Journal of Bangladesh Institute of Planners ISSN 2075-9363
Vol.17, Issue-1, 2024, pp. 34-48, © Bangladesh Institute of Planners

*Research Paper*

# A comprehensive assessment of the problems and evaluating the recreational value of Patenga Sea Beach tourism site using TCM

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**Abstract**

The Patenga Sea Beach is one of most well-known beaches of the world. This study investigates the recreational value of this beach, utilizing the Travel Cost Method (TCM) to assess visitor behaviour and economic value. The research addresses a critical gap in the understanding of beachgoer characteristics, their recreational preferences and essential elements for developing effective coastal management policies in developing nations. Through a comprehensive on-site survey of 245 respondents, the study collected detailed data on visitors' socioeconomic profiles, travel expenditures, and willingness to pay (WTP) for beach recreation. The methodology employed both linear regression and semi-log linear models to analyse the data, with particular attention to the effectiveness of value transfer approach in estimating the recreational use value. The findings reveal significant patterns in visitor demographics and behaviour, notably that the majority of beachgoers belong to middle-income groups and predominantly utilize public transportation, facilitated by the absence of entrance fees. The analysis quantified the consumer surplus at 190.38 BDT (1.59 USD) per person per visit, representing the tangible economic benefit derived from beach recreation. This value provides a crucial benchmark for policy considerations and resource allocation decisions. The research contributes to the broader understanding of coastal recreation economics in developing countries, demonstrating the practical applicability of TCM in valuing natural recreational resources. Furthermore, the study's findings offer valuable insights for beach management strategies, particularly in balancing accessibility with sustainable resource management. This study thus makes a significant contribution to the literature on recreational economics and coastal resource management. Also present a replicable framework for assessing recreational value of similar coastal destinations, while the economic valuation provides concrete data to support evidence-based policy making in coastal tourism management.

**Keywords:** Non-market valuation, Linear Regression, travel costs, consumer surplus and recreational value

## 1. Introduction

Tourism is the practice of leisure travel to various locations for business, or other purposes (Kirillova et al., 2018). A tourism site refers to a specific location or destination that attracts tourists due to its cultural, historical, natural, or recreational features (Leiper, 1990). It can be a landmark, attraction, or destination that is visited by tourists (Camilleri, 2018a). The recreational value of a tourism site means the enjoyment, satisfaction, and well-being that visitors derive from engaging in recreational activities at the site (Cheng & Lu, 2015). It encompasses the emotional, psychological, and experiential aspects of tourism, such as leisure, relaxation, entertainment, and escape from routine (Vada et al., 2019). Measuring the recreational value of a tourism site is important as it provides insights into the preferences, behaviours, and motivations of tourists. It also helps in understanding the economic impact of tourism, and informs tourism management and policy decisions (Leh et al., 2018).

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Received 30 June 2024, Revised 27 November 2024, Accepted 27 December 2024.

There are various ways to assess a tourist destination's recreational value, such as the Travel Cost Method (TCM) (Fleming & Cook, 2008), the Contingent Valuation Method (CVM) (Jala & Nandagiri, 2015), the Hedonic Pricing Method (Sinclair et al., 1990), and the Revealed Preference Method (Fezzi et al., 2014). The Travel Cost Method (TCM), which is based on real travel behaviour and incorporates the economic value that visitors placed onto the spot with their readiness to incur travel expenditures, is crucial in determining the recreational appeal of a tourism site (Leh et al., 2018). Additionally, TCM takes into account the opportunity cost of time and offers a precise indicator of the site's demand for recreational activities (Leh et al., 2019). Moreover, it can provide information on the characteristics of visitors, their travel patterns, and the economic impact of tourism, which can be useful for site management, policy-making, and planning (Leh et al., 2018). TCM is a widely used and accepted method in the field of tourism economics and has been applied in various studies to estimate the recreational value of tourism sites (Fleming & Cook, 2008).

This study uses the TCM to determine the recreational value of an individual tourist's visit to the Patenga beach. The study also seeks to classify the recreational spaces in the Chattogram Metropolitan Area, analyse the problems of selected tourism sites from user's perspectives, and propose measures for developing user-friendly tourism sites. This study has three objectives: first, to calculate the recreational demand generated by tourists at Patenga; second, to calculate the consumer surplus of tourists while paying the visit at Patenga, and third, to calculate the travel expense incurred by beachgoers to analyse its relationship with other variables.

The results of this investigation are anticipated to be particularly useful to the municipality and management authority of Patenga sea beach. Alongside it can also help other authorities in terms of the provision and management of public resources and the improvement of restaurants, hotels, and catering services at the beach. The results may also serve as a guide for implementing user/access or entrance fees for recreational sites in Chattogram.

However, it is important to note that this study has some limitations. Firstly, it focuses only on estimating the value of recreational use of the Patenga sea beach and does not consider other values such as the value of commercial fishing or the value of the Chattogram's deep seaport. Secondly, the study is based on information obtained from onsite visitors which may vary depending on different time periods or seasons. Finally, due to time and financial constraints, a broader study capturing all the values of the beach could not be conducted within the framework of this study. Therefore, there is a scope of further research exploring the other dimensions of the beach's value, considering different time periods for data collection. While the results support in the understanding of the tourism potential of Bangladesh and provide recommendations for the improvement of tourism site management and development; the limitations of the study required to be taken into consideration when interpreting the results.

## 2. Geographic Identity

The Patenga Sea Beach (8.7 mi) in Bangladesh's southern region of Chattogram is the subject of this investigation (Nabi & Salimullah, 2022). Popular tourist spot Patenga Sea

Beach is renowned for its beautiful scenery, white-sand shores, and recreational opportunities (Chandra Roy & Roy, 2015). It attracts a huge number of visitors, including residents and tourists from other parts of Bangladesh and abroad. The Patenga Sea Beach is situated along the Bay of Bengal's coast and is easily accessible by road from the city centre of Chattogram (Roy, 2021). It is a public beach managed by the municipality and management authority of Chattogram (Abdin, 2016). The beach offers various recreational activities, such as swimming, sunbathing, beach sports, and boat rides, which are enjoyed by visitors (Bashar & Nandy, 2019).

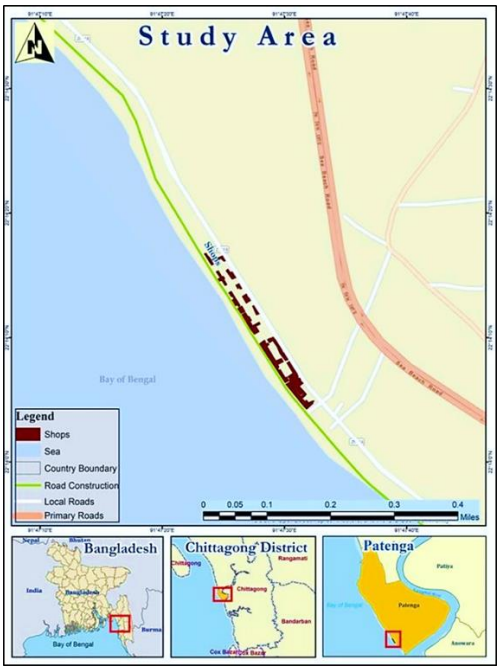


**Figure 1.** Study Area Map of Patenga Sea Beach

The study area also includes the vicinity of Patenga Sea Beach, which may have an influence on the recreational value of the site. This includes nearby facilities, such as restaurants, hotels as well as the overall environment and amenities available for visitors (Hassan, 2020).

The study area is chosen due to its significance as a popular tourist site in Chattogram and its recreational value for visitors. It offers a perfect environment for analysing visitors' recreational demand functions and estimating the consumer surplus, which could be a determinant of the beach's recreational value.

## 3. Data and Methodology

### 3.1 Defining Geographic Zones

In order to analyse the visitation patterns and travel costs associated with the Patenga Sea Beach, concentric circles were generated around the site to define zones surrounding the tourism destination. These zones were delineated based on the distance from the beach,

with the innermost circle representing the immediate vicinity and the outer circles encompassing areas at progressively greater distances. This zoning approach allowed for the identification of differences in travel characteristics and visitation rates across the various geographic regions.

### 3.2 Data Collection

To quantify the usage and recreational value of the Patenga Sea Beach, data was collected on the number of visitors to the site. This involved surveying visitors at the beach, as well as gathering information from tourism authorities and management bodies responsible for the site. The survey data provided insights into the demographics, travel patterns, and trip characteristics of the visitors. This information was crucial for understanding the demand for recreational activities at the Patenga Sea Beach.

The questionnaire used in this study was designed to collect comprehensive socio-economic, behavioural, and experiential data from the respondents. It included factors such as age, education, number of earning members, total household income, and children, which provide insights into the demographic and economic characteristics of the households. Additionally, transportation cost, food expenses, spending on other activities, recreational facilities, distance (origin to destination), travel time, day of the week, number of vacations, and average time spent were captured to understand travel and recreational behaviour. Variables like security, aesthetics, site expenditure, management, and accessibility were included to assess the quality and management of the site. A random sampling technique was used to collect data from 245 respondents in April 2024, ensuring an unbiased representation of the target population. The sample size was determined based on practical considerations such as resource availability and the need to capture diverse perspectives for robust analysis.

### 3.3 Calculating Visitation Rates

Using the visitor data, the research calculated the visitation rates to the Patenga Sea Beach on an annual basis. This involved analysing the number of visitors from the different geographic zones surrounding the site. The visitation rates were then used as a key input for the travel cost method (TCM) analysis.

Then the survey data had been entered in SPSS. In this study, the semi-log recreation demand model (Marvasti, 2013) is considered. The model transformed into a semi-log linear model by taking natural logarithm (In). The economic significance of this recreation area can be estimated by integrating the demand curve (Camilleri, 2018b). Mathematically, the model can be written as follows:

$$\text{Visit} = e^{a+bx} \quad (1)$$

$$\text{Ln (visit)} = a+bx \quad (2)$$

Here, y=In(visit); x= variables such as age, gender, travel cost, site characteristics, satisfaction level among others.

### 3.4 Determining Travel Costs

A critical component of the TCM analysis was the estimation of travel costs associated with visiting the Patenga Sea Beach. This included gathering data on the average cost per mile

and per hour of travel time. Additionally, the average travel time and distance time for a round trip to the site were determined through the visitor surveys and secondary data sources. By combining these factors, the study was able to calculate the average travel cost per trip for visitors to the Patenga Sea Beach.

### 3.5 Regression Analysis

To understand the demand for recreational activities at the Patenga Sea Beach, the study conducted a regression analysis. The visitation rates per capita and the calculated travel costs were considered the key variables in the regression model. The regression analysis allowed for the estimation of the demand function, which represented the relationship between the number of visits and the travel costs incurred by visitors.

### 3.6 Estimating Consumer Surplus

The final step in the TCM analysis was the calculation of the consumer surplus associated with the Patenga Sea Beach (figure 2). The consumer surplus represents the difference between the maximum price visitors are willing to pay and the actual price they pay to access the site. By integrating the demand function derived from the regression analysis, the research was able to estimate the total consumer surplus, which served as a proxy for the recreational value of the Patenga Sea Beach to its visitors.

$$\text{Consumer Surplus} = \int_{TCavg}^{TCmax} \ln(visit) \quad (3)$$

$$= \int_{TCavg}^{TCmax} \left(e^{(a+b*variables\ average)+C*Travel\ Cost))} dTC\right) \quad (4)$$

$$= 1/\text{c}\ [e^{(a+b*variables\ avg)+C*Travel\ Cost\ \max)} - e^{(a+b*Variables\ avg)+C*Travel\ Cost\ Mean)}] \quad (5)$$

Where, TC max is maximum value of travel cost and TC mean is mean value of travel cost. For finding out the consumer surplus, the co-linearity was checked among the variables and then the variables highly co-related among themselves were excluded from calculation. And from these variables, the logarithm of number of visits per month) was expressed as dependent variable. The independent variables are: age, children number, earning member, household income, home district, education, food expenses, spending for others, trip type, OD distance, travel time, average spending time, satisfaction average and travel cost. The co-efficient values of these variables, were inserted in the equation of consumer surplus.

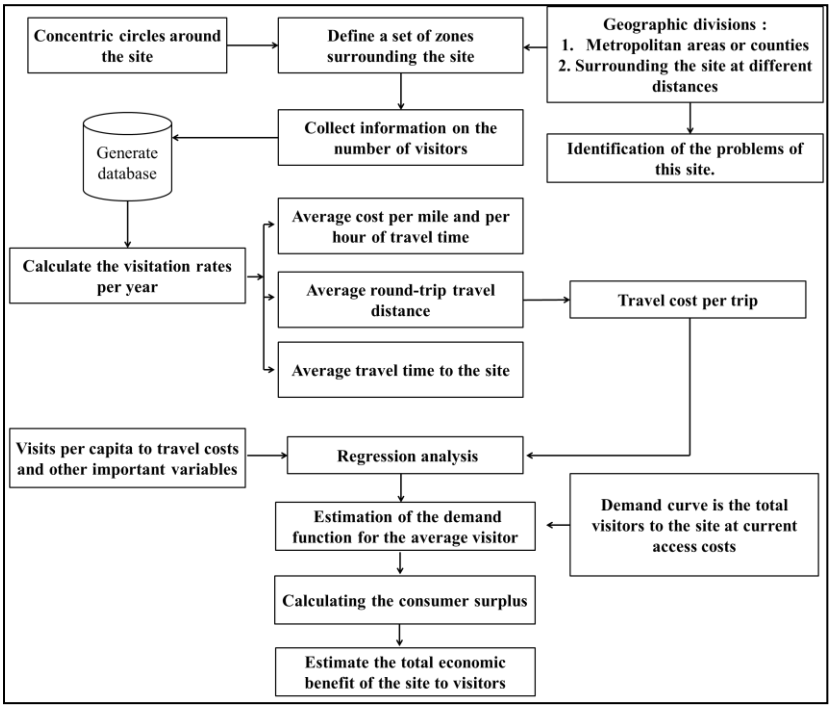


**Figure 2.** Methodological Flowchart (Source: prepared by the Authors, 2024)

### 3.7 Identification of Site-Specific Problems

In addition to the TCM analysis, the study also identified the problems and issues specific to the Patenga Sea Beach tourism site. This was accomplished through a comprehensive review of the geographic divisions surrounding the site, including metropolitan areas at varying distances (Smith et al., 1983). By considering different geographic scales, this study is able to pinpoint the various challenges and constraints faced by visitors and the local community in relation to the Patenga Sea Beach.

## 4. Results

### 4.1 Visitor Characteristics and Visitation Patterns

The analysis of visitor characteristics to the Patenga Sea Beach revealed several key insights. As shown in Table 1, the average age of visitors was around 40 years, indicating that the site attracts a relatively mature tourist. The majority of visitors had moderately high level of education among the site's users.

**Table 1.** Collinearity Diagnosis

| Avg. of the Variables or indicators | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Indicators** | **Avg Value** | **b** | **Indicators** | **Avg Value** | **b** | **Indicators** | **Avg Value** | **b** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Age | 39.97 | 0.19 | Distance OD | 19.9714 | -0.07 | Accessibility | 3.08 | -0.72 |
| Education | 1.49 | 0.14 | Travel time min | 95.2857 | 0.24 | **Values needed for the CS assessment** | | |
| Number of earning member | 1.37 | 0.36 | Day of the week | 1.2 | 0.09 | | | |
| Total household income | 25400.7 | -0.43 | No of vacations | 3 | 0.14 | a | 0.56 | |
| Children Number | 3 | -0.07 | Average time spend hour | 2.51 | -0.63 | c | -0.03 | |
| Transportation cost | 52.57 | -0.03 | Security | 3.8 | 0.14 | Travel Cost (max.) | 90 | |
| Expense for food | 161.14 | 0.11 | Aesthetic | 4.08 | 0.1 | | | |
| Spending for other activities | 79.43 | 0.16 | Site expenditure | 3.68 | 0.27 | Travel Cost (mean) | 52.5714 | |
| Recreational facilities | 3.4 | -0.49 | Management | 4 | 0.62 | | | |

Source: Conducted by the Authors (2024) for the purpose of this study

The data in Table 1 also shows that the average number of earning members per household was 1.37, implying that most visitors came from family or multi-person groups rather than solo travellers. The total household income of the average visitor was around BDT 25400, reflecting a middle-income household's earning

The study identifies that most visitors came to the site during the weekdays rather than on weekends. This suggests that the Patenga Sea Beach may cater more to local residents and day-trippers than to weekend or holiday crowds. The "Average time spent in hours" revealed a value of 2.51, meaning that visitors spent an average of 2.51 hours at the site per visit. This relatively short duration implies that the site may primarily serve as a recreational destination for short-term visits rather than a destination for extended stays.

### 4.2 Travel Cost Analysis

The travel cost analysis (table 2), provided valuable insights into the economic factors influencing visitation to the Patenga Sea Beach. The average travel cost per trip was estimated to be BDT 52.57 (table 1). This cost included various components, such as transportation, security, and aesthetic expenses incurred by visitors to access the site.

The regression analysis of the demand function yielded a R-Square change of 0.82, indicating that the log-linear demand model explained 81.7% of the variance in the dependent variable, as presented in Table 2.

**Table 2.** Summary of Log-linear Model

| Model Summary | | | | | | |
|---|---|---|---|---|---|---|
| **Model** | **Change Statistics** | | | | | |
| Log-linear Demand Model | R Square Change | F Change | $df_1$ | $df_2$ | Sig F (a) | Comment |
| | 0.816991 | 1.568327 | 21 | 13 | 0.046 | Statistically significant |

Source: Prepared by the Authors (2024)

The R-Square value suggests that the model was effective in capturing the key factors influencing the demand for visits to the Patenga Sea Beach (McConnell, 1985). The F-Change statistic of 1.57 was found to be statistically significant at the 0.046 level, further corroborating the overall strength and validity of the model.

### 4.3 Travel Economic Valuation of the Tourism Site

$$\text{Consumer Surplus} = \int_{TCavg}^{TCmax} \ln(visit) = 190.38 \text{ Taka}$$

The consumer surplus calculation, a measure of the recreational value of the Patenga Sea Beach, resulted in an estimated value of BDT 190.38. This suggests that visitors will be willing to pay BDT 190.38 more than the current cost to enjoy the recreational benefits of the site. In other words, the consumers are deriving a significant surplus value from their visits to the Patenga Sea Beach, indicating its high recreational appeal and value to the population.

### 4.4 Identification of Site-Specific Problems

The study also identified several key problems and challenges facing the Patenga Sea Beach tourism site. Regarding infrastructure and accessibility, the site faced several deficiencies. The footpaths around the Patenga Spot were found to be insufficient and narrow, while the drainage facilities were inadequate, leading to frequent waterlogging issues. The lack of modern recreational facilities, such as boating and windsurfing opportunities, were noted as a shortcoming those failed to meet the demands of tourists, especially foreign visitors.

The provision of visitor services and amenities also presented several challenges at the Patenga Sea Beach. The washroom facilities were found to be insufficient and poorly maintained, while the lack of waste disposal bins resulted in littering and an unsightly environment. The available food services in the nearby area were reported to be unhygienic and overpriced, further detracting from the overall visitor experience.

Safety and security concerns were another significant issue identified at the Patenga Sea Beach. As indicated in Table 2, the site lacked adequate safety measures, such as a limited number of life jackets and only one watchtower. The absence of a designated kids' zones also posed safety risks, as children were observed playing in unsafe areas near waterbodies and electric lighting poles. Additionally, the lack of security reportedly led to issues like kidnapping and hijacking, which undermined the site's appeal and safety for visitors.

Furthermore, the study identified several management and human resource challenges at the site. The involvement of non-professionals in the tourism business was found to have affected the quality of service provided to the visitors. The lack of proper training and human resources related to tourism management also impeded the site's development and growth as a competitive tourism destination. The insufficient monitoring of local hotels and recreational facilities resulted in issues like overpricing, further diminishing the value proposition for visitors.

Therefore, the Patenga Sea Beach faced a multitude of challenges across various domains, including infrastructure, visitor services, safety and security, and management and human resources. Addressing these issues would be crucial in enhancing the overall visitor experience and maximizing the economic benefits of the site.

### 4.5 Proposals to Mitigate the Problems of the Tourism Site

The findings from the travel cost analysis and the identification of site-specific problems provide a comprehensive understanding of the Patenga Sea Beach tourism site. The high consumer surplus value of BDT 190.38 suggests that the site holds significant recreational value for visitors. However, the various infrastructural, service, safety, and management issues identified in the study limit the site's full potential.

To enhance the overall visitor experience and maximize the economic benefits of the Patenga Sea Beach, several recommendations can be made. Addressing the infrastructure and accessibility challenges, such as improving the footpaths, enhancing drainage facilities, and introducing modern recreational amenities, would be a crucial first step. Improving visitor amenities, including upgrading and maintaining the washroom facilities, installing more waste disposal bins, and ensuring the availability of hygienic and reasonably priced food options, would also contribute to a more enjoyable visitor experience.

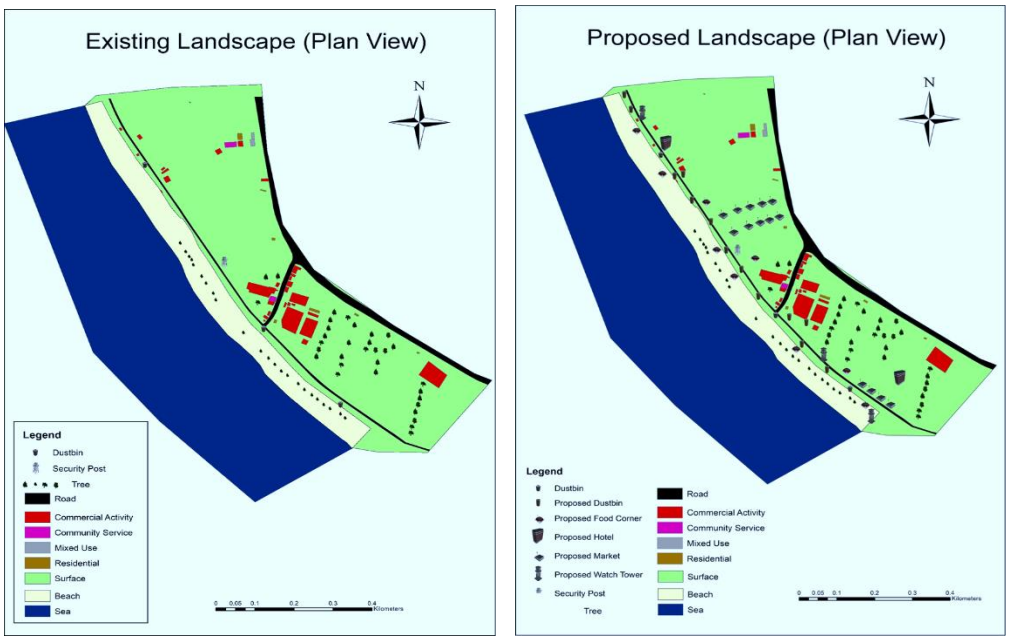


**Figure 3.** Existing and Proposed Landscape (Plan View) (Source: prepared by the Authors, 2024)

Strengthening safety and security measures, such as increasing the number of life jackets and watchtowers, creating a designated kids' zone, and developing a robust security system to address issues like kidnapping and hijacking, would be essential for ensuring the safety and well-being of visitors. Enhancing tourism management and human resource capabilities, through measures like training programs, professional involvement in the tourism business, and improved monitoring of local facilities, would also play a crucial role in elevating the quality of services and experiences offered at the Patenga Sea Beach.

The integration of the travel cost analysis and the site-specific problem identification can inform policymakers and tourism authorities in developing targeted strategies and interventions to unlock the full potential of the Patenga Sea Beach. This holistic approach can guide future investments, infrastructure development, and management practices to ensure the sustainable growth and enjoyment of the site by both domestic and international tourists.

Figure 3 presents a comparative analysis of the existing and proposed landscape plans for the Patenga Sea Beach tourism site. The existing landscape, as shown in the left panel of Figure 3, reveals a relatively basic infrastructure with scattered commercial activities, community services, and mixed-use areas along the beachfront. The current layout includes basic elements such as security posts, trees, roads, and various commercial and residential structures, but lacks organized spatial planning and tourist-friendly amenities.

The proposed landscape plan, illustrated in the right panel of Figure 3, introduces several strategic improvements to enhance the site's functionality and visitor experience. Key additions include:

1. Food Corners: The plan strategically positions new food corners throughout the site, addressing the current issues of unhygienic and scattered food vendors. This

organized approach would help ensure better food quality control and improve the dining experience for visitors.

2. Hotels: New hotel facilities are proposed at carefully selected locations, which would address the current accommodation shortage and provide better options for tourists planning longer stays.
3. Markets: Designated market areas are incorporated into the plan, allowing for better organization of commercial activities and potentially reducing the problem of overpricing through increased competition and regulation.
4. Watch Towers: Additional watch towers are proposed, significantly improving the site's security infrastructure. This addresses one of the major safety concerns identified in the study.
5. Enhanced Security Posts: The proposed plan maintains and augments the security post network, contributing to a more comprehensive security system.
6. Improved Spatial Organization: The overall layout shows a more balanced distribution of facilities and services, with clear demarcation between different functional areas (commercial, residential, and recreational).

The proposed landscape plan effectively addresses many of the issues identified in the site analysis while maintaining the natural beauty of the beach. The improved organization of space and addition of essential facilities would likely contribute to increased visitor satisfaction and potentially higher economic returns, as suggested by the consumer surplus analysis. This comprehensive approach to landscape planning aligns with the study's findings regarding visitor needs and current site deficiencies, providing a practical framework for future development of the Patenga Sea Beach tourism site.

## 5. Discussion

This study provides valuable insights into the recreational value of Patenga Sea Beach, through the application of the Travel Cost Method (TCM). The findings reveal several significant patterns in visitor behaviour, economic valuation, and implications for sustainable beach management that warrant detailed discussion.

The study's estimation of consumer surplus at 190.38 BDT per person per visit represents a substantial recreational value that has not been previously quantified for this location. This figure is particularly noteworthy when considering Bangladesh's economic context, where the average daily wage is significantly lower than in developed nations. The positive consumer surplus indicates that visitors derive considerable benefit beyond their actual travel expenses, suggesting that the beach provides important social and recreational value to the Bangladeshi population.

The demographic analysis reveals a predominant middle-income visitor profile, which has important implications for both social equity and economic planning. The absence of entrance fees and the availability of public transportation ensure accessibility of Patenga Sea Beach to middle-income groups, which demonstrates its role as an inclusive recreational space in a developing nation context. This accessibility stands in contrast to many international tourist destinations where high costs often restrict access to more affluent visitors.

The prevalence of public transport usage among visitors reflects both the economic circumstances of visitors and the existing transportation infrastructure. This finding has dual implications: first, it suggests that improvements in public transportation could enhance visitor access and potentially increase the beach's recreational value; second, it indicates that environmental impacts from private vehicle usage may be lower than at comparable international destinations.

The application of both Linear Regression and Semi-log linear models in this study provides robust methodological insights for valuing recreational sites in developing nations. The consistency of results across both models strengthens the reliability of the findings and suggests that these methodological approaches are appropriate for similar studies in comparable contexts. The successful implementation of TCM in this study demonstrates its viability as a valuation tool in developing nation contexts, where data availability and collection often face challenges.

The study's findings have several important implications for policy and management. The substantial consumer surplus indicates that there may be scope for introducing modest user fees to support beach maintenance and infrastructure development without significantly impacting visitor numbers. However, any such policies would need to be carefully balanced against the current inclusive nature of the beach as a public space.

The research also reveals opportunities for economic development around the beach area. The documented willingness of visitors to travel and spend on beach visits suggests potential for carefully planned tourism development that could enhance both visitor experience and local economic benefits. This could include improved facilities, food services, and recreational activities, though such development would need to be managed sustainably to preserve the natural attributes that attract visitors.

Environmental management implications emerge strongly from this study. The high visitor numbers and demonstrated recreational value provide economic justification for increased investment in beach maintenance and environmental protection. The quantified recreational value can be used to support cost-benefit analyses for environmental protection measures, potentially including coastal erosion control, waste management, and water quality improvements.

Limitations of the study merit consideration in interpreting these findings. The on-site sampling approach may have introduced some selection bias, potentially overlooking potential visitors who chose not to visit due to travel costs or other barriers. Additionally, the focus on domestic visitors means that the international tourism potential of Patenga Sea Beach remains unexplored.

Looking forward, this study establishes a foundation for future studies of coastal recreation in Bangladesh and similar developing nations. The methodological framework demonstrated here could be applied to other coastal sites, enabling comparative analyses and more comprehensive coastal recreation planning at a national level.

The findings also raise important questions for future research, particularly regarding the potential impacts of climate change on coastal recreation values, the role of beach quality in determining recreational value, and the potential for sustainable tourism development that balances economic benefits with environmental protection. Through this it makes a significant contribution to understanding the recreational value of coastal resources in developing nations. The findings provide empirical support for increased investment in

beach management and conservation while highlighting the importance of maintaining public access to natural recreational spaces.

## 6. Conclusion

Using the Travel Cost Method (TCM), this study evaluated the Patenga Sea Beach's recreational value in Bangladesh and offered insightful information on beachgoer's personalities and attitudes towards its recreational use. The findings of this study revealed that the beach attracts a considerable number of visitors, mostly from middle-income groups, who utilize public transport due to the absence of an entrance fee. The estimated consumer surplus demonstrated the significant benefits obtained by visitors. The study also demonstrated how the trip cost approach may be used to estimate the value of beaches for recreational purposes in a developing country like Bangladesh. Findings of this study have significant ramifications for beach management strategies. Understanding visitor characteristics, including their socio-economic status, travel patterns, and willingness to pay, is crucial for developing effective strategies to sustainably manage and to protect the recreational value of Patenga Sea Beach. Policymakers and stakeholders can utilize the findings of this study to formulate evidence-based decisions and policies that aim to balance the needs of visitors, local communities, and to ensure environment friendly management.

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