PLANNING MALAYSIA:
Journal of the Malaysian Institute of Planners
VOLUME 21 ISSUE 6 (2023), Page 374 – 383

MEDIATION ROLE OF INTENTION IN THE ENVIRONMENTAL ATTITUDE-BEHAVIOR RELATIONSHIP

Wan Nor Azilawanie Tun Ismail[1], Mohd Khairul Amri Kamarudin[2], Normah Awang Noh[3], Norsuhaily Abu Bakar[4], Asmawi Ibrahim[5]

[1,2,3,4,5] *Faculty of Applied Social Sciences,*
UNIVERSITI SULTAN ZAINAL ABIDIN

Abstract

The issues related to environmental quality have plagued the minds, harmony and well-being of all humankind. The mentioned environmental issues involve crucial aspects directly related to the behaviour and lifestyle of societies that prioritize economic and material development over environmental conservation for future generations. Therefore, this study aims to assess the role of intention in the relationship between attitude and environmental behaviour. A survey design with a quantitative approach was used in this study. The study focused on rural area located in contaminated river basins in the state of Terengganu. Using a cluster sampling technique, cross-sectional self-report data were collected from residents living within a 500-meter radius of Terengganu's categorized polluted river (n = 373). This study employed partial least squares structural equation modeling (PLS-SEM) to evaluate the proposed relations between the variables. The findings indicated that intention was a mediating variable in the relationship between attitude and environmental behaviour. The results also discovered that the information exposure through media does not act as a moderator between intention and environmental behaviour. Raising environmental awareness and practicing sustainable behaviors are essential to strengthening a country's capacity for sustainable development and cultivate a responsible and environmentally concerned society.

Keywords: Environmental Attitude, Intention, Exposure Message through Media, Environmental Behavior

[1] Lecturer at Universiti Sultan Zainal Abidin. Email: azilawanieismail@unisza.edu.my

INTRODUCTION

The river management issue has recently become critical due to the worsening of the river pollution problem. River management is an effort to preserve and conserve the river so that it remain safe and free from pollution.

In other words, river management offers a mechanism to regulate and direct how people interact with this aspect of the environment so that the river's quality and the significance of living things, notably people, are constantly maintained. River management's primary goals include preserving the current river for usage now and in the future, reducing the effects of diverse human activities on the river, and improving the quality of the river.

There are numerous programmes or campaigns have been conducted to improve the river's water quality. However, the level of civic consciousness of the community towards the environment, especially river care, is still low. An officer from the Department of Rivers and Drainage of Terengganu reported that trash traps have been installed in the rivers to collect waste disposed into the river, helping to lessen the pollution in the river. However, irresponsible actions by the local community have turned these trash traps into places where they also disposed their waste. As a result, the accumulation of garbage in these traps can become breeding grounds for Aedes mosquitoes (Ismail, 2020). This irresponsible behavior has negative implications for the residents and the wildlife inhabiting the surrounding environment. This problem can be evidenced by the experiences of residents who go to the river to catch fish and find that aquatic life, such as fish, snails, and shrimp, dies due to poisoning caused by water pollution (He et al., 2022). It also affects the health of people who use the river as a source of drinking water, experiencing symptoms like diarrhea, vomiting, and headaches (Preko et al., 2021). Sadly, humans are often unaware that their actions are harming the environment.

The issue of improper waste disposal in rivers has led to environmental pollution, adverse effects on local inhabitants, and disruptions to the natural ecosystem. The need for greater civic awareness and responsible behavior is crucial for protecting the environment and preserving the cleanliness of water bodies (Alias et al., 2023; Ismail et al., 2023). According to Wyss (2022), environmental attitudes are a helpful way to comprehend the collection of ideas, interests, or norms that affect environmental behaviour. While intention is defined as motivation, or someone's desire and willingness to perform a particular behavior. Based on the Theory of Planned Behavior, intention is the main factor determining a behavior's implementation (Ajzen, 2012; Ajzen, 1991). The higher a person's desire to act, the more likely that person is to perform a particular behavior (Pan et al., 2018).

As a result, numerous studies have been conducted to assess the level of knowledge and awareness among the general public, teachers, and students

regarding environmental issues, and the results have been unsatisfactory (Bertossi & Marangon, 2022; Kyriakopoulos et al., 2020; Rezaei et al., 2022; Wut et al., 2021; Yu, 2022). A study by Pelcher (2023) shows sport management students in higher education institutions across North America have values, beliefs, and norms moderately connected to pro-environmental stances. Next, the finding from a study by Giannetti (2021) shows that the happiest and most academically students in higher education institution astute participants were only slightly environmentally sustainable or not sustainable at all.

The inconsistent findings across various studies on environmental behavior indicate the existence of gaps and inconsistencies that need to be explored in new research to understand the determining factors of behavior toward the environment. Therefore, this study aims to examine the role of intentions in influencing attitudes towards behavior among the community regarding river pollution in the state of Terengganu. This study also investigates the role of information exposure through media as a moderator on the relationship between intentions and environmental behavior. Figure 1 depicts the research framework of this research.

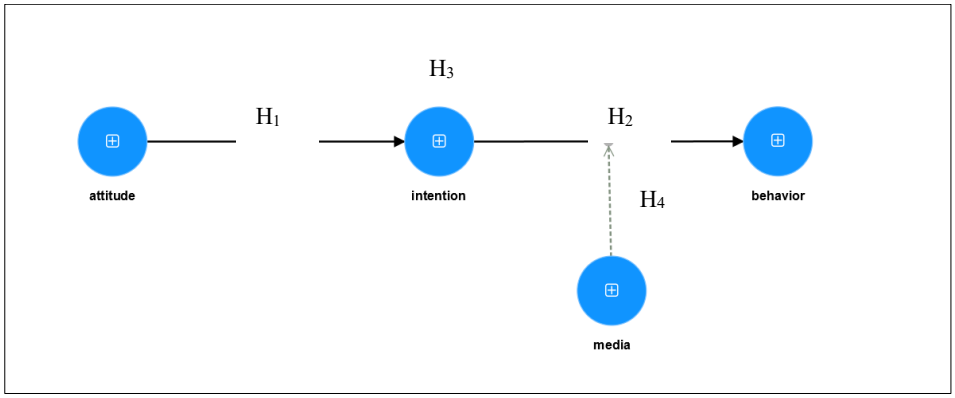

Figure 1: Research Framework

According to this study, attitude predicts environmental behavior. Additionally, this study suggests that intention predicts environmental behavior. The objective of the study is to examine intentions' role in mediating the relationship between attitudes towards behavior. Also, this study aims to confirm exposure messages through media as a moderator between intention and environmental behavior. The following hypothesis is proposed:

H_1: Environmental attitude significantly influences intention.
H_2: Intention has a significant influence on environmental behavior.

H_3: Intention mediates the significant relationship between environmental attitude and environmental behavior.
H_4: Exposure messages through media moderates the significance of intention on environmental behavior.

This determinant is the basis for creating a community aware of the environment, thus producing a more ethical Malaysian society. Measures to correct attitudes, mindsets, and behaviors need improvement to ensure the sustainability of the environment (Azinuddin et al., 2022a; 2022b; 2022c). This is especially crucial in collaborative efforts involving the community and stakeholders in development (Azwar et al., 2023). The aspiration to become a developed country can only be realized when environmental conservation progresses hand in hand with physical development.

RESEARCH METHODOLOGY

Data collection was performed by administering a questionnaire to a sample of residents living within a 500-meter radius of Terengganu's categorized polluted river (n= 373). The questionnaire consisted of five sections regarding environmental attitude, intention, exposure messages through media, environmental behavior, and demographics. Concerning content validity, all constructs were adopted from previous studies. All constructs used seven-point Likert scales from 1 = strongly disagree to 7 = strongly agree. This study employed partial least squares structural equation modeling (PLS-SEM) to evaluate the proposed relations between the variables. The study adopted a two-step process in evaluating PLS-SEM, i.e., assessing the (1) measurement model and (2) the structural model by using Smart PLS 4.

ANALYSIS AND DISCUSSION

Demographic profile

Respondents involved in this study are those aged 16 and above. The results revealed that the majority of respondents, with a percentage of 25.7% (96), were between the ages of 30 and 39, followed by 24.9% (93) between the ages of 20 and 29. Following that, 20.9% (78) of respondents aged 40 to 49 years and 12.1% (45) aged 50 to 59 years. There were 11.5% (43) respondents aged 16 to 19 years old and 4.8% (18) respondents aged 60 and above. Next, the results show that most respondents are female, with a percentage of 55.5% (207). Meanwhile, 44.5% (166) of the respondents were men. The rate in terms of married couples is as much as 64.6% (241) respondents, followed by 29.2% (109) single respondents, 3.5% (13) respondents whose widowed, and 2.7% (10) respondents who are divorced.

Measurement Model Assessment

The measurement model was assessed by examining internal consistency, convergent validity, and discriminant validity, as recommended by Hair et al. (2014). As a result, the validity of the measurement model is satisfactory when the indicator loading was greater than 0.7, composite reliability (CR) was greater than 0.70, and the convergent validity measured by average variance extracted (AVE) was greater than 0.50 (Hair et al., 2014). The discriminant validity was determined by examining the heterotrait-monotrait (HTMT) ratio, which must be between HTMT 0.90 (Henseler et al., 2015). Hence, the analysis indicates discriminant validity was appropriate.

Table 1: Reflective Measurement Model Result

Latent Variable	Indicators	Outer Loadings	Composite Reliability	AVE	Cronbach Alpha
Env Attitude	D1	0.825	0.824	0.644	0.817
	D2	0.798			
	D3	0.787			
	D4	0.800			
Exposure Message through Media	H1	0.741	0.841	0.554	0.839
	H2	0.740			
	H3	0.765			
	H4	0.707			
	H5	0.780			
	H6	0.732			
Intention	J1	0.844	0.893	0.693	0.888
	J2	0.843			
	J3	0.876			
	J4	0.874			
	J5	0.715			
Env Behavior	K6	0.857	0.889	0.685	0.885
	K7	0.857			
	K8	0.761			
	K9	0.836			
	K10	0.824			

Table 1 shows the loadings for each item, and Figure 2 presents the indicator loading visually. Twenty items have loading values greater than 0.70, ranging from 0.707 to 0.876. Table 1 also displays Cronbach's alpha values between 0.817 and 0.888, and the results revealed that CR for each construct in this study ranges from 0.824 to 0.893. Thus, acceptable test results of Cronbach's alpha and CR are obtained. Meanwhile, all obtained values of average variance extracted (AVE) exceed the recommended threshold value of 0.50, ranging from 0.554 to 0.693. The results demonstrated the existence of convergent validity.

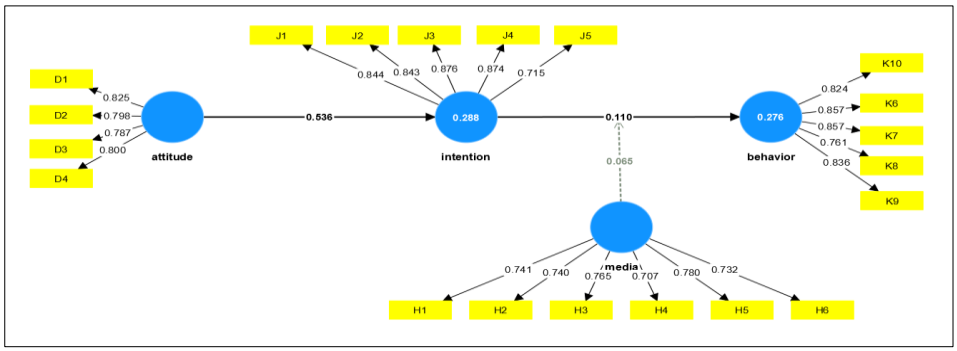

Figure 2: Measurement Model of the variables studied.

Table 2 shows that all constructs were less than the proposed values of 0.90, indicating that discriminant validity was not a problem. Overall, the findings supported each indicator in the measurement model for this study, as shown in Figure 2, demonstrating the measurement model's satisfactory reliability and validity. As a result, these indicators were reliable and suitable for estimating the structural model's parameters.

Table 2: Heterotrait-monotrait ratio (HTMT)

	Env Attitude	**Env Behavior**	**Intention**	**Exposure Message through Media**
Env Attitude				
Env Behavior	0.133			
Intention	0.624	0.214		
Exposure Message through Media	0.169	0.590	0.237	

Structural Model Assessment

Path analysis was used to test the proposed hypotheses. The structural model was tested using the bootstrapping approach with 5,000 subsamples, and the path coefficients' relevance and statistical significance were reported to accept or reject the hypotheses (Hair et al., 2019). This study examined the coefficients and significance to investigate the relationship between two latent variables. Following the suggestion of Hair et al. (2019), this study reported the coefficient of determination (R^2), predictive relevance (Q^2), and effect sizes (f^2).

The R^2 value is the proportion of the variance in the dependent variable that the independent variables can explain. According to Hair et al. (2017), 0.75, 0.50, and 0.25 represent significant, moderate, and weak levels of prediction accuracy, respectively. However, Hair et al. (2011) state that the acceptable value of R^2 may vary depending on the research discipline. For social science research, the R^2 values are suggested as 0.26 for strong, 0.13 for moderate, and 0.02 for weak (Cohen, 1988). Table 3 shows that environmental attitude explained 28.8%

of the variance in intention. At the same time, intention accounted for 27.6% of the variation in environmental behavior. As a result, R^2 value of 0.288 for intention and environmental behavior was classified as weak because R^2 was close to 0.25, indicating an almost weak level. However, as previously stated, R^2 for intention and behavior can be considered strong in this discipline of social science research if it is greater than 0.26.

Next, according to Cohen's (1988) guidelines, f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively. According to Table 3, environmental attitude towards intention has a large effect size of 40.4%. While intention towards environmental behavior has an almost small effect size (1.5%).

Table 3 also reveals that intention has a Q^2 value of 0.195, and environmental behavior has a value of $Q^2 = 0.184$. They all were higher than zero, showing that the model is sufficiently predictive.

Table 3: Path Coefficients of Testing Model

Hyp	Relationship	ß	R^2	Q^2	f^2	T-Statistics	P-Values	Results
H_1	EA -> I	0.540	0.288	0.195	0.404	13.886	0.000	**Accepted**
H_2	I -> EB	0.109	0.276	0.184	0.015	2.188	0.029	**Accepted**

As shown in Table 3, the results show that environmental attitude has a significant relationship with intention (β = 0.540, t-value = 13.886, p-value = 0.000). Since the p-value is <0.05, it was significant, and the finding indicated that H_1 was accepted. As a result, community attitude plays a vital role in contributing to the behavior intention toward river conservation. This result confirms previous findings on attitude as a determining factor in behavioral intention in the theory of planned behavior. Second, the result specifically demonstrated that intention has significance towards environmental behavior (β = 0.109, t-value =0.029, p = 0.029). Statistically, the p-value is <0.05. Thus, H_2 was also accepted. Community intentions and behaviours are critical for environmental conservation. Therefore, identifying enabling factors is vital. The higher a person's desire to act, the more likely that person is to perform a certain behavior (Pan et al., 2018). Promoting good development in people may allow them to actively contribute to their surroundings via positive attitudes and behaviours. Figure 3 depicts the development of three direct hypotheses between the constructs and the outcome of the path analysis.

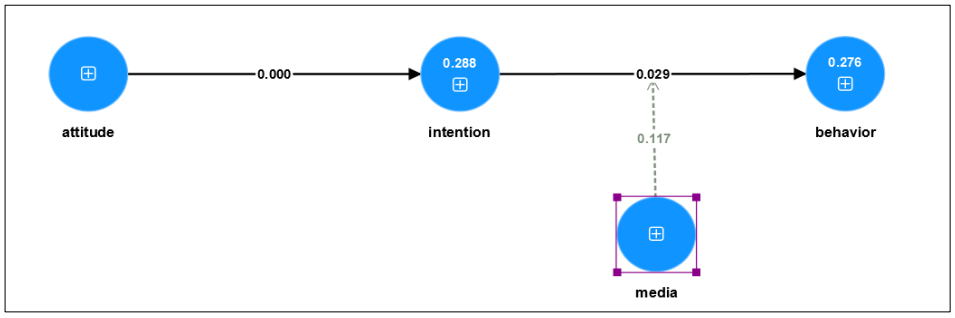

Figure 3: Structural Model

Mediation Analysis

According to Aguinis et al. (2017), mediation considers the existence of an intermediary variable or process that connects the impact of an independent variable to the outcome. The bootstrapping method was used to conduct the mediation studies (Hayes, 2013). The Hair et al. (2014) procedural guideline was adhered to to run the mediation analysis. The results in Table 4 show that intention mediates the relationship between environmental attitude and environmental behavior. The impact of intention on environmental behavior through intention was found to be significant ($\beta = 0.059$, $t = 2.163$, $p = 0.031$), supporting H_3. In summary, the result on attitudes and intentions suggests that individual attitudes give birth to intentions, which lead to behaviour. The findings of this study are consistent with the theory of planned behaviour, which states that attitudes are fundamental to conduct but do not directly cause action; attitudes impact behavioural intentions, which shape our actions (Ajzen, 2012).

Table 4: Mediation Analysis

Hyp	Relationship	ß	SD	T-Statistics	P-Values	Results
H_3	EA -> I-> EB	0.059	0.027	2.163	0.031	**Accepted**

Moderator Analysis

A third variable that modifies the relationship between the independent and dependent variables is referred to as a moderator variable. The result in Table 5 revealed that no moderation effect of exposure messages through media was found between intention and environmental behavior ($\beta = 0.063$, $t = 1.566$, $p = 0.117$), which suggests that H_4 is not supported. It means exposure messages through media are not a moderator variable in relation between intention and environmental behavior. This may be because the environmental awareness section of the mainstream media isn't being enlarged with engaging presentations suited to the needs of each community group.

Table 4: Moderation Analysis

Hyp	Relationship	ß	SD	T-Statistics	P-Values	Results
H_4	Media x I-> EB	0.063	0.041	1.566	0.117	**Rejected**

CONCLUSION

It should be noted that this attitude of neglect and love to destroy the environment and selfishness reflects the irresponsible human spirit. The act of polluting the river is an act that is against ethical and religious values. This irresponsible attitude of society also negatively affects the environment and the quality of human life. Therefore, creating a prosperous river environment depends on the community's attitude and intention to the adverse effects of an individual's actions. The river's well-being can only be achieved if all levels of society play their respective roles with full responsibility.

REFERENCES

Ajzen, I. (1991). The theory of planned behavior. *Orgnizational Behavior and Human Decision Processes*, *50*, 179–211.

Ajzen, I. (2012). The theory of planned behavior. In P. A. M. Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology*. London, UK: Sage.

Alias, N. A., Ismail, W. N. A. T., Amin, A., & Kamarudin, M. K. A. (2023). Application of GIS in spatial model development of attitude residents towards river pollution: a case study of the Terengganu river basin, Malaysia. *Planning Malaysia, 21*(1), 48–57.

Azinuddin, M., Hanafiah, M. H., Mior Shariffuddin, N. S., Kamarudin, M. K. A., & Mat Som, A. P. (2022a). An exploration of perceived ecotourism design affordance and destination social responsibility linkages to tourists' pro-environmental behaviour and destination loyalty. *Journal of Ecotourism*, 1-24.

Azinuddin, M., Mohammad Nasir, M. B., Hanafiah, M. H., Mior Shariffuddin, N. S., & Kamarudin, M. K. A. (2022b). Interlinkage of Perceived Ecotourism Design Affordance, perceived value of destination experiences, destination reputation, and loyalty. *Sustainability*, *14*(18), 11371.

Azinuddin, M., Zain, W. M. A. W. M., & Shariffuddin, N. S. M. (2022c). Tourism Sustainability: Perspectives on past works, issues and future research opportunities. In *Environmental Management and Sustainable Development: Case Studies and Solutions from Malaysia* (pp. 39-51). Cham: Springer International Publishing.

Azwar, H., Hanafiah, M. H., Abd Ghani, A., Azinuddin, M., & Shariffuddin, N. S. M. (2023). Community-Based Tourism (CBT) moving forward: Penta helix development strategy through community local wisdom empowerment. *Planning Malaysia*, *21,* 72-88.

Bertossi, A., & Marangon, F. (2022). A literature review on the strategies implemented by higher education institutions from 2010 to 2020 to foster pro-environmental behavior of students. *International Journal of Sustainability in Higher Education, 23*(3), 522-547.

Giannetti, B. F., Velazquez, L., Perkins, K. M., Trillas-Ortiz, M., Anaya-Eredias, C., Agostinho, F., ... & Munguia, N. (2021). Individual-level characteristics of environmental sustainability among students in a higher education institution: The role

of happiness and academic performance. *International Journal of Sustainability in Higher Education, 22*(7), 1664-1690.

Hair, J.F., Sarstedt, M., Hopkins, L. and Kuppelwieser, V.G. (2014), "Partial least squares structural equation modeling (PLS-SEM): an emerging tool in business research". *European Business Review, 26*(2), 106-121.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM". *European Business Review, 31*(10), 2-24.

He, Y., Liu, X., & Wang, X. (2022). How can environment get better? A research review of pollution governance. *Management of Environmental Quality: An International Journal, 33*(2), 406-418.

Henseler, J., Ringle, C.M. and Sarstedt, M. (2015), "A new criterion for assessing discriminant validity in variance-based structural equation modeling". *Journal of the Academy of Marketing Science, 43*(1), 115-135.

Ismail, W. N. A. T., Amin, A., Kamarudin, M. K. A., Ibrahim, A., & Salleh, N. S. N. M. (2023). Community concerns of river pollution spatial model using Geographic Information System (GIS) in Ibai River, Terengganu. *Planning Malaysia, 21*(1), 89–100.

Kyriakopoulos, G., Ntanos, S., & Asonitou, S. (2020). Investigating the environmental behavior of business and accounting university students. *International Journal of Sustainability in Higher Education, 21*(4), 819-839.

Pan, S. L., Chou, J., Morrison, A. M., Huang, W. S., & Lin, M. C. (2018). Will the future be greener? The environmental behavioral intentions of university tourism students. *Sustainability (Switzerland), 10*(3), 1–17.

Pelcher, J., Trendafilova, S., & Graham, J. A. (2023). An evaluation of the environmental values, beliefs, norms, and behaviors of sport management students in higher education institutions. *International Journal of Sustainability in Higher Education.*

Preko, A., Nkrumah Agyabeng, A., & Mensah, J. K. (2021). Slum dwellers' occupational activities and health implications. *Health Education, 121*(6), 632-648.

Rezaei, A., Ahmadi, S., & Karimi, H. (2022). The role of online social networks in university students' environmentally responsible behavior. *International Journal of Sustainability in Higher Education, 23*(5), 1045-1069.

Wyss, A. M., Knoch, D., & Berger, S. (2022). When and how pro-environmental attitudes turn into behavior: The role of costs, benefits, and self-control. *Journal of Environmental Psychology*, *79*, 101748.

Wut, T. M., Ng, P., Kan, H. K. M., & Fong, C. S. (2021). Does gender matter? Attitude towards waste charging policy and pro-environmental behaviours. *Social Responsibility Journal, 17*(8), 1100-1115.

Yu, H. C. (2022). Creating environmental sustainability: determining factors of water resources information disclosure among Chinese enterprises. *Sustainability Accounting, Management and Policy Journal, 13*(2), 438-458.

Received: 12th July 2023. Accepted: 13th October 2023