



ENVIRONMENTAL CONSCIOUSNESS AND GREEN CONSUMER BEHAVIOUR IN MALAYSIA'S PETROLEUM INDUSTRY: UNPACKING THE ATTITUDE- BEHAVIOUR GAP AND THE ROLE OF PERCEIVED VALUE

Kumaran Kanapathipillaiⁱ,
Adlinna Binti Dolhan,
Mohd Nawawi Bin Ibrahim,
Siti Nursyafiqah Binti Samsudin
UNITAR International University,
Tierra Crest, Jalan SS6/3,
Kelana Jaya, 47301 Petaling Jaya,
Selangor, Malaysia

Abstract:

This study examines the relationship between environmental consciousness (constituents of environmental awareness, environmental concern, and environmental attitude), perceived value, and purchasing behaviour for green personal care products among employees working in the petroleum industry in Malaysia. This study adopted a quantitative research design, and 94 respondents provided the data through structured questionnaires that were administered to executive-level employees in three major petroleum companies in Malaysia. The findings showed definite relationships exist between purchasing behaviour and environmental awareness, concern, and attitude. However, the proposed mediating role of value was not substantiated. This finding suggests that while employees with an environmentally conscious inclination do purchase green personal care products, the perceived value does not at all impact or qualitatively explain this behaviour.

Keywords: purchasing behaviour, environmental consciousness, environmental awareness, environmental concern, environmental attitude, perceived value, green products

1. Introduction

Understanding consumer behaviour towards eco-friendly products is increasingly important due to environmental concerns. The market for organic personal care products

ⁱ Correspondence: email kumar.erapintar@gmail.com

is growing as a safer alternative to harmful products. According to Yingngam (2024), consumer demand for natural personal care products is rising, reflecting a high interest in sustainability. Environmental consciousness, which includes awareness, concern, and attitude regarding personal care products, significantly impacts purchasing decisions, indicating the extent to which individuals are informed and supportive of positive environmental actions (Si *et al.*, 2022).

Additionally, perceived value plays a crucial role in shaping the overall impression of a product, as it is based on the worth of the product relative to its price (Suo *et al.*, 2020). However, a person's green consciousness alone does not ensure product purchase unless the perceived value is high. This study focuses on executive workers in Malaysia's petroleum sector, known for promoting green organizational initiatives, to explore how environmental awareness, concern, attitude, and green purchasing behaviour interact with perceived value as a mediator.

1.1 Research Problem Statement

The rising global awareness of environmental issues has increased consumer interest in sustainable and eco-friendly products, including personal care items. Despite this trend, scholars consistently highlight a gap between consumers' environmental consciousness and their actual purchasing behaviour. This is often referred to as the attitude-behaviour gap. According to Naz *et al.* (2020), Witek (2019), and Johnstone & Tan (2015), some individuals may express concern about ecological challenges such as climate change and resource depletion, but these concerns do not always translate into consistent adoption of green products (Genuchten, 2023). This discrepancy undermines the effectiveness of sustainability initiatives and raises questions about the underlying factors that influence consumer decision-making.

Prior studies have reported mixed findings on the role of psychological and evaluative mechanisms in bridging this gap. Some research suggests that environmental awareness, concern, and attitudes positively drive sustainable purchases (Kim & Lee, 2023; Chang *et al.*, 2021), while others argue that perceived risks, low trust, or competing priorities weaken these links (Wang & Li, 2022). Perceived value has emerged as a potential mediating factor, yet its role remains disputed. Some studies affirm that it strengthens the relationship between environmental consciousness and green purchasing (Huang & Chiu, 2024), whereas others find an insignificant mediating effect (Dutta *et al.*, 2022). This inconsistency underscores the need for further investigation to clarify whether perceived value functions as a bridge between environmental consciousness and actual behaviour.

In Malaysia, where environmental awareness has grown alongside pressing ecological concerns, the petroleum industry presents a distinctive context for examining these relationships. Employees in this sector are simultaneously exposed to sustainability campaigns and to the realities of resource-intensive industrial practices. Understanding how their awareness, concern, and attitudes toward the environment influence personal consumption choices of green personal care products offers both theoretical and practical

contributions. Addressing this issue can deepen insights into the persistence of the attitude-behaviour gap and help businesses and policymakers design strategies that better align consumer values with sustainable consumption practices.

1.2 Research Questions

RQ1: Is there a significant relationship between environmental awareness and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

RQ2: Is there a significant relationship between environmental concern and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

RQ3: Is there a significant relationship between environmental attitude and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

RQ4: Is there a significant relationship between environmental awareness and perceived value of green personal care products among employees in the petroleum industry in Malaysia?

RQ5: Is there a significant relationship between environmental concern and perceived value of green personal care products among employees in the petroleum industry in Malaysia?

RQ6: Is there a significant relationship between environmental attitude and perceived value of green personal care products among employees in the petroleum industry in Malaysia?

RQ7: Is there a significant relationship between perceived value and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

RQ8: Is there a significant mediating role of perceived value in the relationship between environmental awareness and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

RQ9: Is there a significant mediating role of perceived value in the relationship between environmental concern and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

RQ10: Is there a significant mediating role of perceived value in the relationship between environmental attitude and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia?

1.3 Research Objectives

RO1: To examine the relationship between environmental awareness and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

RO2: To examine the relationship between environmental concern and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

RO3: To examine the relationship between environmental attitude and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

RO4: To examine the relationship between environmental awareness and perceived value of green personal care products among employees in the petroleum industry in Malaysia.

RO5: To examine the relationship between environmental concern and perceived value of green personal care products among employees in the petroleum industry in Malaysia.

RO6: To examine the relationship between environmental attitude and perceived value of green personal care products among employees in the petroleum industry in Malaysia.

RO7: To examine the relationship between perceived value and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

RO8: To examine if perceived value mediates the relationship between environmental awareness and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

RO9: To examine if perceived value mediates the relationship between environmental concern and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

RO10: To examine if perceived value mediates the relationship between environmental attitude and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

2. Literature Review

The following sections provide the literature review and hypothesis development.

2.1 Underpinning Theory

The Theory of Planned Behaviour (TPB) explains human actions by emphasizing the role of intentions, which are influenced by three key factors: attitude towards the behaviour, social perception, and perceived behavioural control (Ajzen, 1991). An individual's intention is crucial for developing a behaviour, making it a predictor of whether the behaviour will be performed (Aseri & Ansari, 2023). Attitude, particularly the belief about the benefits of a behaviour, significantly affects intention. For instance, consumers' beliefs about the outcomes of purchasing sustainable products are shaped by personal experiences, advertisements, and social exposure. Many consumers are motivated to buy green products due to their perceived environmental benefits and ethical considerations. Overall, TPB in this study provides a framework for understanding consumer behaviour

in green purchasing, illustrating how attitudes, subjective norms, and perceived behavioural control shape behavioural intentions and actions.

2.2 Purchasing Behaviour of Green Personal Care Products

As the market for green personal care products expands, understanding the underlying factors, such as environmental consciousness, that drive consumer purchasing behaviour becomes increasingly crucial (Kumar *et al.*, 2024; Minocha *et al.*, 2024; Carrión-Bósquez & Arias-Bolzmann, 2021). Recent studies indicate that health consciousness and concern for personal appearance significantly influence attitudes toward these eco-friendly products, highlighting the complex interplay between individual values and purchasing intentions (Szaban *et al.*, 2023). Furthermore, the Theory of Planned Behaviour suggests that these factors not only affect intentions but also correlate with various stages of behavioural change, thereby influencing actual purchase behaviour (Szaban *et al.*, 2023). This multifaceted approach underscores the necessity for marketers to craft targeted strategies that resonate with consumers' environmental values while addressing their personal well-being, ultimately bridging the gap between intention and action in sustainable consumption.

2.3 The Relationship Between Environmental Awareness and the Purchasing Behaviour of Green Personal Care Products

According to Borzino *et al.* (2020), there is a high likelihood of pro-environmental attitudes in people who have a higher awareness of the environment than those with less environmental awareness. Moreover, studies by Amaliah *et al.* (2023), Kim & Lee (2023), Silintowe & Sukresna (2023), and Chen *et al.* (2022) found that environmental awareness significantly influences green purchase behaviour. This indicates that green consciousness significantly influences eco-friendly product purchasing decisions, enabling consumers with limited purchasing habits to become more likely to buy green products when they possess better environmental awareness.

Conversely, according to (Sharma *et al.*, 2022; Leclercq-Machado, 2022; Panno *et al.*, 2020), environmental awareness does not constantly lead to increased involvement in pro-environmental behaviour and most often fails to translate into actual purchasing behaviour due to several inconsistencies. Furthermore, Kowalik *et al.* (2024), Nittala & Moturu (2021), and Jaiswal *et al.* (2021) elucidated that environmental awareness does not directly influence the purchasing behaviour of green products, as post-purchase behaviour and other pro-environmental factors play a more significant role. These dissimilarities in findings reveal a gap in the literature, which led to the formation of hypothesis H1.

H1: There is a significant relationship between environmental awareness and the purchasing behaviour of green personal care products among employees in the petroleum industry in Malaysia.

2.4 The Relationship Between Environmental Concern and the Purchasing Behaviour of Green Personal Care Products

Based on a study by Yoo *et al.* (2024), consumers' environmental concerns positively impact their purchasing behaviours, whereby when environmental concern is high, it results in greater consumer preferences for green products. In previous studies, Zhuang *et al.* (2021), Channa *et al.* (2021) and Wijekoon & Sabri (2021) mention that environmental concern significantly influences the purchasing behaviour of green personal care products, as factors such as green perceived value, attitude, and green trust positively impact green purchase intention. Moreover, Armutçu *et al.* (2023) discovered that environmental concern, along with the factors of the extended Theory of Planned Behaviour (TPB), significantly influences consumers' intention to purchase green personal care products.

Contrarily, some studies also show that these attitudes toward the environment have no guarantee of turning into environmentally conscious behaviour. As abundantly reported in the previous literature, even when people have concerns about the environment, that concern does not result in environmentally conscious behaviour (Ibiapina *et al.*, 2020). Furthermore, Andika *et al.* (2023) elucidate that Environmental concern negatively impacts the purchasing behaviour of green personal care products. The study highlighted that Indonesian consumers tend to favour traditional products over green alternatives. Similarly, (Bulut *et al.*, 2021) uncovered that environmental concern among post-millennials positively drives their green purchasing behaviour; however, when perceptions of greenwashing are high, the positive impact of environmental concern on purchasing behaviour diminishes. These difference reveals a gap in the literature which led to the formation of hypothesis H2.

H2: There is a significant relationship between environmental concern and the purchasing behaviour of green personal care products among employees in the petroleum industry in Malaysia.

2.5 The Relationship Between Environmental Attitude and the Purchasing Behaviour of Green Personal Care Products

According to Visser & Dlamini (2021), environmental attitude positively impacts the purchasing behaviour of green personal care products, as heightened environmental awareness and altruistic values significantly influence green purchasing intentions. The study found that environmental attitude positively impacts green purchasing behaviour towards compostable coffee pods, with income level partially mediating this relationship. Similarly, research by Novela *et al.* (2025), Kaur *et al.* (2024), Chen *et al.* (2022), Dilotsotthe & Duh (2021), and Kamalanon *et al.* (2022) indicate that environmental attitudes, green product knowledge, and values strongly shape consumers' purchase intentions and behaviours toward eco-friendly products, with mediators such as trust, literacy, and perceived value further reinforcing green purchasing decisions.

On the contrary, Szaban (2023), Chaihanchai & Anantachart (2022), and Alfonsius & Gilbert (2021) found that environmental attitudes negatively impact the purchasing behaviour of green personal care products. This is especially true for consumers with high green value who may pursue more significant environmental actions. In emerging markets, environmental attitude may not translate into increased demand for green products due to perceived price and trust in green labels. Consumers may perceive marketing efforts as greenwashing, leading to scepticism and a lack of trust in eco-friendly claims. Moreover, Karimi *et al.* (2021) elucidate that the "attitude-behaviour gap" between environmental attitudes and pro-environment intentions is also a significant issue, contradicting findings from both developed and developing nations. Additionally, a study by Carrión-Bósquez & Arias-Bolzmann (2021) revealed that although attitudes positively affect green purchase intentions among university millennials in Ecuador, there is a notable disconnect, with 82% of participants failing to convert their high intentions into actual purchases, largely due to entrenched consumption habits. This underscores the issue of green purchasing. These differences in previous findings reveal a gap in the literature, which led to the formation of hypothesis H3.

H3: There is a significant relationship between environmental attitude and the purchasing behaviour of green personal care products among employees in the petroleum industry in Malaysia.

2.6 The Relationship Between Environmental Awareness and Perceived Value

According to Lopulalan & Rolobessy (2024), having environmental awareness will foster a sense of responsibility towards the environment. To corroborate this further, studies by Zemafi and Haryono (2024), Pai *et al.* (2023), Zheng *et al.* (2023), and Rusyani *et al.* (2021) have affirmed that environmental awareness has been consistently shown to strengthen consumers' perceptions of value in sustainable products. Individuals with greater eco-consciousness not only recognize the functional and quality-related benefits of green offerings but also attach a higher value to them through their understanding of environmental attributes and brand image. This heightened awareness further contributes to a sense of green self-efficacy and perceived control, which reinforces purchase intentions, particularly in contexts such as eco-friendly food and green personal care products.

However, Scheller *et al.* (2024) argue that attitudes on low-carbon technologies are associated more with product-specific benefits than with ethical aspects. This suggests that instead of being motivated solely by awareness of the environment or responsibility, consumers focus more on the value. For example, the value of a product's quality, price, and productivity. Similarly, studies by Kristia (2023), Sun & Shi (2022), and Ansu-Mensah (2021) have indicated a negative influence of environmental awareness on perceived value. Their studies have shown that environmental awareness can reduce perceived value when consumers suspect insincerity in eco-friendly claims. According to their

studies, concerns about greenwashing, coupled with price sensitivity, may create scepticism and erode trust, leading to lower value attributions and weaker intentions to purchase green products. These differences in previous findings reveal a gap in the literature, which led to the development of hypothesis H4.

H4: There is a significant relationship between environmental awareness and perceived value of green personal care products among employees in the petroleum industry in Malaysia.

2.7 The Relationship Between Environmental Concern and Perceived Value

Several studies have found that environmental concern significantly influences the perceived value and purchase intention for green healthcare products. Higher environmental awareness correlates with increased valuation of eco-friendly attributes and stronger consumer willingness to buy. Studies by Cahyaningrum & Tresnawaty, (2024), Mitariani *et al.* (2024), Putri (2024), Ul Jannah *et al.* (2024), Royani & Imaningsih (2024), Nuraeni & Harsoyo (2024), Hudayah *et al.* (2023), and Vania & Ruslim (2023) highlight that environmental concern serves as a critical predictor in green product consumption within healthcare. According to these studies, environmental concern generally promotes greener purchasing choices by shaping favourable attitudes and enhancing perceived value. While its impact may be indirect in some contexts, it consistently supports stronger purchase intentions across product categories such as skincare and potentially healthcare, often reinforced by factors like social value, brand knowledge, and perceived control.

Contrastingly, some studies suggest that the relationship between environmental concern and perceived value may not always be straightforward. A previous study by Stojanova *et al.* (2021) pointed out that the impact of environmental concern on purchasing decisions may vary depending on individual circumstances and the perceived relevance of environmental issues to the consumer. Furthermore, studies by Mahmud *et al.* (2023), Parker *et al.* (2022), Teixeira *et al.* (2021), and Abror *et al.* (2021). These researchers have found that environmental concern can reduce perceived value under certain conditions. When consumers focus heavily on environmental issues, they may question the cost-effectiveness, quality, or efficacy of eco-friendly products, which in turn lowers their value perception. Heightened concern can also amplify perceptions of risk, shaping how emotional and social values are weighed in purchase decisions and ultimately complicating the link between environmental attitudes and perceived benefits. These dissimilarities in previous outcomes reveal a gap in the literature, which led to the creation of hypothesis H5.

H5: There is a significant relationship between environmental concern and perceived value of green personal care products among employees in the petroleum industry in Malaysia.

2.8 The Relationship Between Environmental Attitude and Perceived Value

Previous study shows that perceived value is a key link between how people feel about the environment and how often they buy green personal care products. This is because people's thoughts, feelings, and values about protecting the environment affect how responsibly they act (Chen & Chang, 2012). More recent studies by Khadka & Malviya (2024), Lavuri *et al.* (2023), Kamalanon *et al.* (2022), and Kim *et al.* (2021) have discovered that environmental attitude has been shown to play a crucial role in shaping how consumers value sustainable products. According to their studies, individuals with stronger pro-environmental attitudes tend to recognize and appreciate the benefits of eco-friendly offerings more readily, which enhances their perceived value. This favourable orientation not only supports higher purchase intentions for green products but also extends to contexts such as eco-friendly tourism, where personal values and environmental consciousness interact to strengthen consumer preferences for sustainable choices. On the other hand, Kennedy & Adhikari (2022) disagree with this idea. They say that even though perceived value is a key part of how well marketing works, it doesn't always make people want to buy green goods. Their results show that brand equity and cognitive values have a bigger effect on environmental attitude than perceived value. In line with this, Royani & Imaningsih (2024), Parker *et al.* (2022), Zabiulla & Kadali (2022), Riptiono (2022) elucidate that environmental attitude can reduce perceived value under certain conditions. According to their research, heightened awareness of environmental issues may generate scepticism toward eco-friendly claims, which weaken confidence in product benefits, or shift focus away from emotional and social values, thereby diluting overall value perceptions. In some cases, while concern raises awareness and even influences attitudes, its direct effect on purchase intentions and value attribution remains limited. This shows that strong environmental attitudes can complicate rather than consistently strengthen consumer evaluations of green products. Hence, these dissimilar views reveal a gap in the literature, which led to the development of hypothesis H6.

H6: There is a significant relationship between environmental attitude and perceived value of green personal care products among employees in the petroleum industry in Malaysia.

2.9 The Relationship Between Perceived Value and the Purchasing Behaviour

A study by Nguyen *et al.* (2020) discovered that perceived value positively impacts green purchasing behaviour. This previous study highlights that making people think that green products are good for the environment creates purchase intention. Moreover, recent research (Ngo *et al.*, 2025; Armutçu *et al.*, 2023; Yılmaz, 2023; Bhutto *et al.*, 2022) revealed that perceived value plays a significant role in shaping sustainable purchasing behaviour because consumers who recognize greater benefits in eco-friendly products are more inclined to translate intentions into actual purchases. Their research shows that higher perceived value, whether derived from health, environmental, or functional

benefits, strengthens green attitudes and behavioural intentions, which in turn influence buying decisions.

Contrarily, Mudiyanse et al. (2025), Rašić et al. (2024), Margono et al. (2022) and Vu et al. (2021) have discovered that perceived value can act as a barrier when consumers perceive sustainable products as costly, risky, or of uncertain quality. Moreover, their studies have mentioned that frugality, concerns over functionality or security, and the complexity of evaluating product attributes may reduce purchase intentions, even when attitudes toward sustainability are positive. In such cases, higher perceived costs or doubts about effectiveness can overshadow environmental concern, which leads to reluctance to engage in green purchasing. These disparities reveal a gap in the literature, which led to the realisation of hypothesis H7.

H7: There is a significant relationship between perceived value and the purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

2.10 Perceived Value Mediates the Relationship between Environmental Awareness and Purchasing Behaviour of Green Personal Care Products

According to a study by Li et al. (2013), enhancing perceived value can lead to more effective techniques for encouraging consumers to buy environmentally friendly items. This improvement could lead to better buying habits and greater knowledge of the environment, which would lead to more sustainable consumption patterns. Moreover, recent research by Kumar (2024), Jaya et al. (2024), Amaliah et al. (2023), Yahya et al. (2024), Zhuang et al. (2021) mentions that perceived value consistently emerges as a key mediator linking environmental awareness to purchasing behaviour. According to their study, when consumers become more aware of environmental issues, they tend to recognize greater benefits in eco-friendly products, which enhances perceived value and strengthens purchase intentions. However, the role of perceived value as a mediator between environmental awareness and purchasing behaviour remains contested.

Recent studies (Gupta & Bhardwaj, 2024; Kaur et al., 2024; Szilagyi et al., 2022; Rahmi et al., 2022) suggest that perceived value does not significantly mediate this relationship. According to their research, factors such as environmental attitude, green trust, spirituality, and personal attitudes exert stronger direct effects on purchase intentions and behaviours. These differences in past breakthroughs reveal a gap in the literature, which led to the development of hypothesis H8.

H8: There is a significant mediating role of perceived value in the relationship between environmental awareness and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

2.11 Perceived Value Mediates the Relationship between Environmental Concern and Purchasing Behaviour of Green Personal Care Products

A study by Li *et al.* (2024) involving 283 young Vietnamese customers examined the relationships between environmental concern, perceived value of green products, and intentions to purchase them. The findings indicated that the perceived value of green products significantly influenced buying intentions, serving as a mediator between environmental concern and green purchasing intentions. This suggests that an individual's perception of a product's worth plays a crucial role in their purchasing behaviour when they are environmentally conscious. Additionally, Ngo *et al.* (2025), Purboyo & Firdaus (2024), Kautish *et al.* (2023), Vania & Ruslim (2023), and Zameer & Yasmeen (2022) elucidated that perceived value frequently serves as a mediating factor between environmental concern and purchasing behaviour. Based on their research, when consumers become more conscious of environmental issues, they tend to recognize greater benefits and quality in eco-friendly products, which elevates perceived value and strengthens purchase intentions. This mediating effect has been observed across beauty products and broader green consumption, where concern for sustainability enhances emotional and attitudinal factors that translate into buying behaviour.

Conversely, studies by Ngo *et al.* (2025), Purboyo & Firdaus (2024), Jaya *et al.* (2024), Yılmaz (2023), and Alam *et al.* (2023) indicate that environmental concern exerts its influence primarily through attitudes, subjective norms, and perceived behavioural control, rather than through perceived value. Their research shows that other psychological and social constructs play a stronger role. Moreover, factors such as ethical self-efficacy, brand equity, and marketing strategies appear to shape this relationship more significantly. Therefore, demonstrating that perceived value acts as a more complex and context-dependent factor rather than a consistent mediator. These variances in previous findings reveal a gap in the literature, which led to the realisation of hypothesis H9.

H9: There is a significant mediating role of perceived value in the relationship between environmental concern and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

2.12 Perceived Value Mediates the Relationship between Environmental Attitude and Purchasing Behaviour of Green Personal Care Products

Environmental attitudes shape how consumers perceive the value of green products, and this influences their willingness to purchase. Studies show that a positive environmental attitude correlates with higher perceived value, leading to increased purchase intentions for green products (Purboyo & Firdaus, 2024; Vania & Ruslim, 2023; Hudayah *et al.*, 2023). Moreover, research by Munir *et al.* (2023), Han (2021), Pilelienė & Tamulienė (2021), and Putri *et al.* (2021) mentions that perceived value is frequently identified as a key mediator in the relationship between environmental attitude and purchasing behaviour. Based on their research, consumers with positive environmental attitudes are more likely to

recognize the added benefits of eco-friendly products, which strengthens perceived value and, in turn, drives purchasing intentions. Additionally, according to their findings, environmental attitudes alone may not always translate directly into behaviour, but their influence on perceived value provides a crucial mechanism for shaping green purchasing decisions.

Contrarily, some scholars have rebutted the claims of the above findings. Studies by Novela *et al.* (2025), Patwary *et al.* (2022), Moshood *et al.* (2022) and Zhuang *et al.* (2021) have shown that the mediating role of perceived value between environmental attitude and purchasing behaviour presents mixed findings. Some studies highlight perceived value as an important link, showing that stronger environmental attitudes can enhance the perceived benefits of green products, thereby encouraging eco-friendly purchases—particularly among younger consumers and in markets where small and medium-sized enterprises actively promote sustainable options. However, other research suggests that perceived value does not consistently mediate this relationship. Instead, factors such as green perceived risk, environmental responsibility, and anthropocentric attitudes appear more decisive in shaping intentions. These conflicting results indicate that the strength of perceived value as a mediator may vary depending on product category, consumer demographics, and perceived risks. These contradictory findings reveal a gap in the literature, which led to the formation of hypothesis H10.

H10: There is a significant mediating role of perceived value in the relationship between environmental attitude and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia.

2.13 Proposed Conceptual Framework

The purpose of this research is to scrutinize the mediating effect of perceived value on the relationship between environmental consciousness and purchasing behaviour for green personal care products among employees in the petroleum industry in Malaysia. Figure 1 presents the proposed conceptual model designed to shed light on the interaction among the variables.

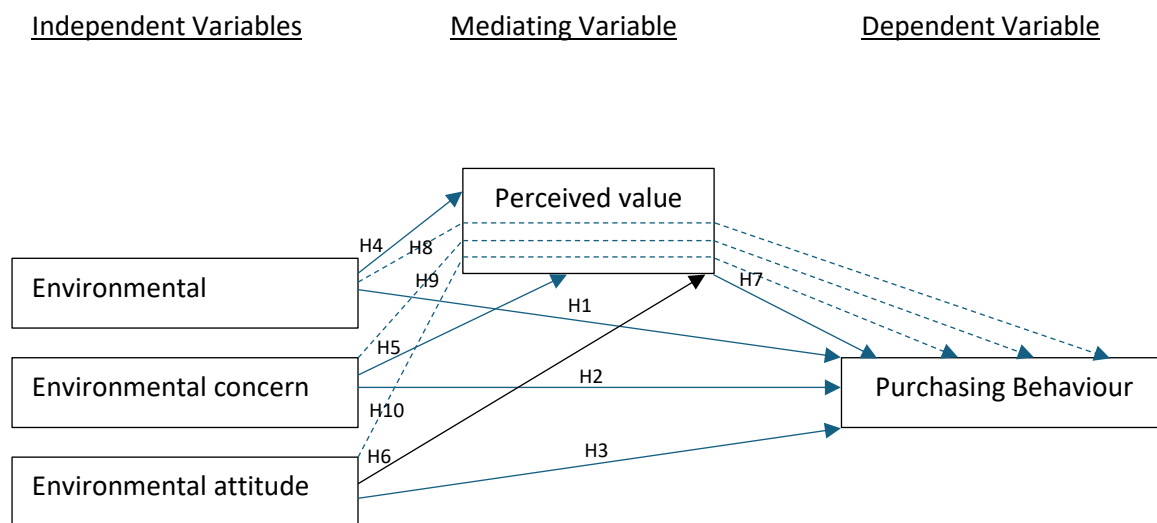


Figure 1: Proposed Conceptual Framework

3. Methodology

This study investigates the influence of environmental awareness, concern, and attitude on green purchasing behaviour among employees in three petroleum companies in Malaysia. Convenience sampling was used, and 140 self-administered survey questionnaires were distributed among employees. The total population was 10,966 individuals, with 94 executives from the selected companies. The study aimed to understand how highly paid workers are influenced by environmental awareness, concern, and attitude. The respondents were chosen because they are among the highest-paid employees in Malaysia and are keen on environmental awareness and sustainability issues due to their industry nature. The data was analysed using SPSS version 29.

4. Findings and Interpretation

This section provides the findings of this study.

4.1 Reliability Test

Table 1: Reliability Test (N=94)

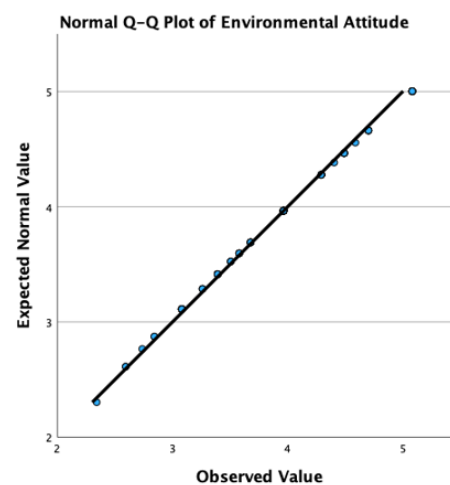
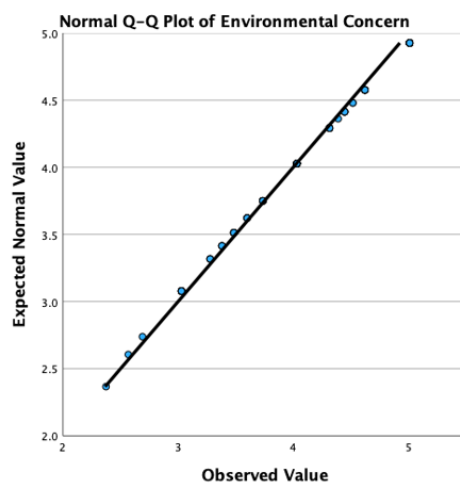
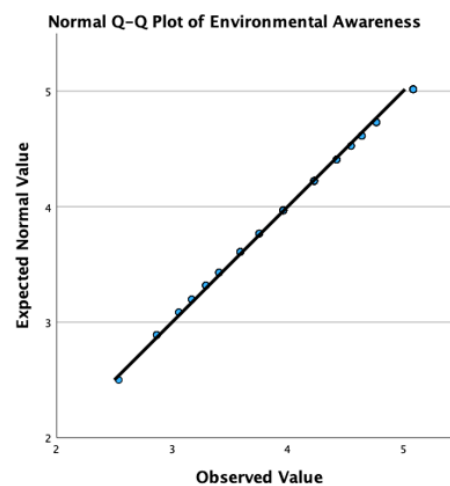
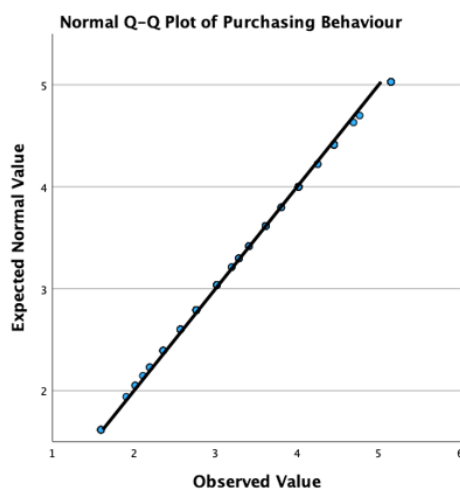
Variables	Cronbach's Alpha	Items
Environmental Awareness	0.817	6
Environmental Concern	0.932	6
Environmental Attitude	0.884	6
Perceived Value	0.816	6
Purchasing Behaviour	0.919	5

The internal consistency of all constructs was assessed using Cronbach's Alpha, with the results presented in Table 1. The findings demonstrate that all scales achieved values well

above the commonly accepted threshold of 0.70, indicating satisfactory reliability. Environmental Awareness ($\alpha = 0.817$), Perceived Value ($\alpha = 0.816$), and Environmental Attitude ($\alpha = 0.884$) showed strong reliability, suggesting that the items used to measure these constructs were consistent in capturing the underlying dimensions. Environmental Concern recorded the highest ($\alpha = 0.932$), reflecting excellent internal consistency across its six items.

Similarly, Purchasing Behaviour also demonstrated very high reliability ($\alpha = 0.919$), confirming that the items reliably measured employees' reported behavioural tendencies. Overall, the results provide strong evidence that the measurement instruments employed in this study are both consistent and reliable, ensuring that subsequent analyses of relationships between these variables are based on robust and trustworthy measures.

4.2 Normality Test (Q-Q Plot)



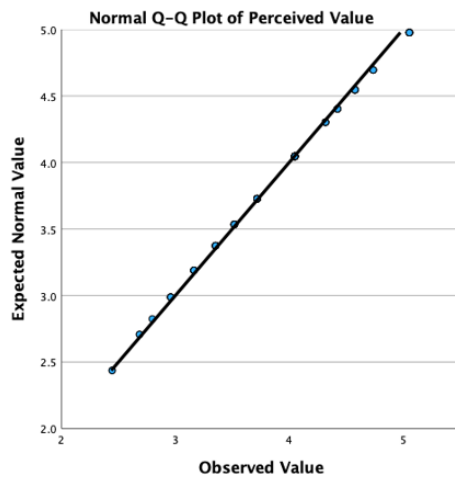


Figure 2: Q-Q Plot Results

All five Q-Q plots in Figure 2 show strong adherence to the normal distribution line with no serious outliers. This indicates that the underlying data for Purchasing Behaviour, Environmental Awareness, Environmental Concern, Environmental Attitude, and Perceived Value are all normally distributed. Such distributions validate the application of parametric statistical tests in subsequent analyses involving these variables.

4.3 Demographic Profile of Respondents

Table 2: Demographic Profiles of Respondents (N = 94)

Demographics	Category	Frequency	Percentage
Gender	Male	27	28.7%
	Female	35	37.2%
	Not disclose	32	34.0%
Age	18 – 24	1	1.1%
	25 – 30	16	17.0%
	31 – 40	53	56.4%
	41 – 50	19	20.2%
	Above 50	5	5.3%
Work Experience (Years)	More than 10 Years	55	58.5%
	8 – 10 years	12	12.8%
	4 – 7 years	17	18.1%
	1 – 3 years	9	9.6%
	Less than 1 year	1	1.1%
Academic Qualification	Diploma	20	21.3%
	Bachelor's Degree	57	60.6%
	Master's Degree	15	16.0%
	Doctorate/ PHD	2	2.1%
Work level	Senior	38	40.4%
	Management	26	27.7%
	Top management	24	25.5%

	Junior	6	6.4%
Salary range	Above RM 8,000	32	34.0%
	RM2,001 – RM4,000	27	28.7%
	RM4,001 – RM6,000	20	21.3%
	RM6,001 – RM8,000	12	12.8%
	Below RM2,000	3	3.2%

The demographic profile of the respondents participating in the study is shown in Table 2. According to the table, the majority of respondents were females (37.2%). In terms of age, the majority were between (31-40) years old, which made up to (56.4%). The majority of the respondents have more than 10 years of experience, which is (58.5%). In terms of academic qualifications (60.6%) of the respondents have a bachelor's degree. A Majority of (40.4%) of the respondents hold senior-level positions, and (34.0%) of the respondents earn more than RM8,000 per month.

4.4 Correlation Analysis

To study the correlation between variables, the correlation test is done, and the analysis is exhibited in Table 3.

Table 3: Pearson's Correlation Analysis Among Variables

Variables	PB	EAW	EC	EAT	PV
Purchasing Behaviour (PB)	1.0				
Environmental Awareness (EAW)	0.517**	1.0			
Environmental Concern (EC)	0.646**	0.669**	1.0		
Environmental Attitude (EAT)	0.625**	0.653**	0.839**	1.0	
Perceived Value (PV)	0.391**	0.484**	0.649**	0.712*	1.0

** . Correlation is significant at the 0.01 level (2-tailed)

Purchasing behaviour was found to have significant positive correlations with all independent variables. Among these, environmental concern showed the strongest association ($r = 0.646$, $p < 0.01$), followed by environmental attitude ($r = 0.625$, $p < 0.01$), environmental awareness ($r = 0.517$, $p < 0.01$), and perceived value ($r = 0.391$, $p < 0.01$). Substantial interrelationships were also observed among the independent variables, with environmental concern showing a very strong correlation with environmental attitude ($r = 0.839$, $p < 0.01$) and environmental awareness ($r = 0.669$, $p < 0.01$), as well as a strong correlation with perceived value ($r = 0.712$, $p < 0.01$). The observed correlations suggest significant associations between environmental consciousness and purchasing behaviour. However, regression and mediation analyses below are conducted to show beyond simple associations and to test the theoretical role of perceived value as a mediator.

4.5 Model Summary, ANOVA, Regression Coefficients, And Mediation Results

To provide a comprehensive overview of the findings, Table 4 integrates the model summary, ANOVA, regression coefficients, and mediation results into a single table.

Table 4: Summary of Regression and Mediation Analyses on Purchasing Behaviour of Green Personal Care Products

Predictor	Model Fit (Regression)	Regression Coefficient (Direct Effects, All Predictors Included)	Mediation: $X \rightarrow M$ (Perceived Value)	Mediation: $X \rightarrow Y$ (Direct Effect)	Mediation: $M \rightarrow Y$	Indirect Effect via PV (95% CI)
Environmental Awareness	$R^2 = 0.458$, Adj. $R^2 = 0.434$, $F(4, 89) = 18.818$, $p < 0.001$	$B = 0.167$, $p = 0.297$	$\beta = 0.508$, $p < 0.001$	$\beta = 0.6342$, $p < 0.001$	$\beta = 0.260$, $p = 0.070$	$\beta = 0.132$ (CI: -0.046 , 0.335)
Environmental Concern	Same as above	$B = 0.522$, $p = 0.011$	$\beta = 0.613$, $p < 0.001$	$\beta = 0.903$, $p < 0.001$	$\beta = -0.067$, $p = 0.652$	$\beta = -0.041$ (CI: -0.239 , 0.188)
Environmental Attitude	Same as above	$B = 0.457$, $p = 0.041$	$\beta = 0.694$, $p < 0.001$	$\beta = 0.967$, $p < 0.001$	$\beta = -0.152$, $p = 0.357$	$\beta = -0.105$ (CI: -0.299 , 0.118)

From Table 4 above the mediation analysis explored whether perceived value serves as an explanatory mechanism linking environmental awareness, concern, and attitude to consumers' purchasing behaviour of green personal care products. Across all three models, the evidence consistently indicated that perceived value does not function as a statistically significant mediator.

In the first model, environmental awareness was found to significantly predict perceived value ($\beta = 0.508$, $p < 0.001$), and both variables together explained 23.4% of the variance in perceived value. When predicting purchasing behaviour, environmental awareness exerted a strong positive effect ($\beta = 0.634$, $p < 0.001$), while perceived value was only marginal ($\beta = 0.260$, $p = 0.070$). The bootstrapped indirect effect of environmental awareness through perceived value was positive ($\beta = 0.132$), but its 95% confidence interval crossed zero (LLCI = -0.046 , ULCI = 0.335), indicating a non-significant mediation. Thus, environmental awareness influences purchasing behaviour primarily through its direct pathway rather than through perceived value.

The second model assessed environmental concern as the predictor. Concern significantly increased perceived value ($\beta = 0.613$, $p < 0.001$), accounting for 42.1% of the variance in the mediator. However, when predicting behaviour, environmental concern maintained a strong and significant effect ($\beta = 0.903$, $p < 0.001$), whereas perceived value was not significant ($\beta = -0.067$, $p = 0.652$). The indirect effect was negative ($\beta = -0.041$), and the confidence interval again encompassed zero (LLCI = -0.239 , ULCI = 0.188). This confirms that perceived value does not mediate the concern-behaviour link. Instead, environmental concern directly drives purchasing decisions without requiring the evaluative filter of value perception.

In the third model, environmental attitude was strongly associated with perceived value ($\beta = 0.694$, $p < 0.001$), with the model explaining just over half the variance in perceived value ($R^2 = 0.506$). Attitude also directly predicted purchasing behaviour robustly ($\beta = 0.967$, $p < 0.001$). In contrast, perceived value was not significant ($\beta = -0.152$,

$p = 0.357$). The indirect effect was negative ($\beta = -0.105$) with a 95% confidence interval spanning zero (LLCI = -0.299 , ULCI = 0.118), further ruling out mediation. This pattern suggests that consumers' pro-environmental attitudes directly shape their purchasing behaviour, bypassing perceived value as an explanatory mechanism.

Overall, these findings highlight a consistent pattern whereby environmental awareness, concern, and attitude all exert direct and significant effects on green purchasing behaviour, but perceived value does not statistically mediate these relationships. This implies that while consumers recognize the environmental relevance of green personal care products, their decisions are not necessarily filtered through an evaluation of product value. From a theoretical standpoint, the results suggest a "direct-effects only" model in which environmental consciousness directly influences behaviour. Business practitioners, and policymakers may consider emphasizing awareness, concern, and attitude formation more strongly, as these constructs appear to influence consumer behaviour independently of perceived value judgments.

4.6 Summary of the Hypotheses Results

Table 5 below provides a summary of the hypothesis results obtained in this study.

Table 5: Summary of the Hypotheses Results

No	Hypothesis	Result
H1	There is a significant relationship between environmental awareness and purchasing behaviour.	Not Supported (in full regression); significant when tested individually)
H2	There is a significant relationship between environmental concern and purchasing behaviour.	Supported
H3	There is a significant relationship between environmental attitude and purchasing behaviour.	Supported
H4	There is a significant relationship between environmental awareness and perceived value.	Supported
H5	There is a significant relationship between environmental concern and perceived value.	Supported
H6	There is a significant relationship between environmental attitude and perceived value.	Supported
H7	There is a significant relationship between perceived value and purchasing behaviour.	Not Supported
H8	Perceived value mediates the relationship between environmental awareness and purchasing behaviour.	Not Supported
H9	Perceived value mediates the relationship between environmental concern and purchasing behaviour.	Not Supported
H10	Perceived value mediates the relationship between environmental attitude and purchasing behaviour.	Not Supported

5. Discussion

This study examined how environmental awareness, concern, and attitude influence the purchasing behaviour of green personal care products among employees in Malaysia's

petroleum industry, and whether perceived value mediates these relationships. The results provide strong evidence of direct effects for environmental concern and environmental attitude, but limited support for environmental awareness when tested within the full regression model. Across all models, perceived value did not emerge as a significant mediator, pointing to a direct-effects-only pathway linking environmental consciousness to consumer behaviour.

5.1 The Relationship Between Environmental Awareness and Purchasing Behaviour

The findings revealed that environmental awareness significantly predicted purchasing behaviour in the mediation model ($\beta = 0.634, p < 0.001$), but when entered alongside other predictors in the full regression model, the effect was no longer significant ($B = 0.167, p = 0.297$). This indicates that awareness plays a role when considered individually, but its impact weakens once concern and attitude are accounted for. This outcome partially supports earlier studies showing that awareness positively drives green purchasing (Amaliah *et al.*, 2023; Kim & Lee, 2023; Silintowe & Sukresna, 2023; Chen *et al.*, 2022). This study also aligns with other research observing that awareness alone does not consistently translate into behaviour (Sharma *et al.*, 2022; Leclercq-Machado, 2022; Panno *et al.*, 2020). The inconsistency resonates with the idea of the “attitude-behaviour gap”, where knowledge of environmental issues is insufficient to ensure actual purchasing actions (Kowalik *et al.*, 2024; Nittala & Moturu, 2021; Jaiswal *et al.*, 2021). Thus, H1 was not supported in the regression model, reflecting the complexity of awareness as a driver of sustainable consumption.

5.2 The Relationship Between Environmental Concern and Purchasing Behaviour

Environmental concern emerged as a robust predictor of purchasing behaviour both in the regression model ($B = 0.522, p = 0.011$) and in the mediation model ($\beta = 0.903, p < 0.001$). This supports H2 and indicates that employees with stronger concern for environmental issues are significantly more likely to purchase green personal care products. These results confirm findings by Yoo *et al.* (2024), Zhuang *et al.* (2021), and Wijekoon & Sabri (2021), who found that environmental concern strengthens green purchase preferences. At the same time, the results contradict studies suggesting that concern may not translate into behaviour or may even negatively influence purchasing decisions (Ibiapina *et al.*, 2020; Andika *et al.*, 2023). This strengthens the argument that, in the Malaysian petroleum sector, environmental concern plays a decisive and direct role in shaping pro-environmental behaviour, reducing the attitude-behaviour gap noted in some earlier works.

5.3 The Relationship Between Environmental Attitude and Purchasing Behaviour

Environmental attitude was also a strong predictor of behaviour in both regression ($B = 0.457, p = 0.041$) and mediation analyses ($\beta = 0.967, p < 0.001$). H3 is therefore supported. These results align with earlier findings that environmental attitudes significantly shape green product purchasing behaviour (Visser & Dlamini, 2021; Novela *et al.*, 2025; Kaur *et*

al., 2024; Chen *et al.*, 2022). However, the results diverge from studies highlighting scepticism or greenwashing as barriers to attitude-driven purchases (Szaban, 2023; Chaihanchanchai & Anantachart, 2022). In this context, the strong predictive power of attitude suggests that employees with favourable environmental orientations translate their beliefs into concrete actions, bridging the gap observed in other markets (Karimi *et al.*, 2021; Carrión-Bósquez & Arias-Bolzmann, 2021).

5.4 The Relationship Between Environmental Awareness, Concern, and Attitude with Perceived Value

The mediation results confirmed that all three predictors significantly influenced perceived value. This study shows that environmental awareness ($\beta = 0.508, p < 0.001$), environmental concern ($\beta = 0.613, p < 0.001$), and environmental attitude ($\beta = 0.694, p < 0.001$) are all significant. Additionally, hypotheses H4–H6 were therefore supported. This aligns with studies showing that higher environmental consciousness enhances perceived value by increasing recognition of eco-friendly benefits (Lopulalan & Rolobessy, 2024; Zemafi & Haryono, 2024; Pai *et al.*, 2023; Zheng *et al.*, 2023). At the same time, the results contradict works that found weak or negative effects of awareness, concern, or attitude on perceived value due to scepticism, greenwashing, or price sensitivity (Kristia, 2023; Sun & Shi, 2022; Ansu-Mensah, 2021; Parker *et al.*, 2022). The findings thus position environmental consciousness as a reliable enhancer of perceived value in this study's context.

5.5 The Relationship Between Perceived Value and Purchasing Behaviour

Despite its links with environmental consciousness, perceived value itself did not significantly predict purchasing behaviour in either the regression model ($B = 0.216, p = 0.175$) or the mediation analyses ($\beta = 0.260, p = 0.070$). This indicates that H7 was insignificant. This contradicts prior studies emphasizing perceived value as a driver of sustainable purchasing (Nguyen *et al.*, 2020; Ngo *et al.*, 2025; Armutçu *et al.*, 2023; Yılmaz, 2023). As such, this study resonates with research showing that perceived costs, risks, or scepticism reduce its impact (Mudiyanselage *et al.*, 2025; Rašić *et al.*, 2024). Within this sample, employees' green purchasing appears more influenced by direct environmental motivations than by evaluative judgments of value.

5.6 The Mediating Role of Perceived Value

Finally, perceived value did not significantly mediate the relationship between environmental awareness, concern, or attitude and purchasing behaviour, as all bootstrapped confidence intervals for indirect effects crossed zero (awareness: $\beta = 0.132$, CI $[-0.046, 0.335]$; concern: $\beta = -0.041$, CI $[-0.240, 0.188]$; attitude: $\beta = -0.105$, CI $[-0.299, 0.118]$). Thus, H8–H10 were insignificant. This outcome challenges studies that proposed perceived value as a key mediator (Kumar, 2024; Jaya *et al.*, 2024; Amaliah *et al.*, 2023; Yahya *et al.*, 2024), while supporting research indicating that direct psychological factors such as trust, attitude, and norms exert stronger effects (Gupta & Bhardwaj, 2024;

Patwary *et al.*, 2022; Moshood *et al.*, 2022). The results suggest that in this context, perceived value is not the mechanism through which environmental consciousness shapes behaviour. Instead, concern and attitude function as strong, independent drivers, whereas awareness has a weaker and context-dependent influence.

Hence, the findings confirm that environmental concern and attitude are decisive predictors of green purchasing behaviour among petroleum employees, while awareness plays a more limited role once other orientations are considered. Perceived value, though shaped by awareness, concern, and attitude, does not independently predict behaviour nor mediate the relationships. These outcomes reconcile with some strands of prior research while contradicting others, illustrating the complexity of the attitude-behaviour gap in sustainable consumption.

6. Conclusion

This study set out to explore the influence of environmental awareness, concern, and attitude on the purchasing behaviour of green personal care products among employees in Malaysia's petroleum industry, while examining whether perceived value impacts as a mediating factor. Grounded in the Theory of Planned Behaviour, the findings make several contributions that address the gaps identified in earlier literature.

The first objective was to examine whether environmental awareness predicts green purchasing. The results demonstrate that awareness, while conceptually important, exerts only a limited influence once other orientations are considered. This narrows the inconsistency in previous findings where some studies observed a strong role of awareness in driving sustainable choices (Amaliah *et al.*, 2023; Kim & Lee, 2023; Chen *et al.*, 2022), while others questioned its effectiveness in overcoming the attitude-behaviour gap (Sharma *et al.*, 2022; Panno *et al.*, 2020). The present research clarifies that awareness alone is insufficient, thereby refining its place within the behavioural framework.

The second objective was to determine the role of environmental concern in shaping purchasing behaviour. Here, the evidence strongly supports concern as a direct and reliable driver, aligning with earlier studies that emphasized its central role in strengthening pro-environmental actions (Yoo *et al.*, 2024; Zhuang *et al.*, 2021; Wijekoon & Sabri, 2021). At the same time, the results challenge perspectives that treated concern as a weak or inconsistent predictor (Ibiapina *et al.*, 2020; Andika *et al.*, 2023). In doing so, the study narrows the gap by showing that in the Malaysian petroleum context, concern is a decisive motivator that helps bridge the divide between attitudes and behaviour.

The third objective was to evaluate the impact of environmental attitude. The findings confirm that favourable attitudes significantly translate into actual purchasing, reinforcing arguments made by (Visser & Dlamini, 2021; Novela *et al.*, 2025; Kaur *et al.*, 2024). At the same time, the results contradict sceptical views that emphasized the limiting effects of greenwashing or consumer doubt (Szaban, 2023; Chaihanchai & Anantachart, 2022). By confirming that attitudes hold predictive strength even in a

resource-intensive industry, this study strengthens the theoretical position that attitudes remain central in shaping behaviour within the Theory of Planned Behaviour.

The next objective was to establish the relationship between environmental consciousness and perceived value. The findings reveal that awareness, concern, and attitude all significantly enhance perceived value. This narrows the debate between supportive works (Lopulalan & Rolobessy, 2024; Pai *et al.*, 2023; Zheng *et al.*, 2023) and scholars who suggest weaker effects due to scepticism or cost sensitivity (Kristia, 2023; Sun & Shi, 2022; Ansu-Mensah, 2021). The evidence here demonstrates that in this context, environmental consciousness meaningfully shapes value perceptions, even if these perceptions do not ultimately mediate behaviour.

The final objective was to assess whether perceived value predicts or mediates purchasing behaviour. The results show that perceived value does not exert a direct effect, nor does it mediate the links between environmental orientations and behaviour. This finding stands in contrast to prior studies highlighting value as a key mechanism (Nguyen *et al.*, 2020; Jaya *et al.*, 2024; Yahya *et al.*, 2024). However, this study supports those who argued that pro-environmental decisions may stem more from internalised concern and attitudes than from evaluative judgments (Gupta & Bhardwaj, 2024; Moshood *et al.*, 2022). By clarifying this contested role, the study bridges an important theoretical gap, showing that concern and attitude, rather than value perceptions, are the true channels through which environmental consciousness drives sustainable purchasing.

Thus, the results affirm that environmental concern and attitude are the strongest and most consistent predictors of green purchasing behaviour in this study. On the other hand, awareness plays a supporting but less decisive role. Moreover, perceived value does not function as the mediating bridge once assumed. By integrating these findings, the study refines the application of the Theory of Planned Behaviour to sustainable consumption. This study indicates that personal orientations carry greater weight than value-based evaluations. Additionally, this study also contributes to resolving the fragmented results in the literature and narrows the attitude-behaviour gap. Furthermore, this research provides a clearer roadmap for future research and practice.

7. Limitations and Future Research

This study only focuses on workers from one industry only. Thus, restricts the generalisability of the results to other sectors or geographic settings. Therefore, to acquire more insight into this mediation study, future research could be expanded to more industries in Malaysia.

Acknowledgements

The authors would like to express their gratitude and appreciation to all respondents from the petroleum industry for their support and time spent in answering the research questionnaires.

Conflict of Interests Statement

The authors declare that the research has been conducted without any conflict of interest. The study was carried out entirely independently, and no outside organisation provided funding or exerted influence. The material presented is original work, and publication has not been sought elsewhere.

About the Authors

Kumaran Kanapathipillai, a prominent figure in academia, earned his PhD in management and business from Management and Science University (Malaysia). With an impressive tenure of 24 years in the academic world, he has honed expertise in areas such as Management, Marketing, Supply Chain Management, and Logistics Management. Within academia, he plays a pivotal role in guiding and assessing both master's and Ph.D. candidates. He also serves as an external examiner for several universities in Europe and Asia. Additionally, he is a peer reviewer for numerous academic journals. Beyond academia, he provides specialised training sessions on entrepreneurship, creative problem-solving, and project management across diverse industries. His scholarly pursuits predominantly concentrate on contemporary entrepreneurship, management, and marketing.

Adlinna Binti Dolhan is a Junior Marketing Executive who is actively involved in strategic planning, client engagement, and internal communications. She holds a Bachelor of Administrative Science (Hons) and is presently pursuing her Master of Business Administration at UNITAR International University. With a great interest in business development and operational strategy, she is passionate about contributing to her professional growth and the success of her organization.

Mohd Nawawi Bin Ibrahim is an accomplished Senior Engineer at PETRONAS with over 13 years of experience in the oil and gas industry. He holds a Bachelor of Mechanical Engineering from Universiti Teknologi PETRONAS and is currently pursuing his MBA at UNITAR International University to further sharpen his strategic and business acumen in addition to his engineering expertise, as he is also the Business Development Director and co-founder of Narinar Group Sdn. Bhd., a fast-growing aromatherapy and wellness brand in Malaysia.

Siti Nursyafiqah Binti Samsudin is a Quality & Kaizen Manager in the aftermarket automotive industry with a total of 10 years of experience. She holds a Bachelor of Polymer Engineering from UniMAP and is currently pursuing her MBA at UNITAR International University to enhance her managerial skills and business knowledge for future success in such a competitive world.

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