WHAT DRIVES GREEN ACTIONS? DETERMINANTS OF PRO-ENVIRONMENTAL BEHAVIOUR AMONG MALAYSIAN PUBLIC IN SOUTHERN REGION

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Abstract. The existence of various environmental issues, including pollution, the exploitation of natural resources, and even society's attitude in Malaysia in recent times, has attracted the attention of various parties. The objective of this study is to identify the influence of dimensions, namely attitude, subjective norms, perceived behavioural control, environmental value, and environmental knowledge, on the practice of pro-environmental behaviour. The study data were collected quantitatively via a questionnaire distributed to 200 respondents in the Southern region of Malaysia, selected using cluster and convenience sampling. This study examined the relationships among variables using Pearson correlation and multiple regression analyses. The findings indicate strong and significant correlations among attitude, subjective norms, perceived behavioural control, environmental value, environmental knowledge, and pro-environmental behaviour. The regression revealed that environmental knowledge is the most significant predictor. To foster sustainable generations in the future, the application of values, attitudes, and knowledge of environmental care needs to be introduced at an early stage through formal and informal programmes and education.

Keywords: *theory of planned behaviour, pro-environmental behaviour, Malaysian public, Southern region, regression analysis*

Introduction

Citizen participation in environmental preservation not only helps maintain biodiversity and air, water, and soil quality but also increases social awareness and community involvement in protecting nature (Gatersleben, 2023). Caring for the environment has many positive impacts for individuals, society, and the environment itself. A caring attitude helps maintain the balance of nature, where every element has an important role in the survival of the ecosystem (Van Valkengoed et al., 2022). By applying a caring attitude, we can avoid actions that harm the environment, such as deforestation, air pollution, and the use of dangerous chemicals (Liu and Green, 2024). A clean environment can help us live safely, comfortably, and peacefully, reducing the impact of infectious diseases associated with pollution, such as dengue fever and typhoid (Farrukh et al., 2023). Previous studies show that Malaysian society's level of environmental awareness remains low compared to developed countries such as Japan, Denmark, and Germany (Mohd Nordin et al., 2025). The public's attitude towards environmental issues is very worrying. Preliminary studies show that most of the public consider protecting the environment to be the government's responsibility (Farrukh et al., 2023). The community is more sensitive to environmental issues, especially those

close to them, but awareness of how to get involved in overcoming these problems is minimal (Batool et al., 2024). Annually, Malaysia produces nearly 13.5 million tonnes of waste.

What is more worrying is that this figure is increasing alongside Malaysia's population growth. In comparison, only 19,000 tonnes of waste were disposed of every day in this country in 2005, or on average, a Malaysian disposed of about 0.8kg of waste per day. However, that average figure increased to 1.1kg of waste per day in 2021, equivalent to 39,936 tonnes of waste per day (DOSM, 2023). A few years ago, several schools in Pasir Gudang, Johor, had to be temporarily closed when a group of students fainted after inhaling methane gas released into a nearby river by an irresponsible factory. At the same time, some Malaysians also prefer to throw garbage everywhere rather than into designated garbage dumps (Mahmud et al., 2021). Such an attitude makes garbage management more complicated and expensive because it is not disposed of properly. The above situation clearly illustrates that the public's awareness and attitude towards the environment remain low and worrying (Mahmud et al., 2021). Without public cooperation and commitment, achieving and implementing environmental sustainability will be difficult (Piao and Managi, 2024). It cannot be denied that the government and agencies have made many efforts. However, it is seen as having little impact on public awareness of environmental preservation and conservation (Zulkepeli et al., 2024). This is evident when various environmental issues remain prevalent and show no signs of decreasing. This raises doubts for us: are the existing environmental awareness programs and educational curricula insufficient or weak to have the desired impact on the community?

Therefore, the involvement of everyone and society is a major step toward achieving sustainability and environmental conservation (Asmizar et al., 2024). Pro-environmental behaviour is an action that benefits the environment and minimizes environmental damage. A person's pro-environmental behaviour is influenced by internal factors, such as knowledge, attitudes, awareness, and practices, as well as external factors, such as the situation, economy, and social context (Liu and Green, 2024). Correia et al. (2022) opined that internal factors are more dominant in influencing a person's behaviour towards the environment than external factors. On the other hand, Wang et al. (2023a) and Yee et al. (2022) mentioned that external factors, such as incentives, penalties, and punishments, can be used to overcome environmental pollution. Authorities such as the Ministry of Science, Technology, and Innovation should enforce existing laws to punish the parties concerned. Moreover, environmental campaigns broadcast on TV and radio could create a sense of responsibility. According to Esfandiar et al. (2023) as well as Shanmugavel and Balakrishnan (2023), community members are the primary targets of environmental conservation campaigns worldwide. Every level of society, starting from the lowest level, namely small children in school, up to community leaders, needs to be mobilized not only to understand environmental problems but also to be involved in conservation efforts (Qalati et al., 2022). In fact, the local community's knowledge of the environmental problems they face is also useful in such conservation efforts. Therefore, any environmental conservation effort that ignores local community involvement is bound to fail.

Despite this, there is still a lack of in-depth analysis of the mechanisms underlying a person's pro-environmental behaviour, including the impact patterns, interactions, and relationships among the variables that shape it (Esfandiar et al., 2023). Although environmental issues are important, several research gaps remain. First, most past

studies have assessed the basic factors of the theory of planned behaviour (TPB), namely attitude, subjective norms, and perceived behavioural control. However, factors such as environmental knowledge and values have rarely been studied (Hogg et al., 2024; Piao and Managi, 2024). In addition, most past studies have emphasised the aspect of intention. This study has focused on pro-environmental behaviour to assess whether Malaysians really care for the environment. Furthermore, most studies have focused on developed countries, and the Klang Valley, and studies assessing pro-environmental behaviour among people in Malaysia's southern zone are still lacking (Nordin et al., 2025; Asmizar et al., 2024). In this regard, it is very important to conduct further research into the relationships among the factors involved. Drawing on the theory of planned behaviour (TPB), this study examines pro-environmental behaviour among the Malaysian public in the Southern region. Specifically, this study examines pro-environmental behaviour among the community using selected variables: attitude, subjective norms, perceived behavioural control, environmental value, and environmental knowledge. This study focuses on the community because their behaviour will determine the future state of the environment. The community needs to be aware of its responsibility in maintaining environmental quality. Environmental governance does not only lie on the shoulders of the government, but the involvement of all parties, non-governmental organizations, the private sector, the community, and individuals is highly encouraged in maintaining environmental quality (Alsaad et al., 2023).

Literature review

Theory of Planned Behaviour (TPB) in framing pro-environmental behaviour

The Theory of Planned Behaviour (TPB) focuses on the intention that drives behaviour (Ajzen, 1991). A person sets an intention to do something, which shows determination or effort. The intention is driven by three main elements: attitude, subjective norms, and perceived control over behaviour (Ajzen, 2011). Taking into account these three elements, a person's behaviour is a decision that is determined by the attitude towards the behaviour or the perception of surrounding factors such as the benefits or harms caused by the behaviour (attitude), social pressure that supports or opposes it (subjective norms), and the accessibility or difficulty that can be experienced in carrying out the behaviour (behavioural control) (Ajzen, 2011). These three elements are influenced by beliefs, as shown in *Figure 1*. Beliefs are cognitive feedback and reflect a person's knowledge and views about a matter. This study referred to and used TPB to explain the pro-environmental behaviour of the Malaysian public. According to Liu and Green (2024),s pro-environmental behaviour is a person's willingness to minimize the negative impact of their actions on nature and development, such as reducing resource consumption, conserving energy, using non-toxic materials, and reducing waste. Pro-environmental behaviour is defined as an effort to take preventive action to protect the environment (Farrukh et al., 2023). Batool et al. (2024) stated that someone with an environmentally friendly attitude will be more likely to favor ecological products and participate in environmental protection activities. Extending TPB, this study also proposes environmental value and environmental knowledge as important enablers. Environmental values are linked to personal values, beliefs, and norms, shaping perceptions of behavioural change. Behavioural changes will occur if every human being has value elements within as motivation and encouragement (Liu et

al., 2022). Biosphere, egoistic, and social altruistic value orientations are seen as important elements in shaping a person's behaviour (Hogg et al., 2024). In producing a generation that can cultivate environmental awareness in daily life and subsequently support the Sustainable Development Goals (SDGs), education has been the primary means. Formal and informal education are essential for providing basic knowledge about the environment, raising awareness, and increasing community concern about environmental changes and the factors that influence them (Xie and Lu, 2022). The existing knowledge base can serve as a guide for action, especially regarding environmental well-being (Si et al., 2022). Therefore, early exposure to environmental education is essential. This is because increased understanding and awareness are important elements in building characters that cultivate an environment conducive to sustainable development (Hossain et al., 2022). This situation will only be achieved when every individual in society has a clear understanding of the environment (*Figure 2*).

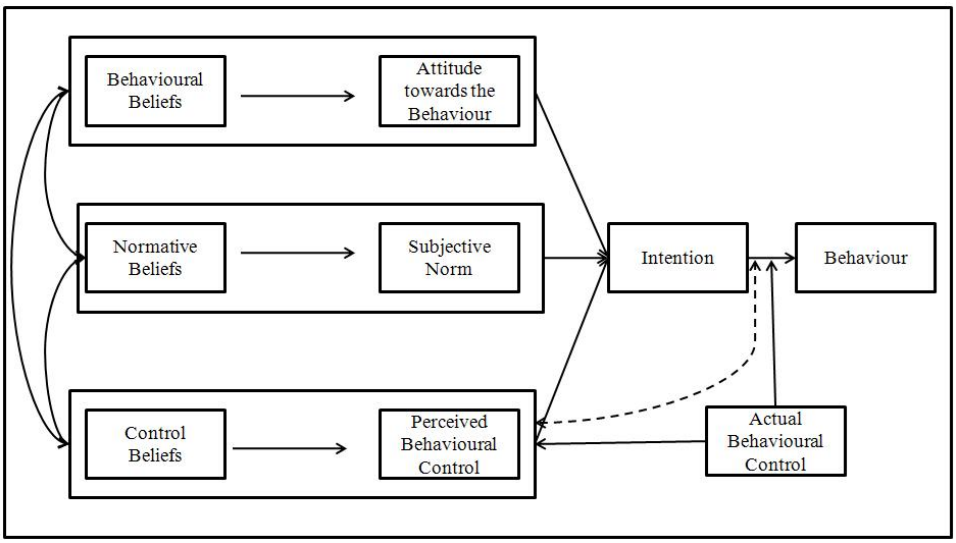

Figure 1. *TPB model.*
Source: Ajzen (1991).

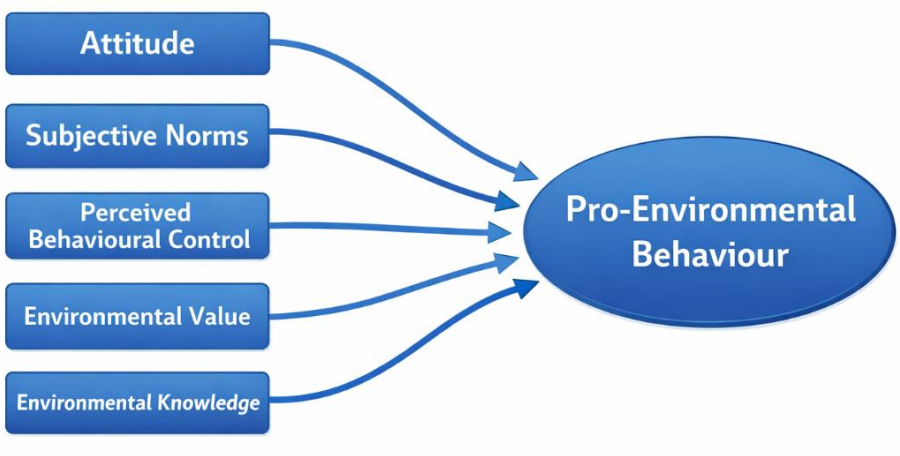

Figure 2. *Research model.*

Attitude and pro-environmental behaviour

Attitude elements are often described as including beliefs (belief-cognitive), feelings (feeling-affective), and behaviour, or as cognitive, affective, and action components (Batool et al., 2024). According to Ajzen (1991), attitude will in turn influence a person's intention to perform the behaviour. For example, those who feel comfortable and happy tend to have the intention to perform the behaviour, and vice versa for individuals with a negative attitude (Ajzen, 1991). Individuals who are positive towards the environment will apply pro-environmental behaviour in their daily lives (Asmizar et al., 2024; Zulkepeli et al., 2024). This opinion has been supported by studies conducted by Esfandiar et al. (2023) as well as Correia et al. (2022). Shanmugavel and Balakrishnan (2023) define environmental attitudes as an individual's cognitive value judgment towards environmental protection, grounded in environmental protection values. Qalati et al. (2022) argue that green attitudes will predict behaviour but are limited to environmental issues rather than broader ones. Psychological factors that influence individual attitudes include their own results, personal values, close friends, family, and social groups. Kurokawa et al. (2023) have found a positive relationship between environmental attitudes and behaviour in purchasing green products. Overall, there is consistent empirical evidence supporting a positive relationship between environmental attitudes and behaviour. Based on the discussion, the following hypothesis is posited:

H1: Attitude significantly predicts pro-environmental behaviour among the Malaysian public in the Southern region of Malaysia.

Subjective norms and pro-environmental behaviour

The subjective norm element concerns normative pressure arising from a person's perception of how others around them respond to a behaviour (Ajzen, 1991). Belief in acceptance that comes from important people in the individual's environment, such as peers, family, local community, and colleagues (Batool et al., 2024). Past studies have found that interpersonal influence can be expressed through either agreement or disagreement with a pro-environmental behaviour (Zulkepeli et al., 2024; Savari et al., 2023; Shanmugavel and Balakrishnan, 2023). Some individuals have a positive attitude towards a behaviour, but the influence of people around them who seem to dislike it can affect the intention to perform it (Ajzen, 1991). Based on Nordin et al. (2025) study, although someone believes that recycling is important for environmental sustainability, they do not see people around them taking the matter seriously because there is a lot of garbage thrown everywhere, leading them to believe that the public does not care about the environment. So, this will affect the intention to recycle for environmental sustainability, because it feels impossible to achieve if many people are unaware. Although understanding the role of subjective norms in the local context is very important, given Malaysia's collective culture, research on the influence of subjective norms on pro-environmental behaviour in Malaysia remains relatively limited (Asmizar et al., 2024). Knowing how subjective norms can be can motivate pro-environmental behaviour, and help plan interventions and policies that are more effective in overcoming environmental problems (Esfandiar et al., 2023; Correia et al., 2022; Qalati et al., 2022). Therefore, the following hypothesis is posited:

H2: Subjective norm significantly predicts pro-environmental behaviour among the Malaysian public in the Southern region of Malaysia.

Perceived behavioural control and pro-environmental behaviour

Perceived behavioural control is a new element added to the original TPB, namely the Theory of Reasoned Action (TRA). TRA has been found to have limitations in predicting behaviour when a person faces a situation outside their control (Ajzen, 2011). The perceived behavioural control element is a person's belief in the feasibility of the behaviour, influenced by internal and external factors (Batool et al., 2024). This element focuses on the individual's beliefs about factors that strengthen or weaken their ability to act. These factors can include self-efficacy and expected opportunities to carry out the behaviour (Ajzen, 1991) successfully. Self-efficacy is an internal factor, namely self-confidence in being able to act and will successfully carry out the behaviour. Sh. Ahmad et al. (2022) found that individuals are more motivated to engage in pro-environmental behaviour when they feel confident that it can be achieved. Next, external factors such as environmental conditions or resources that facilitate the implementation of green behaviour (Wang et al., 2023b; Yee et al., 2022). For example, the process of control and monitoring by relevant agencies, especially the Department of Environment, using various legislative and non-legislative approaches such as the National Environmental Policy, the National Green Technology Policy, and the National Climate Change Policy, can have a positive impact on the quality of the environment (Noor and Nordin, 2023). Both internal and external perceptions influence a person's intention to act environmentally, and vice versa (Zulkepeli et al., 2024; Piao and Managi, 2024; Mohd Noor et al., 2022; Qalati et al., 2022). Consequently, the following hypothesis is posited:

H3: Perceived behavioural control significantly predicts pro-environmental behaviour among the Malaysian public in the Southern region of Malaysia.

Environmental value and pro-environmental behaviour

According to Hamzah et al. (2025), one cause of the decline in love for nature is the lack of environmental value, especially among young people, often referred to as the millennial generation. Humans living on Earth must be responsible for managing and using natural resources in accordance with conservation principles (Liu et al., 2022). Moral responsibility for environmental preservation refers to the obligation of individuals and communities to maintain the natural environment (Mathers-Jones and Todd, 2023; Wang et al., 2023a). This involves awareness and action to reduce the negative impact of humans on the ecosystem and create a sustainable life (Piao and Managi, 2024). Anthropocentrism is often blamed for various environmental problems. It is considered inadequate to solve them, as this paradigm is centered solely on human interests and denies the intrinsic interests of other beings (Mohd Noor and Nordin, 2023; Wang et al., 2023b). On the other hand, environmental values such as biocentrism and ecocentrism are moral values that not only focus on humans, but also on biotic and non-biotic creatures (Piao and Managi, 2024). Appreciating and protecting the plants, animals, and ecosystems around us is a form of contribution and appreciation for this life (Hogg et al., 2024; Noor et al., 2024a). Changing our consumption patterns by

choosing environmentally friendly products can also have a positive impact on biodiversity. Accordingly, the following hypothesis is posited:

H4: Environmental value significantly predicts pro-environmental behaviour among the Malaysian public in the Southern region of Malaysia.

Environmental knowledge and pro-environmental behaviour

Knowledge is defined as the capacity to acquire, retain, and use information, a mixture of understanding, experience, wisdom, and skills. According to Hossain et al. (2022), knowledge naturally depends on different ways of acquiring ideas, namely perception, imagination, memory, judgment, abstract concepts, and consideration. Kurokawa et al. (2023), Akhtar et al. (2022) as well as Xie and Lu (2022) have found that environmental knowledge fosters awareness, attitudes, and positive behaviour towards the environment. Braun et al. (2018) conducted a study to assess levels of knowledge about environmental issues. The study found a positive correlation among level of education, field of study, and level of environmental knowledge. Their survey also found that respondents at the bachelor's and doctoral levels in fields of study related to science, such as medicine, science, and agriculture, have higher levels of knowledge and greater awareness of environmental issues. Thus, environmental knowledge can help the global community understand environmental issues and develop the skills and determination to overcome and maintain environmental quality (Noor et al., 2024b). Environmental education aims to cultivate a population with knowledge, skills, attitudes, motivation, and commitment to work individually and collectively to address current environmental problems and prevent new ones from emerging (Si et al., 2022). Environmental knowledge is very important for Malaysians to apply, as it, when accompanied by high awareness, can foster good practices in community members' interactions with the environment (Noor et al., 2024a; Mansoor and Wijaksana, 2023). Consequently, the following hypothesis is posited:

H5: Environmental knowledge significantly predicts pro-environmental behaviour among the Malaysian public in the Southern region of Malaysia.

Materials and Methods

This study was conducted quantitatively, using a survey to collect data. The population of this study consisted of 200 Malaysian public in Negeri Sembilan, Melaka, and Johor. To determine the number of samples for regression research, the researchers used the formula from Green (1991): 50 + 8n, where n is the number of variables. In this research, there are six variables, and from that, the following calculation can be obtained:

$$\begin{aligned} Total\ sample &= 50+8(n) \\ &= 50+8(6) \\ &= 98;\ rounded\ to\ 100\ people. \end{aligned}$$

Based on the formula above, a sample can be drawn from a population of up to 100 respondents. The researchers have increased the sample to 200 respondents. Cluster sampling is usually used when the population to be studied is geographically dispersed

or consists of groups with similar characteristics (Noor and Fuzi, 2024). In cluster sampling, the population is divided into three states, namely Negeri Sembilan, Melaka, and Johor. Next, the researchers used convenience sampling, in which respondents are selected based on the researchers' availability and convenience (Noor and Fuzi, 2024). The instrument used in this study comprised a questionnaire with three parts: Part A (Demography), Part B (determinants of pro-environmental behaviour), and Part C (pro-environmental behaviour). A five-point Likert scale was used in parts B and C. To measure attitude, the items are adapted from Milfont and Duckitt (2010). Among the items include "I think the energy transition contributes to technological advancement," and "I think energy transition policy and related measures contribute to the reduction of greenhouse gas emissions." To measure subjective norms, the measurement items are adapted from Ajzen (1991). Among the items are "I need to practice pro-environmental behaviour because my family, friends, and colleagues think it is important" and "People around me expect me to use environmentally friendly appliances." To measure perceived behavioural control, the researchers have adapted the items from Ajzen (1991). Among the measurement items are "I believe my activism can support environmentally friendly practices in my surroundings" and " I am capable of managing and taking care of the environment in my surroundings." Next, items developed from Fryxell and Lo (2003) study are used to construct environmental value items. Among the items are "I need to respect the Earth by living in harmony with other species" and "I need to prevent pollution to protect the environment."

To measure environmental knowledge, the item's measurement is adapted from Mostafa (2007). Examples of measurement items include 'I am very knowledgeable about environmental issues" and "I understand the environmental symbols on product packaging." Finally, to measure pro-environmental behaviour, the measurement items are adapted from Kollmuss and Agyeman (2002). Examples include "I will buy products that do not harm the environment" and "I will bring a reusable bag for shopping." The data obtained were analyzed using descriptive statistics and inferential statistics. Pearson's correlation is used to test the associative hypothesis, and the simple regression test aims to find out the influence of each predictor variable, namely the influence of attitude, subjective norms, perceived behavioural control, environmental value, and environmental knowledge on pro-environmental behaviour.

Results and Discussion

Demographic profile

Out of the 200 respondents, the sample demonstrated an equal gender distribution, with males and females each comprising 50.0% of the total. In terms of geographical representation, the majority of respondents weer from Johor (52.5%), followed by Melaka (24.0%) and Negeri Sembilan (23.5%). Most participants were aged between 21-30 years old (37.0%), with the remaining respondents being distributed among other age groups. In terms of educational backgorund, the most respondents had a Bachelor’s Degree (37.5%), while followed by those with Diploma and Master’s Degree holders (9.5% each), as well as other academic qualification (*Table 1*).

Table 1. *Demographic profile.*

Category	Frequency (N)	Percentage (%)
Gender		

Male	100	50.0
Female	100	50.0
State		
Johor	105	52.5
Melaka	48	24.0
Negeri Sembilan	47	23.5
Age		
18-20 years old	18	9.0
21-30 years old	74	37.0
31-40 years old	35	17.5
41-50 years old	48	24.0
51-60 years old	25	12.5
Highest academic qualification		
SPM	17	8.5
STPM/ Matriculation/ A-Level	14	7.0
Certificate	16	8.0
Diploma	19	9.5
Foundation	18	9.0
Bachelor's Degree	75	37.5
Master's Degree	19	9.5
PhD	17	8.5
Professional Qualification	5	2.5

Normality and reliability analyses

Normality was assessed to ensure that all collected data were normally distributed before parametric testing was performed using IBM statistical software. The normality test is a statistical procedure that assesses whether a sample of data is drawn from a normally distributed population (Noor and Fuzi, 2025). The data results showed that the data were normally distributed based on skewness and kurtosis. In the normality test, data are considered normally distributed if skewness is between -2 and +2 and kurtosis is between -7 and +7 (Hair et al., 2014). As shown in Table 2, the normality test indicated that the data were normally distributed; thus, they were suitable for parametric reliability testing using Cronbach's Alpha. Reliability can be defined as the consistency of a measuring instrument in repeatedly measuring the same quantity (Noor and Fuzi, 2025). *Table 2* displays the value of the Cronbach's Alpha coefficient (α) with the value of the construct ranging from 0.742 to 0.794. This finding indicates that the questionnaire instrument has high reliability according to Babbie (1992) classification, as the coefficient (α) exceeds 0.60. This means that the items in this instrument are very consistent and can be used for the data collection process.

***Table 2**. Normality and reliability assessments.*

Variables	Cronbach's Alpha	Skewness	Kurtosis
Attitude	0.790	-1.680	1.900
Subjective Norms	0.742	-1.509	1.781
Perceived Behavioural Control	0.794	-1.766	2.254
Environmental Value	0.771	-1.582	1.890
Environmental Knowledge	0.779	-1.776	2.965

Correlational and regression analyses

Table 3 shows the relationships between x. Based on the Pearson correlation analysis conducted, there are positive relationship between attitude (r=0.845, p<0.05), subjective norms (r=0.757, p<0.05), perceived behavioural control (r=0.857, p<0.05), environmental value (r=0.827, p<0.05), environmental knowledge (r=0.858, p <0.05), and pro-environmental behaviour. Regression analysis is a statistical procedure to analyze the relationship between the dependent variable and the independent variables. *Table 4* shows the model summary output. Multicollinearity is detected by examining the tolerance and VIF values. When the tolerance value > 0.10 and the VIF value < 10, the regression model is free of multicollinearity (Hair et al., 2010). Based on Table 4, the tolerance values for the five independent variables are all above 0.10, and the VIFs are all below 10; thus, the assumption of non-multicollinearity has been met. Adjusted R^2 of 0.810 indicates that the independent variables can explain 81.0% of the variation in pro-environmental behaviour. Next, environmental knowledge is a stronger predictor, with a beta coefficient of 0.421 (p<0.001).

***Table 3**. Correlation analysis.*

Category	Pro-Environmental Behaviour
Attitude	
Pearson Correlation	0.845**
Sig. (2-tailed)	0.000
N	200
Subjective norms	
Pearson Correlation	0.757**
Sig. (2-tailed)	0.000
N	200
Perceived behavioural control	
Pearson Correlation	0.857**
Sig. (2-tailed)	0.000
N	200
Environmental value	
Pearson Correlation	0.827**
Sig. (2-tailed)	0.000
N	200
Environmental knowledge	
Pearson Correlation	0.858**
Sig. (2-tailed)	0.000
N	200

***Table 4**. Regression analyses.*

Variable	Beta	Sig.	Tolerance	VIF
Attitude	0.181	0.027	0.144	6.921
Subjective Norms	0.119	0.025	0.341	2.933
Perceived Behavioural Control	0.329	0.000	0.150	6.674
Environmental Value	-0.087	0.307	0.131	7.607
Environmental Knowledge	0.421	0.000	0.212	4.716
R^2	0.815			
Adjusted R^2	0.810			
F change	170.551			
Sig.	0.000[b]			

The findings indicate strong and significant correlations among attitude, subjective norms, perceived behavioural control, environmental value, environmental knowledge, and pro-environmental behaviour. The regression revealed that environmental knowledge is the most significant predictor. Good attitudes encourage individuals to engage in positive behaviours. Several studies have shown that attitudes play an important role in individuals' decisions to engage in pro-environmental behaviour (Batool et al., 2024; Zulkepeli et al., 2024). People believe that positive behaviour towards the environment will produce positive consequences, while having negative behaviour will also have negative consequences for the environment (Qalati et al., 2022). Then, subjective norms are a key concept for understanding how a person's behavioural intentions form and how individuals are motivated to practice certain behaviours (Batool et al., 2024). Zulkepeli et al. (2024), Esfandiar et al. (2023) as well as Correia et al. (2022) found that subjective norms were among the predictors of green and eco-friendly behavior. This includes reducing waste, saving energy, and using renewable resources.

Based on TPB, this study also found that perceived behavioural control can directly influence behavioural intentions. Batool et al. (2024) and Zulkepeli et al. (2024) stated that perceived behavioural control is a strong predictor of individual intentions to engage in behaviours that have a positive impact on the environment. For instance, to deter the perpetrator from continuing to engage in polluting activities, punishment serves as a deterrent and prevents the perpetrator from repeating the behavior. In the environmental context, punishment imposed by law should shape public attitudes, making them more concerned and more effective in fulfilling their responsibilities to preserve the environment. Hogg et al. (2024), Piao and Managi (2024) as well as Wang et al. (2023a) explained that understanding and basic knowledge of the environment, including environmental problems, their causes, the impacts of human activities on the environment, and steps to solve environmental problems. Finally, Mathers-Jones and Todd (2023) as well as Liu et al. (2022) state that values will have a specific impact on behaviour, effort, interest, and awareness. An individual with high environmental value is always sensitive to environmental problems and issues and even tries to address them.

This study has expanded the scope of the TPB by integrating two additional variables, namely environmental knowledge and environmental value. The study findings provide evidence that external and internal factors are important in assessing pro-environmental behaviour. This study also presents findings from a different context, offering empirical evidence, especially in the southern zone, which has rarely been the focus of previous studies. The findings of this study can also serve as a guide for parties, such as the government, private, and non-governmental bodies (NGOs), to plan development in line with progress and community demands, without compromising environmental quality. This study adds value to knowledge about environmental awareness. It provides the community with exposure to environmental sustainability and ensures that environmental protection continues to be implemented at all levels of society (Mohd Noor and Nordin, 2023). Environmental planning and the pursuit of local sustainable development increasingly depend on community participation.

Doing a massive environmental campaign is a very effective first step. Educational material can be delivered through social media, seminars, or direct counselling to the community (Gatersleben, 2023). Topics such as protecting ecosystems, managing waste, and conserving natural resources can serve as focal points for increasing community environmental awareness. Moreover, a transformation needs to be done

further to strengthen the existing environmental education modules and curriculum so that the content in a module and environmental education curriculum is completer and more comprehensive, covering all important aspects in a balanced and uniform manner, both theory, application of basic elements of biodiversity, practical exposure and emphasis through religious approaches and moral values (Farrukh et al., 2023). This effort is important and needs to be implemented in a coordinated manner to meet needs both locally and globally.

The techniques and delivery methods for providing solid, effective environmental education and awareness must be tailored to age so they are easily accepted and understood and can be practiced accordingly (Saulick et al., 2024). For example, using animation and picture methods at the preschool level helps them understand and absorb what is taught more quickly and effectively. Local communities that care about the environment can be the main driver of change in society. By holding activities such as planting trees, cleaning the river, or open discussions, this community can inspire others to get involved (Do Canto et al., 2023). Especially in this era, social media is a powerful tool to spread environmental awareness. Creating a campaign through content in the form of videos, infographics, and articles about environmental preservation can reach a wide audience (Boerman et al., 2022). Electronic media has a role to increase public awareness through broadcasting programs specifically focused on the environment (Alsaad et al., 2023).

Cooperation with local governments can help initiate large-scale environmental programs. For example, by providing separate garbage bins, developing recycling facilities, or providing incentives for environmentally friendly businesses (Piao and Managi, 2024). Increasing environmental awareness requires cooperation between individuals, communities, and governments (Capstick et al., 2022). Furthermore, this study is important for parents to train and change the behaviour of children who are still unaware of the importance of the environment. The attitude of loving environmental activities must be cultivated in everyone from an early age. This is important to ensure they do not engage in activities that accidentally damage the environment, such as throwing garbage everywhere. Therefore, parents need to provide children with in-depth knowledge regarding activities that can preserve the environment so that children's behaviour can be educated to continue to love the environment (Liu et al., 2022). By following the steps above, the community can help sustain our Earth.

Conclusion

The main objective of the Sustainable Development Goals (SDGs) is to preserve the natural world for the future of our planet. The United Nations (UN) emphasizes protecting the environment and encourages all countries to maintain environmental well-being. However, despite these efforts, in recent years environmental quality has deteriorated, including pollution of water, air, and soil; climate change; and the degradation of natural resources. Among the main causes are human actions. Thus, all levels of society are urged to actively participate in environmental preservation and conservation efforts to sustain a culture of environmental care. This step can improve the country's ecosystem and biodiversity, ensuring a better future for future generations. The current study has some limitations that need to be addressed. The first aspect concerns the study sample, which is limited to the Malaysian public in the Southern region. Next, the study's limitations concern the variables, which focus only on five

determinants. Finally, the limitations in collecting study data, namely, the instruments used to meet the study objectives. This study is quantitative and uses a questionnaire for data collection. Therefore, the accuracy of this study's results depends on respondents' responses to the questionnaire statements. Future studies are encouraged to broaden the sample context, enhance the current model by including mediating or moderating variables, and adopt mixed-method or multi-method approaches.

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Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

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