

RESEARCH ARTICLE



The Effect of Environmental Knowledge and Perceived Value on Visitor Experience in Forest Recreation

Kaswanto^a, Fitri Rahmafritria^b, Amarizni Mosyaftiani^c, Harityas Wiyoga^d

Article Info:

Received 14 March 2024

Revised 27 June 2024

Accepted 30 June 2024

Corresponding Author:

Fitri Rahmafritria

Resort and Leisure Management
Program

Universitas Pendidikan Indonesia

E-mail: rahmafritria@upi.edu

This paper was presented at
International Conference on
Responsible Tourism and
Hospitality (ICRTH) 2023

© 2024 Kaswanto et al. This is an
open-access article distributed
under the terms of the Creative
Commons Attribution (CC BY)
license, allowing unrestricted
use, distribution, and
reproduction in any medium,
provided proper credit is given
to the original authors.



^aDepartment of Landscape Architecture, Faculty of Agriculture, IPB University, Darmaga Campus, Bogor 16680, Indonesia

^bUniversitas Pendidikan Indonesia, Bandung, Indonesia

^cRimbun Landscape Research Institute, Depok, Indonesia

^dUSDA Forest Service, International Program, Washington DC, USA

Abstract

Vandalism and environmental degradation pose challenges in natural recreation areas, prompting the need for interventions to promote environmental consciousness and nature appreciation. This study investigates the role of knowledge and perceived value in enhancing ecological experiences. A five-point Likert scale survey was distributed to 235 visitors at Djuanda Forest Park in Bandung, Indonesia. Structural Equation Modeling (SEM-PLS) was employed to analyze direct and indirect influences. The results demonstrate that enhancing ecological perceived value positively impacts visitors' interactions with nature. Moreover, increased actual knowledge regarding environmental degradation enhances the perceived value of outdoor recreation in natural settings. These findings highlight the importance of developing educational programs in natural recreation areas to support sustainable environmental practices.

Keywords: actual knowledge, ecological experience, environmental perceived value, forest recreation, visitor behavior

1. Introduction

In efforts to promote recreation in forest areas, managing visitor vandalism is crucial for environmental sustainability [1]. While eco-friendly behavior is ideal, effective educational strategies in recreation areas must be explored. Vincente-Molina suggests that emphasizing perceived ecological value can minimize vandalism [2]. However, the current literature does not focus on educating visitors during their recreational experience to foster sustainable behavior.

This study aims to bridge this gap by analyzing how actual knowledge impacts visitors' perceived value and ecological experiences. Previous research has noted the significance of environmental perception on behavior [3-5]. Castellanos-Verdugo et al. [3] found that visitor knowledge positively influences attitudes and behaviors related to ecotourism. Nonetheless, the direct influence of knowledge on behavior is debated, highlighting the need for practical knowledge application [6]. This study utilizes actual knowledge to examine how the perceived value of natural spaces affects environmentally conscious behavior [7]. By focusing on actual knowledge rather than theoretical, this study seeks to develop guidelines for educational programs that mitigate negative behaviors and support a sustainable environment. The results will offer valuable insights into optimizing visitor education to promote eco-friendly behavior and enhance ecological experiences. Practically, this research helps provide guidelines for developing education programs in nature recreation areas to minimize negative visitor behavior and support realizing a sustainable environment.

2. Literature Review

In this research, environmental knowledge is the knowledge and awareness of environmental problems and possible solutions to those problems. It can also be defined as the ability to identify various symbols, concepts, and behavioral patterns related to environmental protection, so its concept is objective knowledge [8]. More profound knowledge about

environmental issues held by someone is correlated with their interest in taking action to protect the environment [9].

The study explained that respondents' lack of knowledge often hampered their pro-environmental behavior [10]. However, explained that the influence of knowledge would not be significant if the education process did not build individual awareness [11]. Therefore, it can be assumed that knowledge plays a role in building pro-environmental behavior through psychological processes that build experiences and value, thus affecting behavior. Experience and perceived value are psychological variables that build awareness [1]. This shows that knowledge is essential but needs to be mediated by other variables to explain how environmentally friendly behavior can be built. Structurally, the conceptual model can be observed in figure 1.

Based on the literature review above, the following hypotheses are proposed:

H1: Environmental knowledge influences environmental perceived value

H2: Environmental perceived value influences the ecological experience

H3: Environmental knowledge can enhance visitors' ecological experience through environmental perceived value

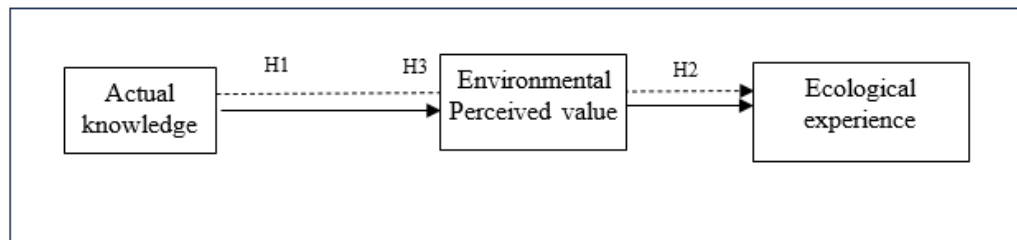


Figure 1. Conceptual model of visitor behavior in forest recreation

3. Materials and Methods

This research was conducted using a survey approach, distributing questionnaires to visitors of Djuanda Forest Park in Bandung, Indonesia. Djuanda Forest Park covers 526.98 hectares, directly borders residential areas, and is located approximately 14 km from the city's center. The park, dominated by trees and hosting 112 species, is a significant ecological site frequently visited on regular days and holidays.

The survey was conducted from March to May 2023. To ensure diversity in responses, surveys were distributed at different times of the day on weekdays and weekends.

This study used a questionnaire to collect data regarding respondents' perceptions and behaviors related to urban forest conservation areas. Table 1 provides a detailed operationalization of the variables and indicators. The variables were measured using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was self-administered, with instructions provided to respondents at the distribution point.

Respondents were selected using a convenience sampling method. Visitors were approached at key points within Djuanda Forest Park, including entrances and popular spots where tourists and natural trails concentrate. Participation was voluntary and limited to those above 17 years old to ensure their decision-making capability. Other than that, no specific inclusion or exclusion criteria were applied.

The sample consisted of 235 individuals, and demographic details such as age, gender, and education level were collected to help evaluate its representativeness. Informed consent was obtained from all participants, ensuring they were aware of the study's purpose and their role in it.

Table 1. The operationalization of variables

No.	Variables	Indicators	Code	Statements
1	Knowledge about the environmental condition	Objective knowledge	K1	I know that the quality of our earth's environment is increasingly declining
			K2	I know that environmentally friendly behavior must start with oneself
			K3	I know that the reduction in forest area will worsen climate change on earth
2	Environmental perceived value [12]	Biospheric	PV1	Doing recreational activities in the Forest Park gives me personal satisfaction because it has contributed to a better environmental quality
		Egoistic	PV2	Recreation in the urban forest can improve physical and mental health
		Altruistic	PV3	Recreation in the Forest Park can provide benefits for other living creatures
3	Experience with nature [7]	Attached	Ex1	When I am in Forest Park, I feel attached to nature
		Relate	Ex2	When I am in Forest Park, I feel like a part of nature
		United	Ex3	When I am in Forest Park, I feel comfortable because I am united with nature
		Close	Ex4	When I am in Forest Park, I feel calm because I am close to nature

4. Results and Discussion

The demographic survey results indicate that the respondents consist of 48.93% females and 51.06% males, predominantly young visitors, with 37.44% aged between 19 and 25 years and 28.08% between 25 and 35 years. There were also small proportions of elderly (4.25%) and adolescent respondents (8.51%) (Table 2).

Table 2. Respondent characteristics based on gender and age

Gender	Number of respondents	(%)
Female	115	48.93
Male	120	51.06
Total	235	100.00
Age	Number of respondents	(%)
A (15–19 years old)	20	8.51
B (>19–25 years old)	88	37.44
C (>25–35 years old)	66	28.08
D (>35–45 years old)	28	11.91
E (>45–55 years old)	23	9.78
F (>55 years old)	10	4.25
Total	235	100.00

4.1. Inner model

Construct validity and reliability testing show that all tested variables have a loading factor greater than 0.7. All latent variables recorded AVE values > 0.5, Cronbach's Alpha, and Composite Reliability > 0.7, confirming validity and reliability (Table 3).

Table 3. Construct validity and reliability values

Latin	Average Variance Extracted (AVE)	Cronbach's Alpha	Composite Reliability
Actual Knowledge	0.684	0.861	0.915
Environmental perceived value	0.802	0.753	0.890
Ecological experience	0.782	0.845	0.896

4.2. Structural model

The structural model analysis reveals significant positive relationships:

- Actual knowledge positively influences environmental perceived value (t-statistic = 15.190, original sample = 12.837).
- Environmental perceived value positively influences ecological experience (t-statistic = 20.882, original sample = 0.626).
- Indirect effects are also significant (t-statistic = 9.336, original sample = 0.337) (Figure 2, Table 4).

These results indicate that higher actual knowledge about the declining quality of natural ecosystems increases the perceived value of recreating in natural areas. This perceived value significantly improves visitors' ecological experience.

4.3. Discussion

The structural model was analyzed using two measurements, namely the path coefficient and the t-statistic. The standard value of the T-statistic is greater than the t-table, which is 1.96, so it is said to have a significant relationship. The structural model can be observed in figure 2. The influence of actual knowledge on environmental perceived value is known to have a t-statistic of 15.190 with an original sample of 12.837, indicating that the influence is significant and positive.

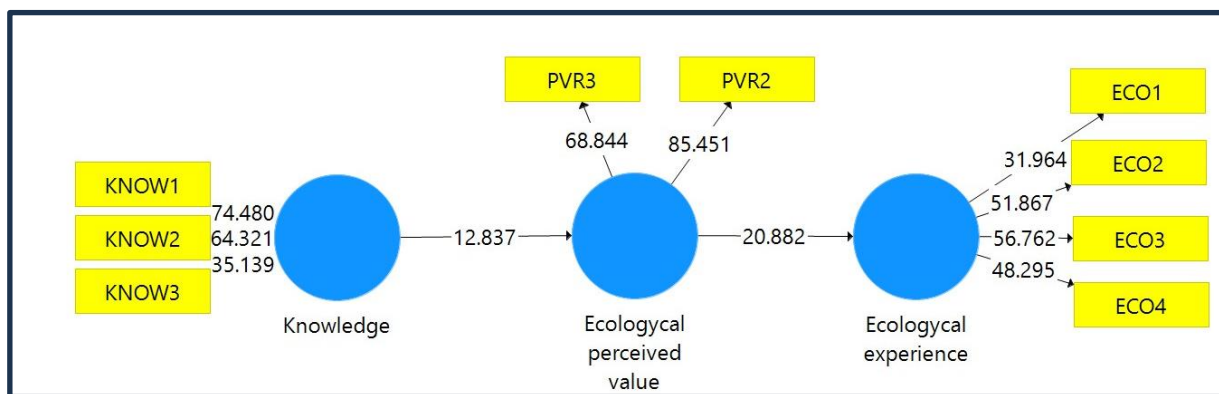


Figure 2. Significance values (t-statistic)

The results suggest that initiatives to increase visitors' actual environmental knowledge can enhance their perceived value of natural areas. Consequently, this can lead to more meaningful ecological experiences, fostering a deeper connection with nature. This emphasizes the practical viability of designing educational programs and informational campaigns targeting environmental knowledge to promote sustainable tourism and eco-friendly behaviors.

These findings align with previous studies [12,13], stating that environmental knowledge significantly influences attitudes and behaviors toward nature. However, this study extends the literature by demonstrating the mediating role of perceived value in enhancing ecological experiences. Unlike [12], which focuses purely on the knowledge-behavior link, our study highlights how perceived value serves as a critical intermediary, emphasizing the multidimensionality of ecological engagement. Furthermore, this complements the work by

[14] by empirically validating that positive ecological experiences arise from informed subjective responses to environmental conditions.

Our results suggest that increasing environmental knowledge can enhance perceptions and ecological experiences, a nuance not extensively covered in earlier works. This nuanced understanding can inform policy and practice, guiding the development of targeted environmental education programs within natural recreational settings.

In summary, this research highlights the pivotal role of actual environmental knowledge and perceived value in fostering positive ecological experiences, providing a comprehensive understanding that can inform future interventions to promote sustainable tourism practices.

5. Conclusions

This study highlights the significance of developing educational programs in urban forests and conservation areas. The research reveals that heightened environmental knowledge can enrich an individual's ecological experience, fostering a deeper connection to nature. Theoretically validating the importance of environmental knowledge, the study confirms that tourists acquire a greater appreciation for nature and exhibit increased empathy and concern when equipped with ecological understanding. Consequently, enhancing tourists' environmental knowledge can lead to more positive emotional responses to nature. To optimize the management of recreational spaces, it is crucial to shift focus from mere attractiveness and comfort provision to designing impactful environmental education programs. These programs should enhance visitors' environmental experiences, knowledge levels, and perceptions of ecological value.

In implementing these educational initiatives, an experiential education approach is pivotal. Educational programs in urban forest and conservation areas should offer visitors objective knowledge about the current environmental condition, striving to create a sense of closeness, unity, and relatedness with nature. Importantly, disseminating knowledge about the ongoing environmental challenges in our ecosystems can elevate visitors' perceived ecological value. Through such programs, visitors can comprehend the positive impact of their activities in these natural settings, contributing to improved health, enhanced physical and environmental quality, and elevated social conditions within the community.

Author Contributions

K: Conceptualization, Data curation, Formal Analysis, Writing; **FR:** Methodology, Formal analysis, Writing – review & editing; **AM** and **HW:** Data curation, Writing –original draft

Conflicts of interest

There are no conflicts to declare.

Acknowledgments

This research was funded by the Post Doctoral Fellowship Grant from IPB-University, Indonesia.

References

1. Dunkley, R. A. 2016 Learning at Eco-Attractions: Exploring the Bifurcation of Nature and Culture through Experiential Environmental Education. *The Journal of Environmental Education*, **2016**, 47(3), 213-221.
2. Vicente-Molina, M. A.; Fernández-Sáinz, A.; Izagirre-Olaizola, J. Environmental knowledge and other variables affecting pro-environmental behaviour: comparison of university students from emerging and advanced countries. *Journal of Cleaner Production*, **2013**, 61, 130-138.

3. Castellanos-Verdugo, M.; Vega-Vázquez, M.; Oviedo-García, M. Á.; Orgaz-Agüera, F. The Relevance of Psychological Factors in The Ecotourist Experience Satisfaction through Ecotourist Site Perceived Value. *Journal of Cleaner Production*, **2016**, 124, 226-235.
4. Ahmad, A. Conservation of Island Biodiversity in Brunei Darussalam: The Role of Ecotourism in Environmental Education. *International Journal of Ecology & Development*, **2015**, 30, 51-63.
5. Jamin, A.; Rahmafritia, F.; & Nurazizah, G. R. Rebuilding health tourism destination image after Covid-19: The case of Malaysia And Indonesia. IEEE 8th R10 Humanitarian Technology Conference (R10-HTC), **2020**, (pp. 1-6). IEEE.
6. Ajzen, I.; Joyce, N.; Sheikh, S.; Cote, N. G. Knowledge and The Prediction of Behavior: The Role of Information Accuracy in The Theory of Planned Behavior. *Basic and applied social psychology*, **2011**, 33(2), 101-117.
7. Kim, M. S.; Kim, J.; Thapa, B. Influence of Environmental Knowledge on Affect, Nature Affiliation and Pro-Environmental Behaviors among Tourists. *Sustainability*, **2018**, 10(9), 3109.
8. Laroche, M.; Bergeron, J.; Barbaro-Forleo, G. Targeting Consumers Who are Willing to Pay more for Environmentally Friendly Products. *J. of Consum. Mark.* **2001**, 18(6), 503–520.
9. Mobley, C.; Vagias, W.M.; DeWard, S. L. Exploring Additional Determinants of Environmentally Responsible Behaviour: The Influence of Environmental Literature and Environmental Attitudes. *Environ. and Behav.* **2010**, 42(4), 420–447.
10. Kennedy, E.H.; Beckley, T.M.; McFarlane, B. L.; Nadeau, S. Why We Don't Walk The Talk: Understanding the Environmental Values/Behaviour Gap in Canada. *Hum. Ecol. Rev.* **2009**, 16(2), 151–160.
11. Napitupulu DW, Rahmafritia F, Rosita R. The effect of tourism accessibility perception towards tourists visiting intention to Toba lake in Samosir district. *Journal of Indonesian Tourism, Hospitality and Recreation.* **2021** Apr;4(1):39-52.
12. Stern, P. C. New Environmental Theories: Toward A Coherent Theory of Environmentally Significant Behavior. *Journal of Social Issues*, **2000**, 56(3), 407-424.
13. Um, S.; Chon, K.; Ro, Y. H. Antecedents of revisit intention. *Annals of Tourism Research*, **2006**, 33(4), 1141-1158.
14. Rahmafritia F, Kaswanto RL. The role of eco-attraction in the intention to conduct low-carbon actions: a study of visitor behavior in urban forests. *International Journal of Tourism Cities.* **2024** Mar 25.