Ghana's Elmina Beach and Economic Welfare Improvement

Jonathan D. Quartey * Nana Gyeedu Yarney
Department of Economics, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.
*E-mail address of corresponding author: jdquartey@yahoo.com

Abstract
Beach resources have been a source of income for many economies around the world. Even though Ghanaian beaches are not well developed and sometimes suffer from abuse, they are quite well patronized by both local and non-local pleasure seekers. Currently there is generally no fee charged for recreational access to the vast expanse of Ghanaian beaches, which remain largely undeveloped open access resources. This paper sought to quantify the consumers' surplus (CS) of pleasure seekers who visit the beach. It specifically assessed the value visitors place on the beach and subsequently determined an appropriate access fee for the Elmina beach in Ghana as a means for welfare improvement among the local people. The individual Travel Cost Model was used. The trip generation function was estimated through a Negative Binomial Count Model. The annual average number of visits made to the beach per visitor was approximately 7, with a maximum trip cost of 8 Ghana cedis (US$4.08). Travel cost, age, educational level, multi-destination and multi-purpose trips were significant determinants of recreational trips made to the beach. The consumer's surplus per visitor per trip for local and non-local visitors was 39.43 Ghana cedis (US$20.12) and 64.47 Ghana cedis (US$32.89) respectively. Tests of hypotheses revealed a significant difference between local and non-local visitors, with multi-destination and multi-purpose trips influencing the number of trips made to the beach significantly. The maximum access fee was 74.2 Ghana cedis (US$37.88) per visitor per annum. The results also indicated that extracting some CS of pleasure seekers at the beach through access fees could provide livelihood support for the several chronically poor people in Elmina, where the beach is located. Additionally, the environmental and coastal erosion threats faced by the residents could be checked to some extent through these fees to reduce climate change vulnerability among the people.
Keywords: consumers' surplus, economic welfare, Elmina beach, Ghana, travel cost.

1. Introduction

Equity in wealth distribution is one of the pillars of sustainable development. This essentially requires the better-off to part with some of their wealth for the benefit of the deprived. Leisure is widely considered as an indicator of wellbeing. This means the more leisure one seeks the better economic wellbeing one is expected to have attained. An innovative way to achieve equity is to identify leisure seekers and legitimately extract some of their net benefit from leisure, measured in monetary terms (consumers' surplus), for the benefit of the poor. In the context of environmental resources, this is possible because most poor countries still have enough amounts of environmental wealth, which, the better off desire to enjoy, creating a win-win situation for both the well off and the poor. Several thousand people in developing countries live in poverty even though they dwell in environmentally well-endowed communities. The inability of these communities to use this natural wealth to enhance their welfare appears to emanate from ignorance of the true value of these resources and how to have access to it efficiently. Bridging the knowledge gap and generating the appropriate innovation could possibly turn things around for several of the poor people in many resource-rich communities in developing countries. While development assistance has a part to play in this direction, the surest way out could be for the deprived to tap their natural wealth efficiently for economic welfare improvement. This could be the way out for the people of Elmina in Ghana, custodians of one of Ghana's richest beaches.

Elmina is twelve (12) kilometers west of Cape Coast, the capital of the Central Region of Ghana. Elmina beach forms part of the central coast line of Ghana and has a very large sandy beach of medium tidal energy. The beach has very cozy environment that attracts thousands of visitors annually. It harbors two international heritage monuments namely the St. George's castle and Fort Ceonraadsburg. The impressive castle of St. George was built by the Portuguese as far back as 1482 and holds the status of Africa's oldest European building. The St. George's Castle and the Fort Coenraasburg on St. Jago Hill, attracts over 100,000 tourists annually including many foreigners who spent almost 2, 600,000 Euros on visits in 2006 (KEEA Municipal Assembly 2006). On the local front, about 75% of the inhabitants are engaged in the fishing industry. There are about 9,669 fishermen, using 924 canoes (Ghana Tourist Board 2005).

2. The problem and objectives of the study

Annan-Prah and Ameyaw-Akumfi (1991) were cited by the Komenda-Edina-Eguafo-Abirem (KEEA) Municipal Assembly (2006) to have found that the Elmina beach was under serious environmental threat. Evidence of coastal erosion from increased sea level rise poses a threat to the existing monuments which are all along the beach (Armah and Amlalo 1998). The Komenda-Edina-Eguafo-Abirem (KEEA) Municipal Assembly believes that with improved tourist infrastructure, the revitalization of the existing monuments and the development of other important cultural sites, tourism could become a major economic activity in Elmina. This could lead to some improvement in the general standard of living in the town (KEEA Municipal Assembly 2006). The district is one of the 39 deprived districts in Ghana. Hence each pupil is given 25 Ghana pesewas (US$0.13) as schooling support as well as a waiver of school levies. Fishing and subsistence farming are the main sources of livelihood support. The beach currently does not provide any direct financial support.

Even though the Elmina beach has served several generations of local and non-local users since the fifteenth century, its economic value has been taken for granted and has remained largely unknown. This knowledge gap has generated a situation in which the inhabitants do not derive adequate benefit and several portions of the beach have been misused for sand winning, illegal small-scale gold mining and waste disposal. Thus the beach stands the risk of destruction if policy makers do not act appropriately and in good time. To do this, policy makers need to be informed about the economic value of the beach resource. This paper sought to bridge this knowledge gap by computing the consumers' surplus for recreational users of the beach, which is their net benefit for using the lake and a measure of the economic welfare they derive from it. Bridging this knowledge gap would inform and therefore equip policy makers to put in place measures to stop the abuse as well as the unchecked sea erosion that is gradually claiming part of the resource. The general objective of this paper is to assess the capacity of the Elmina beach to serve as a source of economic welfare improvement. Specifically, it analyzed the factors affecting recreational visits, estimated visitors consumers' surplus for making recreational trips to the beach and determined an appropriate access fee for the Elmina beach, which could help the poor enjoy improved welfare without deterring pleasure seekers from using it. The individual Travel Cost Model was used.

3. Review of Literature

3.1 *Consumer's surplus*

Consumer's surplus (CS) refers to the difference between what a consumer is willing to pay and what he/she actually pays for consuming a particular good or service. Consumer's surplus (CS) is an approximation to the equivalent and compensating variations of income, which measure welfare changes due to price variations (Feldman 1987). This is the area below the Marshallian demand curve and above the market price. The CS is obtained by calculating the area under the demand curve, which is the integral of the area under the demand curve. In practice, various researchers have found other approaches of finding the CS in travel cost models. Blackwell (2007) found the consumer's surplus by taking the absolute value of the inverse of the coefficient of the travel cost variable in a trip generating function to get the consumer's surplus per annum per person. That is $CS/q = | 1/\beta|$. Where q is the total number of visits per annum and β is the coefficient of the travel cost variable in the trip generating function. Multiplying $| 1/\beta|$ by q gives the total CS. Three different estimates of CS were computed through this approach in this paper; one for local visitors, another for non-local visitors and a composite CS for both groups.

3.2 The Travel Cost Model

When used to estimate the welfare value of recreational benefits derived from ecosystems, the travel cost model (TCM) assumes the value of the site or its recreational services to be a function of peoples' willingness to pay (WTP) to get to the site (Parsons 2004). It uses actual behaviour (revealed choices) to infer values. The method is a demand-based approach which expresses the relationship between visitation rates and price paid to visit a particular recreational site. The basis of the travel cost method is that time and travel expenses incurred by visitors is the "price" of accessing the site. Their willingness to pay (WTP) to visit the site can be estimated using the number of trips made at different travel costs, which is analogous to estimating their WTP for marketed goods based on the quantity demanded at different prices.

The first step for the TCM is the creation of a trip generating function (TGF). This involves regressing visitation rates on travel cost to a site and other factors that affect visitation rates to a site such as income, socio-economic characteristics, etc. The consumer's surplus could be estimated through the TGF. The purpose of the trip generating function is to provide a model of site use. There are two types of travel cost models: zonal model and individual model. In the zonal travel cost (ZTC), a single site is mainly used without characteristics of individuals as dependent variables. The travelers are categorized based on their zone of origin or the natural breakdown of the surrounding area (Liston-Hayes and Hayes 1999).

The individual travel cost method is now regarded as the most defensible and widely applied method found in literature (Parson 2004). Different from the zonal model, the dependent variable in individual travel cost function is the number of trips taken by individuals but not by dwellers from different zones. The individual travel cost considers trips made by an individual to a site in the face of alternative sites. When the alternative sites are a lot the Random Utility Model (RUM) is used (Murdock 2006). Since the single individual is the object unit, the individual travel cost model can collect much more information and thus provides relatively closer travel-cost approximation of true consumer's surplus than the zonal model (Willis and Garrod 1991). This study used the linear model version of the TGF in additive form. The estimation was based on a Negative Binomial Count Model (NBCM) (Othman et al. 1992; Tang 2009), specified in equation 1.

$$v=\beta_0+\beta_1 TC+\beta_2 Y+\beta_3 Ps+\beta_4 A+\beta_5 E+\beta_6 Q+ \mathcal{E} \quad (1)$$

Where v is the total number of trips the respondent had made in the last year to the beach,

TC = the travel cost of the individual to the site,
Y = disposable income of the individual,
Ps= travel cost to a substitute site,
A = age of the individual (in years),
E = educational level of the individual,
Q= perceived quality of the beach,
$\mathcal{E}$ = error term and
βs are the parameters of the regression.

The definition and measurement of the opportunity cost of time is problematic. There is no agreed way of measuring the opportunity cost of time in existing literature. In practice, most studies estimate time cost as a fraction of the visitor's wage in some way. The fractions range from 0 to 1 in literature, although a common convention is to use 1/3 of the wage as the value of time (Hellerstein (1993); Englin and Cameron (1996); Bin *et al*., (2005) and Cesario (1976). Feather and Shaw (1999) have argued that for those on a fixed work week, the value of time could actually exceed the wage. Zawacki *et al*. (2000) and Bowker *et al*. (1996) used 0.25 and 0.5 respectively as wage multipliers. Sohngen *et al*. (2000) and Sarker and Surry (1998) used 0.3. Ward and Beal (2000) suggest 0% as appropriate, since individuals travel for leisure and recreation mostly during holidays when they face no loss of income. Parsons (2004) observed that the recreation demand literature has more or less accepted 25% as the lower bound and the full wage as the upper bound, although neither value enjoys full support (Hynes *et al*. 2004). This paper used a third of the wage rate as proposed by literature (Hellerstein 1993; Englin and Cameron 1996; Bin *et al*. 2005 and Cesario 1976).

The travel cost method follows a custom in which meanderers are distinguished from purposeful visitors (Hanley and Spash 1993). The former refers to individuals for whom the site visit is only part of the reason for their trip or one of many trips, whereas the latter refers to those individuals for whom a site visit is the only reason for their trip. The existence of meanderers gives rise to the question of the percentage of their travel costs which may be apportioned to their visit to the site in question. In many cases the meanderer problem is simply ignored by either omitting multi-destination or multi-purpose trips from the analysis or employing aggregate travel cost without adjustment to cater for the existence of meanderers. Parsons (2004) addressed this issue by introducing a dummy variable into his trip generating function which is adopted in this paper.

4. Methodology

Primary data was obtained from on-site administration of questionnaires on a face-to-face basis to individual visitors who were contacted while on site. The questionnaires were in three parts. The first part introduced the study and sought to obtain general information from respondents. The second part captured travel characteristics of individual visitors such as the number of trips made to the beach in the past one year, trip cost, time taken to reach site and time spent on site, expenditure on site, where visitor was coming from, means of travel and whether visitor had an alternative site in mind. The final part of the questionnaire was to ascertain the socio-economic characteristics of the respondents. Four trained postgraduate students administered the questionnaires in April and May, 2011 between 10:00am and 2:00pm each day. The first visitor to be encountered who agreed to respond to the questionnaires was engaged. Anybody who was intercepted within this time frame was included. Respondents were then asked to alert any other member of the surveying group of their inclusion. This work used a sample size of 284 obtained based on Saunders *et al*. (2007) computations for population sizes, maximum allowable error (10%) and appropriate sample sizes. Due to non-response, the sample size was realized after 400 questionnaires were administered.

The analysis used the linear model version of the TGF in additive form as used by Othman *et al*. (1992). The estimation was by both Ordinary Least Squares (OLS) method used by Othman *et al*. (1992) and the Negative Binomial Count Model (NBCM) of Tang (2009). The model specification was as specified in equation 1 previously.

5. Discussion of findings

From a total of 400 administered questionnaires 284 respondents provided responses for all questions. This represents a 71% response rate. Table 1 provides a summary of the main characteristics of respondents.

Table 1: Respondent characteristics (US$1.00 = GH¢1.96)

Characteristic	Mean	Standard deviation
Distance to the beach	10.5106km	10.00485km
Number of visits	6.75	6.269
Trip cost	GH¢ 5.1268	GH¢ 5.23728
Length of time to site	2.57 hours	2.14 hours
Length of time on site	2.76 hours	2.03 hours
Expenditure on beach	GH¢ 12.64	GH¢ 10.57
Age in years	28.85	10.08
Education	4.1338	1.31975
Annual disposable income	GH¢ 2154.9	GH¢ 1836.94

Source: Authors' fieldwork, 2011

The average distance travelled from visitors' residence in Ghana to the beach was 10.51km. On the average each visitor made 6.75 recreational visits to the beach in the past year, with the average trip cost being 5.13 Ghana cedis (US$2.62). Visitors spent about 2.57 hours travelling to the site on average and spent averagely 2.76 hours on site, spending on average 12.64 Ghana cedis (US% 6.45) on site. The maximum disposable income of visitors was 6600 Ghana cedis (US$ 3367.35). The regression results for the Negative Binomial Maximum Likelihood (NBML) estimation, which represent the trip generating function (TGF), are presented in Table 2.

Table 2: Regression results for Negative Binomial Maximum Likelihood

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	3.994790	0.163232	24.47310	0.0000
TC	-0.026881	0.000328	-8.192396	0.0000
PS	0.001779	0.001478	1.204200	0.2285
Y	-4.73E-05	2.65E-05	-1.786032	0.0741
A	-0.023750	0.004848	-4.898629	0.0000
E	-0.228525	0.029906	-7.641499	0.0000
Q	-0.063154	0.086937	-0.726442	0.4676

$R^2 = 0.461399$ adjusted $R^2 = 0.447739$

For a standard negative binomial model, the exponential (exp) of a coefficient shows the expected change in the dependent variable as a result of a unit change in the predictor, holding all other predictors constant (Tang 2009). A positive coefficient shows an increase whilst a negative shows a decrease. From Table 2 the travel cost, age and level of education were all significant at the 5% level. The negative coefficient of the travel cost (-0.02688) was as expected. One unit increase in travel cost results in the expected number of visits decreasing by a factor of exp (-0.02688) = 2.6914. A unit increase in the level of education will reduce expected number of visits by a factor of $\exp(-0.22852) = 0.796$. The negative relationship between the level of education and the number of recreational visits means, as the level of education increases the number of visits made will reduce. Those with higher level of education are usually employed and may not have very much leisure time at the beach. They may visit recreational sites on very few days, especially on holidays. As age increases by one unit, expected number of visits reduced by a factor of exp (-0.023750) = 0.977. The negative relationship between age and the number of visits could mean that older individuals are usually settled, either working or taking up other responsibilities that may not give them enough time for frequent active leisure, whilst younger individuals may not be too engaged. They are usually very active, energetic and find more time for recreation. This probably explains why the mean age of visitors was 29 years. Comparing NBML estimates for local and non-local regressions below, coefficients for travel cost, travel cost to substitute sites, age and education were significant at the 5% level for non-local visitors. All except travel cost to substitute sites had negative coefficients. NBML regression results for local visitors show that only coefficients for travel cost to the Elmina beach and education are significant at the 5% level.

$$\hat{v}_{\text{non-local}} = 4.149663 - 0.015511TC + 0.046020Ps - 0.0000247Y - 0.035164\text{A} - 0.307027\text{E} - 0.170671\text{Q}$$

$$SE = (0.239234)(0.000433)(0.019137)(0.0000307)(0.006432)(0.042776)(0.112415)$$

$$Z = (17.34566)(-3.581932)(2.404759)(-0.803207)(-5.467425)(-7.177503)(-1.518220)$$
$$R^2 = 0.466834 \qquad \text{adjusted } R^2 = 0.447191$$
$$\hat{v}_{\text{local}} = 2.673582 - 0.025361TC + 0.018679Ps + 0.0000191Y - 0.004742\text{A} - 0.207021\text{E} - 0.065788\text{Q}$$
$$SE = (0.171812)(0.000545)(0.039745)(0.0000386)(0.006260)(0.042776)(0.102240)$$
$$t = (15.56109)(-4.653107)(0.469973)(0.495255)(-0.75754)(-7.177503)(-0.643467)$$
$$R^2 = 0.247541 \qquad \text{adjusted } R^2 = 0.190392$$

5.1 Estimating Consumers' Surplus

The individual consumer's surplus per annum for local and non-local visitors are respectively defined as $\frac{cs}{q} = \frac{1}{\beta_1}$ which implies that,

$$\frac{CS_{local}}{q} = \left|\frac{1}{0.025361}\right| = 39.4306 \approx \text{GH¢ } 39.43 \; per\ annum$$

$$\frac{CS_{non-local}}{q} = \left|\frac{1}{0.015511}\right| = 64.4704 \approx \text{GH¢ } 64.47 \; per\ annum$$

Multiplying CS per head per annum by the total number of visitors in a year gives the CS for all visitors per annum. This is however difficult to find since the total number of visitors most of the time goes unchecked. The only available recent estimate of the number of visitors was obtained by the district administration in 2006. Using this conservative estimate of 25, 560 visitors per annum, and the proportion of non-local visitors as 30%, the total of local visitors would be 17,892 and non-local visitors 7,668. This gives a total consumers' surplus of 1,199,837.52 Ghana cedis (US$612,162.00) per annum.

5.2 Test of Hypotheses

Hypothesis 1

Ho: multi-purpose and multi-destination trips do not affect decisions to visit the Elmina beach.

H_1: multi-purpose and multi-destination trips affect decisions to visit the Elmina beach.

The null hypothesis is rejected when the p-value of the coefficient of multi-purpose and multi-destination trips (MnM) is less than 5%. The results from adding MnM variable to the regressors are shown in Table 3.

Table 3: Regression results with Multi-destination and Multi-purpose trip variable

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	4.043155	0.162997	24.80509	0.0000
TC	-0.026121	0.000327	-7.981907	0.0000
PS	-0.000664	0.001748	-0.380089	0.7039
Y	-5.36E-05	2.64E-05	-2.026781	0.0427
A	-0.021942	0.004863	-4.511590	0.0000
E	-0.215726	0.029882	-7.219238	0.0000
Q	-0.049889	0.086498	-0.576767	0.5641
MnM	-0.244063	0.095726	-2.549606	0.0108

$R^2 = 0.465584 \quad \text{adjusted } R^2 = 0.450037$

The MnM variable has a negative impact on the dependent variable and the corresponding p-value of 0.0108 is less than 5%. Hence, *Ho* is rejected in favour of *H_1*. That is, multi-purpose and multi-destination trips affect the decision to visit the Elmina beach.

Hypothesis 2

Ho: consumers' surplus for local visitors is the same as consumers' surplus for non-local visitors.

H_1: consumers' surplus for local visitors is not the same as consumers' surplus for non-local visitors.

From Tang (2009), the coefficients of TC for local visitors as against TC for non-local visitors can be compared by first making a dummy *Local* (where 1= visitor is local and 0 = visitor is non-local). The dummy variable, *Local*, was linked with the TC variable to create a new variable *Local*TC.* The two samples of both local and non-local visitors were joined and the new *Local*TC* variable was added as a predictor. It was this new variable that was used to test the hypothesis. If the coefficient of *Local*TC* is statistically different from zero, then there is a significant difference between coefficients for TC local and TC non-local, otherwise there is no significant difference.

The results in Table 4 show there is a significant difference between CS local and CS non-local. The p-value for Local*TC variable of 0.0142 is less than 5%. Hence, H_0 is rejected in favour of H_1. That is, consumers' surplus for local visitors is not the same as consumers' surplus for non-locals visitors who visit the Elmina beach.

Table 4: Regression results with Local *TC variable

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	3.923541	0.163142	24.04983	0.0000
TC	-0.002308	0.000359	-6.421110	0.0000
PS	0.001811	0.001455	1.244439	0.2133
Y	-0.000409	0.000263	-1.555847	0.1197
A	-0.022683	0.004823	-4.703447	0.0000
E	-0.219636	0.029727	-7.388529	0.0000
Q	-0.031730	0.086798	-0.365563	0.7147
Local*TC	-0.025459	0.010382	-2.452283	0.0142

$R^2 = 0.476338$ adjusted R^2 =0.461104

5.3 Access Fee

The maximum access fee that can be charged depends on how responsive the trip demand function is to price changes (travel cost), which in effect is price elasticity of demand. The maximum entrance fee occurs where price elasticity is one (Tang 2009). With the individual demand function being

$$\hat{v}_{\mathrm{NBML}} = 3.99479 - 0.0269TC$$

The trip elasticity of trip cost (price elasticity) is given as $\frac{\partial \hat{v}}{\partial TC} \times \frac{TC}{\hat{v}}$

$\frac{\partial \hat{v}}{\partial TC} \approx \frac{\partial \hat{v}}{\partial f} = -0.0269$ where f is the entrance fee per annum

The trip elasticity of entrance fee can be rewritten as $\frac{\partial \hat{v}}{\partial f} \times \frac{f}{\hat{v}}$.

Table 5 shows the various elasticities at different annual access fees and number of visits. From the Table, the maximum entrance fee that can be charged is GH¢ 74.3 per annum. Thus for the average of 6.75 visitors per person per year, this maximum CS per visit will be (74.2/6.75) Ghana cedis which gives a maximum access fee per visit of 10.99 Ghana cedis per annum. This can be shared equitably between local and non-local visitors on the basis of CS derived. With the total CS being 103.90 Ghana cedis, 62.1% of this derived CS comes from non-local visitors while 37.9% comes from the local visitors. The 62.1% of 10.99 Ghana cedis which is equal to 6.82 Ghana cedis would thus be the maximum access fee for non-residents while 4.17 Ghana cedis is paid by local residents. In furtherance of a probably fairer deal where the revenue collectors decide to take only 50% of the CS from visitors, the payments would come to 3.41 Ghana cedis for non-resident visitors and 2.09 Ghana cedis for local visitors.

Table 5: Elasticity Computation for Maximum Entrance Fee (US$1.00 = GH¢1.96)

f	$\hat{v}$	Elasticity	Remarks
GH¢ 10	3.99479	0.067338	Inelastic
GH¢ 20	3.45679	0.155636	Inelastic
GH¢ 30	3.18779	0.253153	Inelastic
GH¢ 40	2.91879	0.368646	Inelastic
GH¢ 50	2.64979	0.507587	Inelastic
GH¢ 60	2.38079	0.677926	Inelastic
GH¢ 70	2.1179	0.889088	Inelastic
GH¢ 71	2.08489	0.916068	Inelastic
GH¢ 72	2.05799	0.941112	Inelastic
GH¢ 73	2.03109	0.966821	Inelastic
GH¢ 74	2.00419	0.993219	Inelastic
GH¢ 74.1	2.00415	0.994581	Inelastic
GH¢ 74.2	1.99881	0.998584	Inelastic
GH¢ 74.3	1.99612	1.001277	Unitary elastic
GH¢ 74.4	1.99343	1.003978	Elastic
GH¢ 74.5	1.99074	1.006686	Elastic
GH¢ 74.6	1.98805	1.009401	Elastic
GH¢ 74.7	1.98536	1.012124	Elastic
GH¢ 74.8	1.98267	1.014854	Elastic

Source: Authors' computations from fieldwork, 2011.

Thus the combined revenue per visit for both classes of visitors comes to 5.50 Ghana cedis and therefore gives a mean of 2.75 per visit. Multiplying this mean by the mean number of visits (at 2006 visit rate of about 25, 560 visits per annum), the average revenue comes to 70, 290 Ghana cedis (US$35, 862.24) per annum. However, more money could be collected if collection goes beyond the 50% rate, which, will actually not hurt visitors since it would be a very small margin of increase compared to their income levels.

In 2006, the Komenda-Edina-Aguafo-Abirem district was able to generate only 4% (94, 486.60 Ghana cedis) of the total funds received for development (NDPC 2007). The 96% had to come from government grants. The computed share of the beach access fee (though conservatively on the lower side based on the assumed 50% collection rate), can almost double the percentage share of internally generated funds in the district. Embarking on their vision for tourism development would further enhance the amount of access fees collected. Also, one target of the District Assembly has been to train well educated young people who will eventually replace the current work force in the fishing industry, with scientific fishing skills instead of the inefficient traditional systems being used now. Thus to the people of Elmina, good education for the youth is a priority. The Ghana Living Standards Survey (V) indicated that for each child of school going age, the annual expenditure on school in the district was 88.65 Ghana cedis (GSS 2008). The computed beach access revenue could cater for over 770 students/pupils' schooling expenditure.

6. Conclusion and Recommendation

The annual average number of visits made to the Elmina beach per visitor was approximately 7, with a maximum trip cost of 8 Ghana cedis (US$4.08). Travel cost, age, educational level, multi-destination and multi-purpose trips were significant determinants of recreational trips made to the beach. The consumer's surplus per visitor per trip for local and non-local visitors was 39.43 Ghana cedis (US$20.12) and 64.47 Ghana cedis (US$32.89) respectively. Tests of hypotheses revealed a significant difference between local and non-local visitors with multi-destination and multi-purpose trips influencing the number of trips made to the beach significantly. The maximum access fee was 74.2 Ghana cedis (US$37.88) per visitor per annum. The results also indicated that extracting some CS of pleasure seekers at the beach through access fees could provide livelihood support for the several chronically poor people in Elmina, where the beach is located.

Thus, even though the Elmina beach has largely been subjected to misuse and neglect, the beach is not only valuable for sand winning, waste disposal and small-scale surface gold mining, which will render it a degraded and polluted beach. It is a sustainable source of wealth for poverty alleviation and economic development. The local authorities at Elmina should therefore take up the challenge to access enough of the available CS to curtail their over dependence on central government grants and to also improve the welfare of the people of Elmina. Additionally, the environmental and coastal erosion threats faced by the residents could be checked to some extent through these fees to reduce climate change vulnerability among the people.

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