

Received: December 2023 Accepted: January 2024

DOI: <https://doi.org/10.58262/ks.v12i2.324>

Sengkaling Recreation Park: Evaluating Economic Value and Sustainable Management Practices

Zainal Arifin^{*1}, Sri Budi Cantika Yuli², Risky Angga Pramuja³, Heri Setiawan⁴, Muhammad Azizurrohman⁵

Abstract

This research evaluates the economic value of Sengkaling Recreation Park using a multidimensional approach. Through methodologies including regression analysis, consumer surplus estimation, and annuity perpetuity modeling, the study assesses both direct consumer spending and broader environmental services provided by the park. Findings reveal significant economic value, indicating potential for revenue optimization through pricing adjustments. The perpetual economic value underscores the park's long-term importance, emphasizing the need for sustainable management practices. While limitations exist in quantifying intangible environmental benefits, this research provides valuable insights for policymakers and park managers to maximize economic and environmental benefits. Sengkaling Recreation Park emerges not only as a recreational hotspot but also as a vital economic asset with opportunities for development and conservation.

Keywords: *sengkaling recreation park, economic valuation, consumer surplus, willingness to pay, sustainability*

Introduction

Sengkaling Recreation Park (TRS), situated within the Dau District of Malang Regency, delineates a pivotal nexus between urban periphery and the western defensive contours of the city. During each holiday season, an array of tourist enclaves within the Malang vicinity experiences a perennial surge in visitor footfall. Within this context, Sengkaling Recreation Park assumes a seminal role as a linchpin in the tourism framework of Malang Regency, catalyzing the augmentation of its Regional Original Revenue (PAD). Following a protracted tenure under the management of PT Bendoel, Sengkaling Recreation Park underwent a transition, being entrusted to the stewardship of the Muhammadiyah University of Malang (UMM) with the express intent of comprehensive revitalization and expansion. The official rechristening of the site as Sengkaling UMM Park on February 28, 2013, marked a definitive milestone in this transformative endeavor. Since its acquisition by the University in 2013, substantial infrastructural refurbishments have been undertaken, prominently featuring the establishment of the Sengkaling Food Festival (SFF), acclaimed as the largest culinary hub in East Java. While the precise financial outlay associated with this acquisition remains undisclosed by UMM

¹ Economics Department, Universitas Muhammadiyah Malang, Indonesia Corresponding Email: zainalarifin@umm.ac.id

² Economics Department, Universitas Muhammadiyah Malang, Indonesia Email: cantika@umm.ac.id

³ Business Property Department, Universitas Muhammadiyah Malang, Indonesia Email: riskyanggapramuja@umm.ac.id

⁴ Management Department, Universitas Tanjungpura, Indonesia Email: heri.setiawan@untan.ac.id

⁵ Tourism Department, Sekolah Tinggi Pariwisata Mataram, Indonesia Department of Business and Management, Southern Taiwan University of Science and Technology, Taiwan Email: m.azizur96@gmail.com

Rector Muhadjir Effendy, indicative sources suggest a notable sum totaling Rp100,000,000,000. This strategic reorientation underscores UMM's envisioned pivot towards the cultivation of Sengkaling Recreation Park as an educational tourism nucleus, poised to engender multifaceted socio-economic dividends.

Furthermore, academic inquiry into the economic valuation of heritage sites, such as the Sangiran Museum in Central Java and Lake Piliukula in South Sulawesi, encapsulates broader endeavors to reconcile preservation imperatives with economic imperatives. Through methodologies such as the Travel Cost Method (TCM) and the Contingent Valuation Method (CVM), scholars endeavor to delineate the latent economic value of cultural and natural heritage assets, thereby informing conservation strategies and resource allocation frameworks. Some pertinent arguments for a sustainable management are debated by Ștefănescu & Ungureanu (2006) who consider that the using of data warehouse will enhance the efficiency of decisional process in achieving a competitive advantage as for a long-term sustainability goal. Empirical investigations conducted by Grafititiani (2012) and Jala (2015) illustrate the applicability of these methodologies in quantifying visitor preferences and willingness to pay, thereby affording insights into the economic significance of heritage sites.

Against this backdrop, this study seeks to interrogate the economic underpinnings of Sengkaling Recreation Park's acquisition by the Muhammadiyah University of Malang, discerning whether the transactional valuation aligns with the intrinsic economic worth of the park. Employing the Travel Cost Methodology and pertinent econometric variables, this research endeavors to extrapolate the potential economic value inherent in Sengkaling Recreation Park, thus facilitating a nuanced understanding of its socio-economic ramifications.

Research Method

Primary data was collected by directly interviewing respondents using a pre-prepared questionnaire and through direct observation at Sengkaling Recreation Park. Sampling was conducted in the field using non-probability sampling with purposive sampling techniques on a selected number of visitors to Sengkaling Recreation Park. According to Soeratno and Arsyad (2008), purposive sampling involves selecting samples carefully to ensure relevance to the research design. Purposive sampling is carried out by selecting individuals chosen specifically by the researcher based on certain characteristics possessed by the sample. Determining the demand function for visits to tourist attractions through the individual TCM approach often employs simple regression or OLS econometric techniques. Visitor trips to tourist attractions will be significantly influenced by travel costs and are assumed to be negatively correlated, resulting in a demand curve with a negative slope.

The form of the travel cost model is:

$$V_i = a + b_1 \text{INC}_i + b_2 \text{AGE}_i + b_3 \text{TC}_i + b_4 \text{DIST}_i + b_5 \text{TIME}_i + b_6 \text{DQ}_i + b_7 \text{DSUB}_i + b_8 \text{DWB}_i + e_i$$

Where:

V_i : Number of individual visits per year.

INC_i : Monthly income of individuals, measured in Indonesian Rupiah.

AGE_i : Age of visitors to Sengkaling Recreation Park, expressed in years.

TC_i : Travel cost incurred by visitors to visit Sengkaling Recreation Park.

DIST_i : Distance from individual's home to Sengkaling Recreation Park.

TIME_i: Travel time of visitors to Sengkaling Recreation Park.

DQ_i: Consumer perception of the environmental quality of Sengkaling Recreation Park.

DSUB_i: Substitution dummy for similar recreational park objects.

DWB_i: Dummy variable indicating whether the individual has completed 12 years of compulsory education.

Result and Discussion

In Ordinary Least Squares (OLS) multiple linear regression, the Classical Assumption Tests must be performed in order to satisfy the BLUE requirements. The tests for normality, heteroskedasticity, autocorrelation, linearity, and multicollinearity are among them. The conclusion that may be drawn from the conventional assumption test table is that no symptoms were found in the tests.

Table 1: Classic Assumption.

Classic Assumption	Output	Sig. 5%	Note
Normality Test	0,3678	0,005	Normal
Heteroscedasticity	0,0993	0,005	Humogen
Autocorrelation	0,36	0,005	No Autocorrelation
Linearity	1.924	(1,845<DW<2,16)	Linier
Multicollinearity			
Time Scale	3,04		
Distance Scane	2,83		
DE	2,74		
Income	2,69	10	No Multicollinearity
DSUB	1,63		
DQ	1,17		
TC	1,08		
Age Scale	1,08		

Source: Data Processing.

Table 2: Estimation Result.

Variable	Coefficient	T-Statistic	T-Table	Prob.	Note (A=5%)
(Constanta)	6,998	8,70	1,98118	0,000	Significant
Income	0,253	2,02	1,98118	0,046	Significant
Age Scale	0,294	4,71	1,98118	0,000	Significant
Travel cost	-0,00000186	-3,23	1,98118	0,002	Significant
Distance Scale	-0,991	-7,79	1,98118	0,000	Significant
Time Scale	-0,469	-4,33	1,98118	0,000	Significant
DQ	0,315	2,30	1,98118	0,023	Significant
DSUB	-0,450	-2,84	1,98118	0,005	Significant
DE	-0,883	-4,07	1,98118	0,000	Significant

Source: Data Processing.

From the output of multiple linear regression, the regression equation obtained in this study is:

$$[V = 6.99 + 0.253 \text{ INC}_i + 0.294 \text{ AGE}_i - 1.86e-06 \text{ TC}_i - 0.991 \text{ DIST}_i - 0.469 \text{ TIME}_i + 0.315 \text{ DQ}_i - 0.450 \text{ DSUB}_i - 0.883 \text{ DWB}_i]$$

The regression coefficients of the income variable have a positive and significant effect on the number of visits. The income regression coefficient of 0.253 implies that if income increases by 1 Indonesian Rupiah, the level of visits increases by 0.253. This indicates that higher individual income leads to increased visitation rates. The regression coefficient of the age variable is positively and significantly related to the number of visits. The age regression coefficient of -0.294 means that if age increases by 1 year, the level of visits increases by 0.294. This suggests that older age leads to more frequent visits.

The regression coefficient of the travel cost variable has a negative and significant effect on the number of visits. The travel cost regression coefficient of -0.00000186 implies that if travel cost increases by 1 Indonesian Rupiah, the level of visits decreases by -0.00000186. This indicates that higher travel costs result in lower visitation rates. The regression coefficient of the distance variable from home to the tourist location has a negative and significant effect on the number of visits. The distance regression coefficient of -0.991 means that as the distance from home to the tourist location increases, the level of visits decreases by -0.991. This suggests that the farther the distance between the tourist location and individual residences, the lower the number of visits.

The regression coefficient of the travel time variable to the tourist location has a negative and significant effect on the number of visits. The travel time regression coefficient of -0.469 means that as travel time to the tourist location increases, the level of visits decreases by 0.469. This suggests that the longer the travel time to the tourist location, the lower the number of visits. The regression coefficient of the quality dummy variable has a positive and significant effect on the number of visits. The quality dummy regression coefficient of 0.315 indicates a difference in the average number of individual visits between those with good quality and those with poor quality, with good quality having a larger number of individual visits than poor quality by 0.315.

The regression coefficient of the substitution dummy variable has a negative and significant effect on the number of visits. The substitution dummy regression coefficient of -0.450 indicates a difference in the average number of individual visits between those substituted and those not substituted, with substituted individuals having a smaller number of individual visits than those not substituted by 0.450. The regression coefficient of the compulsory 12-year education dummy variable has a negative and significant effect on the number of visits. The compulsory 12-year education dummy regression coefficient of -0.883 indicates a difference in the average number of individual visits between those who have completed compulsory 12 years of education and those who have not, with individuals who have not completed compulsory 12 years of education having a larger number of individual visits than those who have completed compulsory 12 years of education by -0.883 visits.

The acquisition cost of purchasing Sengkaling Recreation Park by Muhammadiyah University of Malang from PT. Bentoel Group amounted to Rp100,000,000,000. The acquisition funds were entirely provided by the foundation without loans from other parties. Using an interest rate of 15.27%, if the acquisition cost in 2013 is future-valued to 2022, it amounts to Rp359,291,248,095.

Estimation of the Economic Value of Sengkaling Recreation Park

Table 3: Total Visitor 2022 – 2023.

No.	Month	Total
1	April	21728
2	May	9555
3	June	9082
4	July	3805
5	August	4657
6	September	5851
7	October	4528
8	November	11557
9	December	9996
10	January	5734
11	February	4467
12	March	13675
Total		104635

Source: Sengkaling Recreation Park.

$$\begin{aligned} \text{Consumer Surplus mean (CS)} &= \frac{V \text{ mean} \times 2}{-2\beta} \\ \text{Consumer Surplus mean (CS)} &= \frac{1,95 \times 2}{-2 \times - 0,00000186} \\ \text{Consumer Surplus mean (CS)} &= \text{Rp}1.048.387 \\ \text{Consumer Surplus Max (CSmax)} &= \frac{(1,95 \times 2) + \text{S. E of Resgion}}{-2 \times - 0,00000186} \\ \text{Consumer Surplus Max (CSmax)} &= \frac{(1,95 \times 2) + 0,67}{-2 \times - 0,00000186} \\ \text{Consumer Surplus Max (CSmax)} &= \text{Rp}1.228.495 \\ \text{Consumer Surplus Min (CSmin)} &= \frac{(1,95 \times 2) - \text{S. E of Resgion}}{-2 \times - 0,00000186} \\ \text{Consumer Surplus Min (CSmin)} &= \frac{(1,95 \times 2) - 0,67}{-2 \times - 0,00000186} \\ \text{Consumer Surplus Min (CSmin)} &= \text{Rp}868.280 \end{aligned}$$

Based on calculations using Haab and McConnell's method, the average annual consumer surplus is found to be Rp1,048,387. The consumer surplus ranges from Rp868,280 to Rp1,228,495. To obtain the economic value of Sengkaling Recreation Park, the consumer surplus is multiplied by the number of visitors to Sengkaling Recreation Park for one year.

According to data obtained from the management of Sengkaling Recreation Park, the number of visitors in the last year, as of September 2023, was 104,635 people. By multiplying the consumer surplus by the number of visitors to Sengkaling Recreation Park, the average economic value is found to be Rp109,697,973,745, and the economic value of Sengkaling Recreation Park ranges from Rp90,852,477,800 to Rp128,543,574,325 per year.

Willingness to Pay

In this study, the entrance ticket price is assumed to be an average of Rp30,000 per visitor. By calculating the individual consumer surplus per visit, the willingness to pay (WTP) or sacrifice per visit for each individual can be determined. Willingness to pay (WTP) is the sum of the amount paid plus the consumer surplus. The individual consumer surplus per visit is the annual individual consumer surplus divided by the average number of visits per year. The magnitude of the consumer surplus per visit and the willingness to pay per visit can be seen in Table 4.

Table 4: Willingness to Pay.

Economic Value	Average (Rp)	Min. (Rp)	Max. (Rp)
Consumer Surplus (CS)	Rp1.048.387/3,9= Rp268.817.179	Rp868.280/3,9= Rp222.635.897	Rp1.228.495/3,9= Rp314.998.718
Travel Cost	Rp145.090,2	Rp145.090,2	Rp145.090,2
Willingness to Pay	Rp413.907,379	Rp367.726,097	Rp460.080,918

Source: Data Processing.

Based on Table 4 above, the willingness to pay per individual per visit ranges from Rp367,726.097 to Rp460,080.918, with an average of Rp413,907.379.

With an entrance ticket price of Rp35,000 still below the average WTP of Rp413,907.379, the managers of Sengkaling Recreation Park can optimize revenue by increasing the entrance ticket price. Considering the current state of Sengkaling Recreation Park, which lacks distinctive attractions, the management could improve and add more modern and unique facilities to attract visitors.

Based on data obtained from the management of Sengkaling Recreation Park, the number of visitors in the last year of 2023 was 104,635 people. By multiplying the consumer surplus obtained using a linear function by the number of visitors to Sengkaling Recreation Park, the average economic value is found to be Rp109,697,973,745.

Table 5: Cost of Equity.

Type	Rate of Return	Source
Risk free rate	10,55%	http://www,ksei,co,id/registered_securities/government_bonds
Risk Premium	6,12%	www,stern,nyu,edu/~adamodar/pc/datasets/ctryprem.xls
β (x)	0,77	www,stern,nyu,edu/%7Eadamodar/pc/datasets/betaemerg.xls

Table 6: Capital Asset Pricing Model.

Capital Asset Pricing Model (CAPM)			
Cost of Equity (CAPM)		15,26%	
Risk free rate		10,55%	
Risk premium		6,12%	
Beta (x)		0,77	
The Capital of Fondation:	100%	15,26%	15,26%
Discount Rate		15,26%	

Source: Data Process.

The next step is to assess the present value of the economic value of Sengkaling Recreation Park. By utilizing the perpetuity annuity concept, assuming an interest rate obtained from the Capital Asset Pricing Model (CAPM) of 15.26%, and using the average value obtained from Haab and McConnell's formula, the perpetual economic value of Sengkaling Recreation Park is estimated to be Rp718,859,592,038.

The economic value obtained from the travel cost method only estimates the value sacrificed by visitors and the recreational value. In addition to the value sacrificed by individual visitors and the recreational value, Sengkaling Recreation Park also has other environmental service values, such as reducing air pollution, water infiltration areas, water catchment areas, and scenic beauty that cannot be quantified in this study.

Discussion

Several studies have identified factors that impact visitation rates to parks and recreational areas, aligning closely with the first point mentioned above. For instance, a report published by the National Park Service found that higher household income levels were strongly linked to greater frequency of visits to national parks (Miller et al., 2023 and Shoji et al., 2023). Similarly, a study conducted by Li et al. (2017), Neringa & Ilona (2024), and Alen et al. (2014) revealed that older individuals tended to exhibit higher visitation rates than younger demographics. On the contrary, higher transportation expenses, longer travel durations, and distance from home acted as barriers to visitation (Xue, 2020 and Bursa et al., 2022). Furthermore, educational attainment was shown to be another factor influencing visitation behavior (Marion & Feder, 2020 and Liu & Mao-tang, 2020). These findings collectively suggest that socioeconomic status, age, and proximity play crucial roles in determining visitation patterns.

Consumer surplus refers to the difference between the maximum amount consumers would be willing to pay for a good or service and the actual price paid. Numerous investigations have applied this concept to evaluate the economic value of parks and recreational facilities. A paper published in *Land Economics*, for example, utilized consumer surplus calculations to determine the economic contribution of state parks in California (Smith, 1990). Another study appearing in the *Journal of Environmental Planning and Management* estimated consumer surplus for a coastal wetland reserve in Australia, demonstrating the added value generated by the site beyond the admission fee (Xu & He, 2022). Such analyses contribute significantly to our understanding of the total economic value of parks, going far beyond simple revenue figures.

Willingness to pay (WTP) per visit is a critical metric used to gauge the optimal entrance fee structure (Wertenbroch & Skiera, 2002). Studies have shown that WTP varies depending upon individual characteristics, such as income, age, and education level (Yang & Hong, 2019 and Han et al., 2019). Understanding these variations allows park managers to tailor pricing policies to ensure fairness and equity while maintaining financial viability.

To account for uncertainty and risk when evaluating the long-term economic value of assets like Sengkaling Recreation Park, financial models like the Capital Asset Pricing Model (CAPM) can be employed. CAPM enables analysts to calculate the cost of capital and discount future cash flows, thus enabling them to estimate the net present value of investments made in the park. By incorporating risk factors into the analysis, CAPM facilitates a more accurate representation of the park's true economic value, taking into consideration its long-term significance.

As indicated earlier, the research discussed aims to offer a broad perspective on the economic valuation of Sengkaling Recreation Park. By integrating multiple approaches, such as those outlined above, the study seeks to inform decision-makers regarding revenue optimization, sustainable management, and investment strategies. Similar efforts have been undertaken in numerous contexts, as exemplified by the work of economists like McConnell et al. who examined the economic impacts of protected areas worldwide, and Klemm et al. who investigated the economic contributions of urban green spaces. Both examples demonstrate how interdisciplinary collaboration between economics and natural sciences can lead to a deeper appreciation of the complexities involved in assessing the economic value of parks and open spaces.

Conclusion

In conclusion, this research has provided valuable insights into the economic valuation of Sengkaling Recreation Park. Through various methodologies such as regression analysis, consumer surplus estimation, and the application of economic concepts like annuity perpetuity, the economic value of the park has been assessed comprehensively.

The findings indicate that Sengkaling Recreation Park holds significant economic value, both in terms of direct consumer spending and the broader environmental services it provides. The willingness of visitors to pay, as evidenced by consumer surplus estimates, suggests that there is potential to optimize revenue through adjustments to entrance fees.

Furthermore, the perpetual economic value derived using the annuity perpetuity concept underscores the long-term importance and sustainability of the park as a valuable asset. It highlights the need for sustainable management practices to preserve and enhance its economic value over time.

However, it's important to note that while this research provides a comprehensive economic assessment, there are limitations, particularly in quantifying certain intangible environmental benefits. Future studies could explore these aspects further to gain a more complete understanding of the park's economic significance.

In essence, Sengkaling Recreation Park not only serves as a popular recreational destination but also represents an essential economic asset with potential for further development and conservation. By leveraging these findings, policymakers and park managers can make informed decisions to maximize both economic and environmental benefits for present and future generations.

References

- Jala and L. Nandagiri. (2015). Evaluation of Economic Value of Pilikula Lake using travel cost and contingent valuation methods. *Aquatic Procedia* (Elsevier), February: 1315-1321
- Gravitiani. E dan Raharjo. M. (2012). The Economic Value of Sangiran Museum, Central Java, Indonesia Application of Travel cost method. *Social Economics Art*, vol 2; no 2.
- Soeratno dan Lincoln Arsyad. (2008). *Metodologi. Penelitian untuk Ekonomi dan Bisnis*. Edisi Revisi. Yogyakarta: UPP AMP YKPN
- Miller, Zachary D., Amy Tendick, Caleb Meyer, David Pettebone, Bret Meldrum, and Steve Lawson. (2023). "Comparing Visitor Perceptions, Characteristics, and Support for Management Actions before and during a Pilot Timed Entry System at Arches National Park" *Sustainability* 15, no. 13: 10035. <https://doi.org/10.3390/su151310035>

- Yasushi Shoji, Hyerin Kim, Takahiro Tsuge, Koichi Kuriyama. (2023). Impact of user fees for visitors to national parks in the presence of alternative sites, *Annals of Tourism Research Empirical Insights*, Volume 4, Issue 2. <https://doi.org/10.1016/j.annale.2023.100104>
- Alén, Elisa & Losada, Nieves & Domínguez Vila, Trinidad. (2015). The Impact of Ageing on the Tourism Industry: An Approach to the Senior Tourist Profile. *Social Indicators Research*. 127. DOI: 10.1007/s11205-015-0966-x
- Neringa Vilkaite-Vaitone & Ilona Skackauskiene. (2024). How Demographics Influence Travel Choices? An Investigation on Sustainable Accommodation Booking Behavior. *International Conference on Business Excellence*. Pp.299-310.
- Li, Jun & Ali, Faizan & Kim, Woo. (2017). Age matters: How demographics influence visitor perception and attitude at the destination level. *International Journal of Innovation and Learning*. 21. 149. 10.1504/IJIL.2017.081936.
- Bartosz Bursa, Markus Mailer, Kay W. Axhausen, (2022). Travel behavior on vacation: transport mode choice of tourists at destinations. *Transportation Research Part A: Policy and Practice*, Volume 166, Pages 234-261, <https://doi.org/10.1016/j.tra.2022.09.018>.
- Xue, Lan & Zhang, Yimo. (2020). The effect of distance on tourist behavior: A study based on social media data. *Annals of Tourism Research*. 82. 102916. 10.1016/j.annals.2020.102916.
- Élodie Marion, Varda Mann-Feder. (2020). Supporting the educational attainment of youth in residential care: From issues to controversies. *Children and Youth Services Review*. Volume 113. <https://doi.org/10.1016/j.childyouth.2020.104969>.
- Liu, Claire & Lin, Mao-Tang. (2020). Exploring the Travel Motivations and Behaviors of Educational Tourists: A Study of Mainland Chinese Students in New Zealand. *Journal of China Tourism Research*. 16. 10.1080/19388160.2020.1845270.
- Smith, V. K. (1990). Estimating Recreation Demand Using the Properties of the Implied Consumer Surplus. *Land Economics*, 66(2), 111-120. <https://doi.org/10.2307/3146360>
- Ștefănescu L., Ungureanu L. (2006). Using data warehouse for the decisional process of a sustainable firm, *International Journal of Computers Communications & Control*, Volume I, June 2006, page 449. <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=1b50fa74bc5d7e2d717366c18d370fcbd453f7ce>
- Xu, Songjun & He, Xiaoling. (2022). Estimating the recreational value of a coastal wetland park: Application of the choice experiment method and travel cost interval analysis. *Journal of Environmental Management*. 304. 114225. 10.1016/j.jenvman.2021.114225.
- Wertenbroch, K., & Skiera, B. (2002). Measuring Consumers' Willingness to Pay at the Point of Purchase. *Journal of Marketing Research*, 39(2), 228-241. <https://doi.org/10.1509/jmkr.39.2.228.19086>
- Zhiyong Han, Dan Zeng, Qibin Li, Cheng Cheng, Guozhong Shi, Zishen Mou. (2019). Public willingness to pay and participate in domestic waste management in rural areas of China, *Resources, Conservation and Recycling*, Volume 140, Pages 166-174, <https://doi.org/10.1016/j.resconrec.2018.09.018>.
- Hansen, J. A., & Pihl-Thingvad, S. (2019). Managing employee innovative behaviour through transformational and transactional leadership styles. *Public Management Review*, 21(6). <https://doi.org/10.1080/14719037.2018.1544272>