9.52	
Self employed	29	18.24	16	80.00	6	14.29	
Employed	122	76.73	3	15.00	30	71.43	
Prefer not to say	1	0.63	0	0.00	2	4.76	
Total	159	100.00	20	100.00	42	100.00	
Income							
Less than N50,000	11	6.92	1	5.00	2	4.76	
N50,000 - N149,999	50	31.45	5	25.00	17	40.48	
N150,000 - N249,999	25	15.72	2	10.00	6	14.29	
Above N249,999	56	35.22	3	15.00	6	14.29	
Prefer not to say	17	10.69	9	45.00	11	26.19	
Total	159	100.00	20	100.00	42	100.00	
Household size							
<= 3	64	40.25	1	5.00	18	42.86	
4-6	81	50.94	16	80.00	16	38.10	4.00
7-9	12	7.55	2	10.00	7	16.67	
> 9	2	1.26	1	5.00	1	2.38	
Total	159	100.00	20	100.00	42	100.00	

Table 2. Participants' Awareness of Ecosystem Services Provided by Beaches

Ecosystem Services	Statement	N	Minimum	Maximum	Mean	Std. Deviation
Supporting Services	Beaches serve as home to different plants and animals.	221	2	5	4.10	0.87
Provisioning Services	Beaches provide water for domestic purposes, irrigation and industrial purposes.	221	1	5	3.28	1.10
	Beaches are good fishing environment	221	1	5	3.05	1.01
Regulating Services	Beaches help in controlling flood and preventing erosion	221	1	5	3.57	0.90
	Beaches play a role in sediment storage and transport	221	1	5	3.73	0.88
	Beaches help in managing sea level rise	221	1	5	3.83	0.92
Cultural Services	Beaches are excellent tourist centers.	221	2	5	4.59	0.69

**5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, 1 Strongly Disagree*

Table 3. Distribution of Participants' Willingness to Pay for Ecosystem Services

Willingness to Pay						
	Yes		No		Maybe	
Amount	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Less than $1	45	28.30	0	0	22	52.38
$1 - $2.99	65	40.88	0	0	11	26.19
$3 - $4.99	17	10.69	0	0	4	9.52
$5 - $6.99	19	11.95	0	0	1	2.38
Above $6.99	11	6.92	0	0	0	0
$0	2	1.26	20	100	4	9.52
Total	159	100	20	100	42	100

Table 4. Determinants of Willingness to Pay for Ecosystem Services Provided by Beaches

Are you Willing to Pay?	Variables	Co-efficient	Standard Error	Wald	df	Sig.	Exp(B)
Yes	Intercept	-4.9506	4613.2293	0.0000	1	0.9991	
	Age	-0.1218***	0.0468	6.7819	1	0.0092	1.1296
	Household Size	-0.5985***	0.2301	6.7681	1	0.0093	1.8194
	Female	0.1471	0.9640	0.0233	1	0.8787	1.1585
	Single	-13.4156	4605.1665	0.0000	1	0.9977	0.0000
	Married	-14.0202	4605.1662	0.0000	1	0.9976	0.0000
	Co-habiting/Partners	-19.8870	4606.5963	0.0000	1	0.9966	0.0000
	Unemployed	7.7937	272.6191	0.0008	1	0.9772	2425.1997
	Self-employed	10.8030	272.6137	0.0016	1	0.9684	49167.8317
	Employed	8.8594	272.6161	0.0011	1	0.9741	7040.1668
	Less than N50,000	-4.2999	3.5236	1.4891	1	0.2223	0.0136
	N50,000 - N149,999	-2.3238	1.2617	3.3924	1	0.0655	0.0979
	N150,000 - N249,999	-2.7297	1.6183	2.8454	1	0.0916	0.0652
	Above N249,999	-1.9383	1.3006	2.2210	1	0.1361	0.1439
	No formal education	-3.9100**	1.5553	6.3201	1	0.0119	49.8985
	Secondary	1.1611	1.3900	0.6978	1	0.4035	3.1935
Maybe	Intercept	25.5751	48.1181	0.2825	1	0.5951	
	Age	-0.1073***	0.0489	4.8119	1	0.0283	0.8983
	Household Size	0.0141	0.0932	0.0229	1	0.8798	1.0142

	Female	0.0341	0.4378	0.0061	1	0.9379	1.0347
	Single	-16.0620***	0.9160	307.724	1	<0.001	1.058e-7
	Married	-15.9080***	0.928	293.935	1	<0.001	1.234e-7
	Co-habiting/Partners	-0.8960	421.3170	0.0000	1	0.9980	0.4080
	Unemployed	-8.3010	48.0885	0.0298	1	0.8630	0.0002
	Self-employed	-8.8940	48.0858	0.0342	1	0.8533	0.0001
	Employed	-8.9318	48.0827	0.0345	1	0.8526	0.0001
	Less than N50,000	-1.7784	1.0036	3.1403	1	0.0764	0.1689
	N50,000 - N149,999	-0.3858	0.5807	0.4413	1	0.5065	0.6799
	N150,000 - N249,999	-0.5876	0.7042	0.6963	1	0.4040	0.5557
	Above N249,999	-1.2304	0.6767	3.3055	1	0.0690	0.2922
	No formal education	-13.1742	1032.6286	0.0002	1	0.9898	0.0000
	Secondary	-16.1717	68.4048	0.0559	1	0.8131	0.0000
Model Fit Information							
Model	AIC	BIC	-2LL	2	df	Significance	
Intercept	314.043	320.839	310.043				
Final	252.320	361.061	188.320	121.722	30	<0.001	
Pseudo R-squared							
Cox and Snell	0.423						
NagelKerke	0.539						
McFadden	0.358						
Likelihood Ratio Tests							
Effect	AIC (Reduced Model)	BIC (Reduced Model)	-2LL (Reduced Model)	2	df	Significance	
Intercept	252.320	361.061	188.320	.000	0		
Age	263.607	365.552	203.607	15.286	2	<0.001	
Household size	255.390	357.335	195.390	7.070	2	0.029	
Gender	248.349	350.294	188.349	0.028	2	0.986	
Marital Status	241.745	330.097	189.745	1.424	6	0.964	
Employment	249.323	337.676	197.323	9.003	6	0.173	
Income	248.223	329.779	200.223	11.903	8	0.156	
Education	266.211	361.359	210.211	21.891	4	<0.001	

Reference category = 'No'; ***1% Level of Significance; **5% Level of Significance

For positive WTP relative to negative WTP, only age ($\boldsymbol{\beta}$ = -0.1218, $p < 0.05$), household size ($\boldsymbol{\beta}$ = -0.5985, $p < 0.05$) and education ($\boldsymbol{\beta}$ = -3.91, $p < 0.05$) were statistically significant. This means If a participant's age increases by one year, the likelihood that the individual will be willing to pay for beach services against the alternative of being unwilling is expected to decrease by 1.1296 (or the multinomial log-odds for +WTP relative to -WTP is expected to decrease by 0.1218) while holding all other variables in the model constant. Likewise, with an increase in household size by one person, the multinomial log-odds for +WTP relative to -WTP is expected to decrease by 0.5985, i.e., the odds of willingness to pay for ecosystem services decrease by 1.8194. Also, compared to individuals who possess either secondary or post-secondary education, an individual with no formal education is about 49.8985 times less likely to show a positive willingness to pay given that the multinomial log-odds for +WTP relative to -WTP is expected to decrease by 3.91.

For uncertain WTP (maybe) relative to negative WTP, only age ($\boldsymbol{\beta}$ = -0.1073, $p < 0.05$) and marital status ($\boldsymbol{\beta}_{single}$ = -16.0620, $p < 0.01$; $\boldsymbol{\beta}_{married}$ = -15.9080, $p < 0.01$) were statistically significant. This implies that, if a participant's age increases by one year, the likelihood of uncertainty regarding WTP against the certainty of unwillingness is expected to decrease

by 0.8983. Likewise, the multinomial log-odds for uncertainty regarding WTP relative to a negative WTP is expected to decrease by 16.0620 and 15.9080 for single and married individuals respectively, compared to widowed.

4. Discussion

4.1. Participants' Awareness Level of Ecosystem Services Provided by Beaches

This study partially agreed with the findings by Enriquez-Acevedo et al. [1] that cultural services provided by beaches have been recognized by most people as the most relatable ecosystem services; however, contrary to the opinion of the authors, participants in Nigeria were more aware of the supporting and regulating services provided by beaches than they were of provisioning. This was probably because this current research addressed the limitations faced by previous studies [1] by adopting multiple question types for each service to effectively distinguish them. Surprisingly, one could have expected that ecosystem services that are associated with direct use, in this case, provisioning services, would have been at the forefront in terms of participants' recognition compared to other services that have an environmental impact. This could probably be interpreted to mean that these participants are well informed about the ongoing crises posed by climate change on the environment and therefore perceive the beach as an instrument for controlling its impact on the environment while serving its purpose as a source of revenue for the government, following their identification of cultural services as the main ecosystem services. Heink et al. [45] explained the importance of adopting the most appropriate classification system while investigating ecosystem services, so an explanation for this result could have been a function of the questionnaire design. Perhaps a more explicit and relatable design with a clear distinction among these ecosystem services [13] would have yielded a different outcome.

4.2. Socioeconomic Determinants of WTP for Ecosystem Services

The result, which revealed the non-significance of income as a predictor of WTP, contradicts the findings of several authors who had highlighted income as a predictor of willingness to pay [1], [46]. In Nigeria, Amaghionyeodiwe [47] reported that income significantly predicted WTP for health sector benefits in Nigeria. This could probably be interpreted to mean that the participants do not place as much value on beaches and therefore are not motivated to be financially committed. Furthermore, even though Aina [35] reported that beachgoers in Nigeria are usually middle- and high-income, the results from this study provide evidence showing that high-income levels do not always translate into increased WTP. A different outcome could probably have been gotten if this study had considered beach quality [48] as a determinant, as observed in a previous study [1], where it was discovered that the amount that the participants were willing to pay decreased with an increased level of pollution. Given this, future studies could consider the mediating effect of beach quality on the impact of income on WTP.

Contrary to some studies regarding the impact of age on WTP [49, 50], older participants were less likely to be financially committed to beach management. The claim that older persons are more likely to travel to exciting areas such as beaches [49] was rebutted by the evidence from this study conducted in Nigeria, which agrees with previous findings that a negative relationship exists between age and WTP [1]. One of the factors resulting in negative WTP among the older groups in Nigeria could probably be the impact of the COVID-19 pandemic, which has limited the extent to which people visit public areas, hence, impacting their desire to show financial commitment to the management of these areas like beaches. Studies have shown that risk perception significantly affects the use of public areas [51-53], so if this age group perceives that their exposure is higher with these visits, especially with various media releases regarding the spread of the virus among vulnerable groups (ages 50 and above), it would impact their

WTP for beach management. Another reason could be linked to the investigation by Ojembe and Ebe Kalu [54], who revealed that a major challenge facing the older age groups in Nigeria is loneliness caused by the migration of family members in search of "greener pastures," and this could affect their visit to places like beaches due to the absence of persons to accompany them to these locations, thus leading to a negative WTP.

The inverse relationship observed between household size and WTP agrees with the findings of several authors who have explored the effect of family size on WTP [38, 55], even though a positive WTP has also been reported by some other authors [41, 56]. A probable reason for this result is that the recent unfavorable economic conditions like high inflation and poor power supply affecting businesses in Nigeria have led most families to examine their priorities; beach visits or any other form of tourism have been replaced by other pressing needs such as food, clothing, shelter and education. This means that an additional family member translates to increased spending on these necessities and a reduced inclination to contribute financially towards the management of beaches to ensure that their ecosystem services are sustained.

Likewise, at the level of informal education, the participants showed a negative WTP, indicating that those who were not formally educated were less likely to show financial commitment than those who were formally educated. Although this result agrees with the apriori expectation that the more educated people get, the easier it becomes for them to embrace practices that would lead to environmental conservation [57], the significance of higher education on WTP in the absence of other variables could be argued. This follows a study conducted by Khan and Ahmed [17] on the impact of education on WTP, where it was reported that the likelihood of people with a higher level of education paying more to continue enjoying a particular service is higher than that of those with lower levels of education, but this difference was not statistically significant. A definitive result was obtained by Vicente et al. [58], where they reported that WTP for environmental protection was stronger in groups without a university degree than for those who had obtained a university education. In Nigeria, to ensure that the positive influence of educational level on WTP is significant, the government authorities need to develop programs that emphasize the health benefits of beach visits, a major benefit currently identified by developed nations around the world [59-61].

4.3. Other Motivating Factors for WTP Identified by the Participants

Further investigation was conducted during the interview sessions to ascertain the motivations behind the choices of the participants. Two questions were asked during this session: did you express a positive WTP? And what motivates you to want to pay for or not pay for these services provided by the beach? The results are presented in Table 5. The outcome of the sessions revealed that the following factors are motivators for a positive or negative WTP expressed by the participants, as opined by previous researchers: connectedness to the beach [62, 63], mental health benefit [64], need for social connectedness [65], financial capacity [66, 67], environmental awareness and protection [68-70], as well as a sense of responsibility [71].

Those who indicated a positive WTP communicated a favorable perception of these factors, while those with a negative WTP lacked connectedness, a sense of responsibility, and financial capacity. With the increase in poverty status in Nigeria [72], even though the country is currently facing economic crises, the focus can be redirected to other motivators apart from financial capacity. Collaboration between the government and existing conservation groups in the country like the Lagos Beach Cleaners, a non-profit organization responsible for beach maintenance across Lagos State, could create a pathway to sustainable beach management practices nationwide. This would expose people to the opportunity of learning more about the relevance of beaches amid climate change impacts, potentially leading to a desire to act favorably towards this ecosystem to ensure its continued conservation.

Table 5. Content Analysis Showing Emerging Themes from Interview Session

Did you express a positive willingness to pay?				
	Yes		**No**	
Number of Participants	10		3	
	Highlighted Statements from Interview Session and Key Context			
Interview Question	**Statement**	**Key Contexts**	**Statement**	**Key Contexts**
What motivates you to want to pay or not pay for these ecosystem services?	"..hmm, I have always been a fan of exploring nature. Whatever represents nature, be it water, forest, animals, it doesn't matter where they are. I will find them and explore"	Fan of exploring nature - C	"How does actions or inactions on the beach affect me? Those who want to pay for beach management can go ahead but as far as I am concerned, I do not see the point"	Unaffected/I do not see the point -C
	" I value my sanity. Have you seen Lagos life? If I don't go out to places like beaches, zoo, or even parks, the stress could make me go crazy"	Value sanity and stress could make me go crazy - M	"There are family needs I have not met, so I cannot spend my money on the beach. If I had lots of money, I probably would be willing to pay for beach management, but I don't"	Family needs/probably willing to pay with more money - F
	"Beyond our own gratification, we need to consider the fact that there are animals living in this aquatic environment. Do we want to make them homeless? Well, personally, I think someone has got to look out for them. Why not me?"	Someone has got to look out for the animals - C	"It is not my responsibility. The government should step up to their responsibility"	- SR
	"If I have the money to save the environment, why would I not want to do so? We cannot continue to fold our arms waiting for the government to do everything for us. If we don't take up this responsibility, we will be impacted negatively"	I have money/save environment/ – F/E/SR		
	"Well, I'm not really social at work. The seriousness of the work environment makes it difficult for me to freely establish relationships. So when I go to the beach, I assume everyone there is out to catch some fun. So I easily bond even with strangers".	Easily bond with strangers - S		

	"I believe the current global crises caused by climate change is enough motivation for me. If I can play my part to protect the environment and consequently myself, then I will do it"	- E		
	"I get stressed easily and I find the beach a great place to knock off the pressure and stay mentally alert"	Stress/mentally alert - M		
	"I am willing to pay the extra because I love beaches"			
	"My kids get to meet other kids when we go to the beach. I feel it's a good environment, although different from their regular school. They get to interact with other kids who are not their classmate. It helps their interpersonal relationships".	Interact/interpersonal relationship - S		
	"err..I don't know…I guess it's the responsible thing to do as a Lagosian"	SR		
Emerging Themes and Colour Coding				
Connectedness to Nature	C			
Mental Health Benefit	M			
Social Connectedness	S			
Financial Capacity	F			
Environmental Awareness/Protection	E			
Sense of Responsibility	SR			

5. Conclusion

Although the study estimated WTP, it was assumed that this was influenced by the most identified ecosystem service, i.e., cultural services, thereby failing to tackle the question of whether people would pay more for ecosystem services that directly affect them (cultural and provisioning) than those with environmental impact (regulating and supporting). Dimensioning the ecosystem system services into human and environmental impacts and conducting a comparative analysis between the WTP for each of these dimensions could be employed for future studies. This would guide the government on the areas to focus on if their policies on beach management were embraced. Furthermore, awareness of the ecosystem services provided by beaches in Nigeria is not sufficient to make people behave sustainably toward this environment. It is therefore important that the key factors such as education, age and household size identified in this study be investigated by the government to ensure that individuals are encouraged to act. The government and other stakeholders need to focus on senior citizens by educating them on the need to visit beaches and other green and blue spaces, emphasizing the mental health

benefits that would be derived from their visits. However, for this to be effective, policies that would boost the confidence of these vulnerable groups, especially following the COVID pandemic, by ensuring safety measures are in place upon visits to this environment need to be enacted. As reported in this study, a high-income level does not translate into conservation commitment. Therefore, the government needs to build trust with the citizens, as policies fail if there is no trust between the government and the citizens. The government could achieve this by taking steps to support existing bodies that are sustainability-driven.

Funding

The author appreciates the postgraduate school of the University of Exeter, Department of Geography for part funding provided during the conduct of this research study.

Conflict of Interest

The author declares no conflict of interest.

References

[1] Enriquez-Acevedo, T., Botero, C.M., Cantero-Rodelo, R., Pertuz, A. and Suarez, A. Willingness to pay for Beach Ecosystem Services: The case study of three Colombian beaches. Ocean & Coastal Management, 2018, 161, 96-104. https://doi.org/10.1016/j.ocecoaman.2018.04.025

[2] Oh, C.O., Draper, J. and Dixon, A.W. Comparing resident and tourist preferences for public beach access and related amenities. Ocean & Coastal Management, 2010, 53(5-6), 245-251. https://doi.org/10.1016/j.ocecoaman.2010.04.007

[3] Araújo, M.C., Silva-Cavalcanti, J.S. and Costa, M.F. Anthropogenic litter on beaches with different levels of development and use: a snapshot of a coast in Pernambuco (Brazil). Frontiers in Marine Science, 2018, 5, 233. https://doi.org/10.3389/fmars.2018.00233

[4] Amosu, A.O., Bashorun, O.W., Babalola, O.O., Olowu, R.A. and Togunde, K.A. Impact of climate change and anthropogenic activities on renewable coastal resources and biodiversity in Nigeria. Journal of Ecology and the Natural Environment, 2012, 4(8), 201-211. https://academicjournals.org/journal/JENE/article-full-text-pdf/148482011294

[5] Danladi, I.B., Kore, B.M. and Gül, M. Vulnerability of the Nigerian coast: An insight into sea level rise owing to climate change and anthropogenic activities. Journal of African Earth Sciences, 2017, 134, 493-503. https://doi.org/10.1016/j.jafrearsci.2017.07.019

[6] Rochman, C.M. Microplastics research—from sink to source. Science, 2018, *360*(6384), 28-29. https://doi.org/10.1126/science.aar7734

[7] Marsden, P., Koelmans, A.A., Bourdon-Lacombe, J., Gouin, T., D'Anglada, L., Cunliffe, D., Jarvis, P., Fawell, J. and De France, J. Microplastics in drinking water. Research Report, Wageningen University and Research, Geneva: World Health Organization, 2019. https://library.wur.nl/WebQuery/wurpubs/553048

[8] Elenwo, E.I. and Akankali, J.A. The effects of marine pollution on Nigerian coastal resources. Journal of Sustainable Development Studies, 2015, 8(1), 209-224. https://www.infinitypress.info/index.php/jsds/article/view/1099

[9] Millennium Ecosystem Assessment (MEA). Ecosystems and human well-being: current state and trends. Coastal systems. Island Press, Washington, D.C., USA. 2005, 5, 563-563. http://biblioteca.cehum.org/bitstream/123456789/143/1/Millennium%20Ecosystem%20Assessment.%20ECOSYSTEMS%20AND%20HUMAN%20WELL-BEING%20WETLANDS%20AND%20WATER%20Synthesi.pdf

[10] Tsujimoto, M., Kajikawa, Y., Tomita, J. and Matsumoto, Y. A review of the ecosystem concept—Towards coherent ecosystem design. Technological Forecasting and Social Change, 2018, 136, 49-58. https://doi.org/10.1016/j.techfore.2017.06.032

[11] Barbier, E.B. Valuing ecosystem services as productive inputs. Economic policy, 2007, 22(49), 178-229. https://doi.org/10.1111/j.1468-0327.2007.00174.x

[12] Barbier, E.B., Hacker, S.D., Kennedy, C., Koch, E.W., Stier, A.C. and Silliman, B.R. The value of estuarine and coastal ecosystem services. Ecological monographs, 2011, 81(2), 169-193. https://doi.org/10.1890/10-1510.1

[13] La Notte, A., D'Amato, D., Mäkinen, H., Paracchini, M.L., Liquete, C., Egoh, B., Geneletti, D. and Crossman, N.D. Ecosystem services classification: A systems ecology perspective of the cascade framework. Ecological indicators, 2017, 74, 392-402. https://doi.org/10.1016/j.ecolind.2016.11.030

[14] Alshaikh, M. and Adamson, B. From awareness to influence: Toward a model for improving employees' security behaviour. Personal and Ubiquitous Computing, 2021, 25(5), 829-841. https://doi.org/10.1007/s00779-021-01551-2

[15] Rodríguez-Cruz, L.A. and Niles, M.T. Awareness of climate change's impacts and motivation to adapt are not enough to drive action: A look of Puerto Rican farmers after Hurricane Maria. PloS ONE, 2021, 16(1), p.e0244512. https://doi.org/10.1371/journal.pone.0244512
[16] Kriwy, P. and Mecking, R.A. Health and environmental consciousness, costs of behaviour and the purchase of organic food. International Journal of Consumer Studies, 2012, 36(1), 30-37. https://doi.org/10.1111/j.1470-6431.2011.01004.x
[17] Khan, J.A. and Ahmed, S. Impact of educational intervention on willingness-to-pay for health insurance: A study of informal sector workers in urban Bangladesh. Health Economics Review, 2013, 3(1), 1-10. https://doi.org/10.1186/2191-1991-3-12
[18] Wals, A.E. and Benavot, A. Can we meet the sustainability challenges? The role of education and lifelong learning. European Journal of Education, 2017, 52(4), 404-413. https://doi.org/10.1111/ejed.12250
[19] Leal Filho, W., Raath, S., Lazzarini, B., Vargas, V.R., de Souza, L., Anholon, R., Quelhas, O.L.G., Haddad, R., Klavins, M. and Orlovic, V.L. The role of transformation in learning and education for sustainability. Journal of Cleaner Production, 2018, 199, 286-295. https://doi.org/10.1016/j.jclepro.2018.07.017
[20] Halkos, G. and Matsiori, S. Determinants of willingness to pay for coastal zone quality improvement. The Journal of Socio-Economics, 2012, 41(4), 391-399. https://doi.org/10.1016/j.socec.2012.04.010
[21] Birdir, S., Ünal, Ö., Birdir, K. and Williams, A.T. Willingness to pay as an economic instrument for coastal tourism management: Cases from Mersin, Turkey. Tourism Management, 2013, 36, 279-283. https://doi.org/10.1016/j.tourman.2012.10.020
[22] Nyström, S. The willingness to pay extra for environmental certificated hotels in Stockholm. Master's Thesis, 2017, Uppsala: SLU, Dept. of Economics. http://urn.kb.se/resolve?urn=urn:nbn:se:slu:epsilon-s-6593
[23] Susskind, A.M. Guests' reactions to in-room sustainability initiatives: An experimental look at product performance and guest satisfaction. Cornell Hospitality Quarterly, 2014, 55(3), 228-238. https://doi.org/10.1177/1938965514533744
[24] Arnberger, A., Allex, B., Eder, R., Ebenberger, M., Wanka, A., Kolland, F., Wallner, P. and Hutter, H.P. Elderly resident's uses of and preferences for urban green spaces during heat periods. Urban Forestry & Urban Greening, 2017, 21, 102-115. https://doi.org/10.1016/j.ufug.2016.11.012
[25] Adesoye, P.O. Analysis of climatic data of Ibadan metropolis: implications for green city. Urban Agriculture, Cities and Climate Change. Alex Von Humboldt Fdn, Cuvillier Verlag Göttingen. Germany, 2011, 51-57.
[26] Adunola, A.O., 2012, April. Urban residential comfort in relation to indoor and outdoor air temperatures in Ibadan, Nigeria. In 7th Windsor Conference: The changing context of comfort in an unpredictable world Cumberland Lodge, Windsor, UK. 2012, 12-15. https://www.researchgate.net/profile/Adewale-Adunola/publication/354950375_URBAN_RESIDENTIAL_COMFORT_IN_RELATION_TO_INDOOR_AND_OUTDOOR_AIR_TEMPERATURES_IN_IBADAN_NIGERIA/links/6155953d63675972d2a69e33/URBAN-RESIDENTIAL-COMFORT-IN-RELATION-TO-INDOOR-AND-OUTDOOR-AIR-TEMPERATURES-IN-IBADAN-NIGERIA.pdf
[27] Kang, K.H., Stein, L., Heo, C.Y. and Lee, S. Consumers' willingness to pay for green initiatives of the hotel industry. International Journal of Hospitality Management, 2012, 31(2), 564-572. https://doi.org/10.1016/j.ijhm.2011.08.001
[28] Han, H., Hsu, L.T.J., Lee, J.S. and Sheu, C. Are lodging customers ready to go green? An examination of attitudes, demographics, and eco-friendly intentions. International Journal of Hospitality Management, 2011, 30(2), 345-355. https://doi.org/10.1016/j.ijhm.2010.07.008
[29] Kang, S. and Nicholls, S. Determinants of willingness to pay to stay at a green lodging facility. International Journal of Hospitality Management, 2021, 94, p.102834. https://doi.org/10.1016/j.ijhm.2020.102834
[30] Borisenko, S., 2018. Tourists´ Willingness to Pay for Green Hotel Practices (Doctoral dissertation, Instituto Politecnico de Leiria (Portugal)), 2018. https://www.proquest.com/openview/a8dd36aca164ebbc1747e26d1fb5e58c/1?pq-origsite=gscholar&cbl=2026366&diss=y
[31] Chiwaula, L.S., Chirwa, G.C., Binauli, L.S., Banda, J. and Nagoli, J. Gender differences in willingness to pay for capital-intensive agricultural technologies: the case of fish solar tent dryers in Malawi. Agricultural and Food Economics, 2018, 6(1), 1-15. https://doi.org/10.1186/s40100-018-0096-2
[32] Lucrezi, S. and Digun-Aweto, O. "Who wants to join?" Visitors' willingness to participate in beach litter clean-ups in Nigeria. Marine Pollution Bulletin, 2020, 155, p.111167. https://doi.org/10.1016/j.marpolbul.2020.111167
[33] Tianyu, J. and Meng, L. Does education increase pro-environmental willingness to pay? Evidence from Chinese household survey. Journal of Cleaner Production, 2020, 275, p.122713. https://doi.org/10.1016/j.jclepro.2020.122713
[34] Kniivilä, M. Users and non-users of conservation areas: Are there differences in WTP, motives and the validity of responses in CVM surveys? Ecological economics, 2006, 59(4), 530-539. https://doi.org/10.1016/j.ecolecon.2005.11.017
[35] Aina, C.O. A Holistic Approach to Beach Development in Badagry Local Government in Nigeria: A Case of Whispering Palm Beach Resort. Journal of Advances in Social Science and Humanities, 2019, 5(9), 1063-1083. https://doi.org/10.15520/jassh.v5i9.459
[36] Ren, Y., Lu, L., Zhang, H., Chen, H. and Zhu, D. Residents' willingness to pay for ecosystem services and its influencing factors: A study of the Xin'an River basin. Journal of Cleaner Production, 2020, 268, p.122301. https://doi.org/10.1016/j.jclepro.2020.122301

[37] Gheblawi, M.S. and Sherif, S.A. Determination of factors affecting expenditures on three major food groups in Al-Ain, the United Arab Emirates (UAE). Emirates Journal of Food and Agriculture, 2007, 19(2), 15-23. https://doi.org/10.9755/ejfa.v12i1.5172
[38] Taale, F. and Kyeremeh, C. Households' willingness to pay for reliable electricity services in Ghana. Renewable and Sustainable Energy Reviews, 2016, 62, 280-288. https://doi.org/10.1016/j.rser.2016.04.046
[39] Omeje, A.N., Mba, A.J. and Anyanwu, O.C. Impact of insecurity on enterprise development in Nigeria. Journal of Entrepreneurship in Emerging Economies, 2022, (ahead-of-print). https://doi.org/10.1108/JEEE-11-2021-0449
[40] Abdullah, S. and Mariel, P. Choice experiment study on the willingness to pay to improve electricity services. Energy Policy, 2010, 38(8), 4570-4581. https://doi.org/10.1016/j.enpol.2010.04.012
[41] Gunatilake, H., Maddipati, N. and Patail, S., 2012. Willingness to pay for good quality, uninterrupted power supply in Madhya Pradesh, India. South Asia Working Paper Series, 2012, November 12. http://hdl.handle.net/11540/1266
[42] Luo, Y. and Deng, J. The New Environmental Paradigm and nature-based tourism motivation. Journal of Travel research, 2008, 46(4), 392-402. https://doi.org/10.1177/0047287507308331
[43] Zabbey, N., Giadom, F.D. and Babatunde, B.B. Nigerian coastal environments. In World Seas: An Environmental Evaluation. Academic Press, 2019, 835-854. https://doi.org/10.1016/B978-0-12-805068-2.00042-5
[44] Al-Amin, A.Q., Masud, M.M., Sarkar, M.S.K., Leal Filho, W. and Doberstein, B. Analysing the socioeconomic and motivational factors affecting the willingness to pay for climate change adaptation in Malaysia. International Journal of Disaster Risk Reduction, 2020, 50, p.101708. https://doi.org/10.1016/j.ijdrr.2020.101708
[45] Heink, U., Hauck, J., Jax, K. and Sukopp, U. Requirements for the selection of ecosystem service indicators–The case of MAES indicators. Ecological Indicators, 2016, 61, 18-26. https://doi.org/10.1016/j.ecolind.2015.09.031
[46] Risén, E., Nordström, J., Malmström, M.E. and Gröndahl, F. Non-market values of algae beach-cast management–Study site Trelleborg, Sweden. Ocean & coastal management, 2017, 140, 59-67. https://doi.org/10.1016/j.ocecoaman.2017.02.009
[47] Amaghionyeodiwe, L.A. Determinants of the Willingness to Pay for Public Sector Health Care Services: An Empirical Study of Rural and Urban Communities in Nigeria. In The Palgrave Handbook of Agricultural and Rural Development in Africa. Palgrave Macmillan, Cham. 2020, 219-245. 10.1007/978-3-030-41513-6_11
[48] Brandolini, S.M.D.A. and Disegna, M. ICZM and WTP of stakeholders for beach conservation: policymaking suggestions from an Italian case study. Tourism Economics, 2015, 21(3), 601-628. https://doi.org/10.5367/te.2013.0360
[49] Rahman, M.M. Visitors' willingness to pay for visiting the Patenga beach, Bangladesh. ASEAN Journal of Hospitality and Tourism, 2013, 13(1), 59-68. https://www.researchgate.net/profile/Mohammad-Rahman-77/publication/301891381_Visitors'_willingness_to_pay_for_visiting_the_Patenga_Beach_Bangladesh/links/599daaf8aca272dff12fca31/Visitors-willingness-to-pay-for-visiting-the-Patenga-Beach-Bangladesh.pdf
[50] Arnberger, A., Allex, B., Eder, R., Ebenberger, M., Wanka, A., Kolland, F., Wallner, P. and Hutter, H.P. Elderly resident's uses of and preferences for urban green spaces during heat periods. Urban Forestry & Urban Greening, 2017, 21, pp.102-115. https://doi.org/10.1016/j.ufug.2016.11.012
[51] Dryhurst, S., Schneider, C.R., Kerr, J., Freeman, A.L., Recchia, G., Van Der Bles, A.M., Spiegelhalter, D. and Van Der Linden, S. Risk perceptions of COVID-19 around the world. Journal of Risk Research, 2020, 23(7-8), 994-1006. https://doi.org/10.1080/13669877.2020.1758193
[52] de Bruin, W.B. and Bennett, D. Relationships between initial COVID-19 risk perceptions and protective health behaviors: a national survey. American Journal of Preventive Medicine, 2020, 59(2), 157-167. https://doi.org/10.1016/j.amepre.2020.05.001
[53] Wise, T., Zbozinek, T.D., Michelini, G., Hagan, C.C. and Mobbs, D. Changes in risk perception and self-reported protective behaviour during the first week of the COVID-19 pandemic in the United States. Royal Society open science, 2020, 7(9), p.200742. https://doi.org/10.1098/rsos.200742
[54] Ojembe, B.U. and Ebe Kalu, M. Describing reasons for loneliness among older people in Nigeria. Journal of Gerontological Social Work, 2018, 61(6), 640-658. https://doi.org/10.1080/01634372.2018.1487495
[55] Hernandez-Maskivker, G.M., Nicolau, J.L., Ryan, G. and Valverde, M. A reference-dependent approach to WTP for priority. Tourism Management, 2019, 71, 165-172. https://doi.org/10.1016/j.tourman.2018.10.003
[56] Abdullah, S. and Mariel, P., 2010. Choice experiment study on the willingness to pay to improve electricity services. Energy Policy, 2010, 38(8), 4570-4581. https://doi.org/10.1016/j.enpol.2010.04.012
[57] Kanayo, O., Ezebuilo, U. and Maurice, O. Estimating the willingness to pay for water services in Nsukka area of south-eastern Nigeria using contingent valuation method (CVM): implications for sustainable development. Journal of Human Ecology, 2013, 41(2), 93-106. https://doi.org/10.1080/09709274.2013.11906556
[58] Vicente, P., Marques, C. and Reis, E. Willingness to pay for environmental quality: the effects of pro-environmental behavior, perceived behavior control, environmental activism, and educational level. SAGE Open, 2021, 11(4), p.21582440211025256. https://doi.org/10.1177/21582440211025256
[59] Bergou, N., Hammoud, R., Gibbons, J., Davidson, N., Tognin, S., Reeves, G., Shepherd, J. and Mechelli, A. The mental health benefits of visiting canals and rivers: An ecological momentary assessment study. PLoS ONE, 2022, 17(8): e0271306. https://doi.org/10.1371/journal.pone.0271306

[60] Buckley, R. Nature tourism and mental health: parks, happiness, and causation. Journal of Sustainable Tourism, 2020, 28(9), 1409-1424. https://doi.org/10.1080/09669582.2020.1742725
[61] Subiza-Pérez, M., Vozmediano, L. and San Juan, C. Green and blue settings as providers of mental health ecosystem services: Comparing urban beaches and parks and building a predictive model of psychological restoration. Landscape and Urban Planning, 2020, 204, p.103926. https://doi.org/10.1016/j.landurbplan.2020.103926
[62] Lee, J.S.H. and Oh, C.O. Effects of the perceived trustworthiness of the government and connectedness to nature on payments for ecosystem services: A case study of national parks in South Korea. Journal of Outdoor Recreation and Tourism, 2021, 36, p.100446. https://doi.org/10.1016/j.jort.2021.100446
[63] Sato, M., Aoshima, I. and Chang, Y. Connectedness to nature and the conservation of the urban ecosystem: Perspectives from the valuation of urban forests. Forest Policy and Economics, 2021, 125, p.102396. https://doi.org/10.1016/j.forpol.2021.102396
[64] Luo, W., Chen, C., Li, H., Hou, Y., Xia, Y., Liu, J., Wu, L. and Yao, J. Residential open space and the perception of health benefits: How much is the public willing to pay?. Journal of Environmental Management, 2022, 316, p.115273. https://doi.org/10.1016/j.jenvman.2022.115273
[65] Li, C., Shi, Y., Ni, Q. and Zhao, M. Effects of social interactions and information bias on the willingness to pay for transboundary basin ecosystem services. Journal of Environmental Management, 2021, 296, p.113233. https://doi.org/10.1016/j.jenvman.2021.113233
[66] Wicker, P., Swierzy, P. and Breuer, C. Willingness-to-volunteer versus willingness-to-pay in sports clubs: How organizational capacity affects individual decisions. European Journal for Sport and Society, 2018, 15(4), 332-351. https://doi.org/10.1080/16138171.2018.1540325
[67] Wang, Y., Liu, X., Huang, M., Zuo, J. and Rameezdeen, R. Received vs. given: Willingness to pay for sponge city program from a perceived value perspective. Journal of Cleaner Production, 2020, 256, p.120479. https://doi.org/10.1016/j.jclepro.2020.120479
[68] Wang, Y., Sun, M., Yang, X. and Yuan, X. Public awareness and willingness to pay for tackling smog pollution in China: a case study. Journal of Cleaner Production, 2016, 112, 1627-1634. https://doi.org/10.1016/j.jclepro.2015.04.135
[69] Cicatiello, L., Ercolano, S., Gaeta, G.L. and Pinto, M. Willingness to pay for environmental protection and the importance of pollutant industries in the regional economy. Evidence from Italy. Ecological Economics, 2020, 177, p.106774. https://doi.org/10.1016/j.ecolecon.2020.106774
[70] Gan, Y., Xu, T., Xu, N., Xu, J. and Qiao, D. How environmental awareness and knowledge affect urban residents' willingness to participate in rubber plantation ecological restoration programs: Evidence from hainan, china. Sustainability, 2021, 13(4), p.1852. https://doi.org/10.3390/su13041852
[71] Odonkor, S.T. and Adom, P.K. Environment and health nexus in Ghana: A study on perceived relationship and willingness-to-participate (WTP) in environmental policy design. Urban Climate, 2020, 34, p.100689. https://doi.org/10.1016/j.uclim.2020.100689
[72] World Bank. Nigeria economic update: resilience through reforms. 2021. Available from: https://www.worldbank.org/en/country/nigeria/publication/nigeria-economic-update-resilience-through-reforms