Journal of Finance – Marketing Research

http://jfm.ufm.edu.vn

VIETNAMESE YOUNG CONSUMERS' GREEN PURCHASE BEHAVIOR: DOES GREEN TRUST MATTER?

Doan Bao Son[1*], Pham Thi Thu Hien[1], Nguyen Huy Phuc[1], Nguyen Ngoc Kieu Anh[1], Nguyen Dinh Loc[1], Tong Tinh Nghi[1]

[1]Ho Chi Minh City Open University, Vietnam

ARTICLE INFO	ABSTRACT
	It is crucial to practice environmentally responsible purchasing since impulsive purchases can damage the environment. Green purchase behavior (GP) can help consumers lessen their environmental impact. An integrated structural model of GP was developed by drawing on postulates from the Protection Motivation Theory (PMT). A total of 302 Vietnamese university students were surveyed using the snowball sampling method. It was found through structural equation modeling (SEM) that there is a significant association between perceived severity (PS), perceived vulnerability (PV), and GP. The relationship between PS, PV, and GP is mediated by attitude toward green purchase (ATT). Also, green trust (GTR) plays a significant moderating role in the PV and GP relationship. The findings, including the correlations between the variables, provide credence to the suggested theoretical framework. Since studies on environmental problems and green purchasing behavior are still in their early stages, this work helps fill a gap in our understanding of the phenomenon in the context of Vietnam, a developing Southeast Asian economy. This research may help manufacturers and marketers of green products encourage the use of their products to improve environmentally friendly and sustainable behavior. The findings suggest marketers and manufacturers should emphasize environmental pollution's perceived severity and vulnerability. It is also critical to establish consumers' trust in green marketing.

Corresponding author:

Email:

1. Introduction

The environment is becoming increasingly important to people and directly impacts how people's values and lifestyles are changing. As more people become aware of how important the environment is, they also understand how their shopping choices affect the natural world (Zhuang et al., 2021). More and more people are thinking about the impact of their consumption on the environment and the products they buy, making sustainability an important social issue (Sharma et al., 2023). Customers' attitudes toward going green and their green purchasing behavior (GP) are influenced by internal and external factors, which is why researchers have recently begun to examine conditions that make consumers purchase more green products (Cheung & To, 2019). Researchers have found that younger consumers have a greater impact on environmental protection issues (Adnan et al., 2017) due to their increased awareness and responsibility in this field. Undergraduates are often considered a subset of the younger, more educated consumer demographic; research has shown that this demographic has a greater grasp of eco-friendly goods and services and related environmental concerns (Nguyen et al., 2019; Lai & Cheng, 2016). Green purchasing habits are likely to be pioneered by the Vietnamese consumers' younger generation because they are more informed about responsible and sustainable consumption (Nguyen et al., 2019).

Sustainability, green consumption, and related topics have garnered much attention from academics and industry professionals in the marketing sector (Nguyen et al., 2019). In developing nations, particularly Asia, studies examining the concerns of young consumers regarding the environment have been under-researched (Adnan et al., 2017). Therefore, it is pertinent to investigate the underlying causes of GP in Vietnamese youth. To better understand why youth are becoming shoppers who care about being environmentally conscious, we

propose the Protection Motivation Theory (PMT; Rogers, 1975). The PMT addresses the motivation behind changing one's behavior (Pang et al., 2021). The fundamental tenet of PMT is that people will weigh the costs and benefits of both new and existing behaviors when making pro-environmental decisions (Keshavarz & Karami, 2016). Even though PMT was first created for general health issues, the model is sufficiently comprehensive to be used in any circumstance involving the prediction of GP (Pang et al., 2021; Shafiei & Maleksaeidi, 2020). According to the theory, two cognitive mediating processes impact protection motivation in reaction to a threat like climate change. It is believed that by increasing feelings of severity and vulnerability through fear arousal processes boosts protection motivation. According to PMT, this line of thinking should be supported by the observation that protection motivation is positively correlated with both perceived severity (PS) and perceived vulnerability. (PV) (Rainear & Christensen, 2017).

Despite a large body of literature on GP, research on the attitude-behavior gap is still lacking. The studies' results are often inconsistent. The "attitude-behavior gap" and disagreement on other consumer decision-making factors affecting green purchases are global issues that industry and academia are studying (Sharma et al., 2023). Investigators examine consumer attitudes, motives, and behavior to mitigate environmental issues (Roberts & Bacon, 1997). To close this "attitude-behavior gap", we need to know what influences GP among consumers (Ahmad et al., 2022). By gaining a better understanding of how to influence consumers' attitudes towards sustainability, researchers can further induce GP (Cheung & To, 2019). Consequently, the current research hypothesizes that attitude towards green purchase (ATT) could mediate the relationship between PS, PV, and GP. The degree to which consumers have faith

in a business's environmental performance is indicative of its credibility, reliability, and adherence to industry standards (Wang et al., 2022). Trustworthiness, dependability, meeting customer expectations, and the ability of products to guarantee environmental safety are all aspects of green trust (GTR) (Chen & Chang, 2013). Many studies have shown that when buyers and sellers trust each other, it improves their relationship and makes customers feel more loyal to the company (Li et al., 2021). According to two studies, consumers' propensity to purchase environmentally friendly goods is inversely proportional to their faith level in such goods (Wei et al., 2017). Building on prior research, this study adds to the existing body of knowledge by incorporating green trust into GP. Based on previous studies on GTR, this one shows, from a broader viewpoint, the boundary conditions of customers' transition from a perceived threat to GP.

To fill the gaps in the literature, this study will draw on PMT to explore the impact determinants of Vietnamese youth consumers' GP. Hence, this investigation aimed to examine: *(1) the direct impact of PS and PV on GP; (2) the mediating role of ATT in the relationships between PS, PV, and GP; and (3) the moderating impact of GTR on the link between PS, PV and GP.*

2. Literature review and hypotheses development

2.1. Protection Motivation Theory (PMT)

According to Rogers (1975, p.100), "*people appraise the severity and likelihood of being exposed to a depicted noxious event, evaluate their ability to cope with the event, and alter their attitudes accordingly*" is how PMT was originally developed to explain why people respond to threats or dangerous behaviors (Ruan et al., 2020). According to this theory, people use two primary cognitive processes - threat appraisal and coping appraisal - to decide

how to react to threats (Rogers & Prentice-Dunn, 1997). Threat appraisal entails evaluating risks based on severity and vulnerability. Individuals' perceptions of their vulnerability to the threat's consequences make up their threat susceptibility, while their beliefs about the seriousness of the consequences make up their threat severity (Kothe et al., 2019). Researchers have shown that when people perceive a greater danger and are more vulnerable to it, they are more likely to take precautions (Rogers & Prentice-Dunn, 1997). In keeping with this idea, PMT proposes that there should be a positive association between severity, vulnerability, and protection motivation (Rainear & Christensen, 2017). As noted by Gardner and Stern (2002, p. 244), "*It shows how several psychological processes and mechanisms can interact, reminds us that all of these processes and mechanisms can contribute to misestimation and inaction at the same time, and suggests multicomponent programs that are likely to be effective in efforts to increase people's estimation of environmental threats and/or their actions toward those threats*", which makes the PMT particularly useful for GP overall (Bockarjova & Steg, 2014).

2.2. Threat appraisal and consumers' green purchase behavior (GP)

To address behavior that deviates from rational decision-making guidelines, augmented PMT was created (Oakley et al., 2020). Individuals may act irrationally when they feel threatened. According to the authors, determining the degree to which one must assume personal responsibility for adaptive behavior, is a result of evaluating the threat's severity and vulnerability. Emotions and social norms can also impact this cognitive stage (Marikyan & Papagiannidis, 2023). Severity and vulnerability are the two main constructs included in the threat appraisal process, which assesses the danger of the current risk (Rainear & Christensen, 2017). The perceived severity

(PS) of the threat "*reflects how serious an existing risk is perceived to be*" (Bockarjova & Steg, 2014, p. 277). Perceived vulnerability (PV) "*reflects perceptions of how susceptible one is to the existing threat*" (Bockarjova & Steg, 2014, p. 277). It is believed that by increasing PS and PV, the fear arousal process increases protection motivation (Rainear & Christensen, 2017). According to the PMT, there should be a positive correlation between protection motivation, PS, and PV. The PMT states that vulnerability and severity make up threat appraisal. Individuals engage in threat assessment when they anticipate being impacted by a potential threat stimulus and evaluate its severity (i.e., PS) and individuals' vulnerability (i.e., PV) to that threat.

A consumer's level of concern for the environment and their estimation of the negative effects of that concern on their decision to forego green product consumption are the theoretical frameworks within which PS is defined in this work (Pang et al., 2021). When people perceive a greater PS of danger, they are more inclined to use environmentally friendly products to safeguard themselves. PV measures how susceptible or vulnerable an individual feels to a threat on an individual level (Bai et al., 2019). In particular, the PV of this study stands for a consumer's evaluation of the danger they face from not buying environmentally friendly products and their level of action to mitigate that danger (Al-Sharafi et al., 2023). GP can be defined as "*the purchasing of those products which are environmentally friendly and evading those products which are harmful to the environment*" (Soomro et al., 2020, p. 291). On top of that, it's an eco-friendly product that helps create a more sustainable world while still meeting customer demands (Soomro et al., 2020). Thus, predicting that young consumers with high PS and PV are more likely to utilize green products is a logical move. Accordingly, this leads to the following:

Hypothesis H1: PS significantly and positively affects consumers' GP.

Hypothesis H2: PV significantly and positively affects consumers' GP.

2.3. The mediating role of attitude toward green purchase (ATT)

An explanation for why people react to danger or risky behavior is the primary goal of the PMT (Ruan et al., 2020); specifically, "people appraise the severity and likelihood of being exposed to a depicted noxious event, evaluate their ability to cope with the event and alter their attitudes accordingly" (Rogers, 1975). The severity and vulnerability of a threat assessment are the two main components. The former refers to how seriously people take a threat's potential consequences, while the latter is the likelihood that a threat will inflict harm (Rogers, 1975). Health risks may impact consumers' attitudes toward green purchasing after raising their PS and PV (Tzeng & Ho, 2022). Consumers' attitudes toward the adoption of wearable healthcare technology would be significantly impacted by both PS and PV, according to Guo et al. (2015). A consumer's attitude is significantly affected by their PS and PV (Zhao et al., 2018).

The significance of attitude in comprehending human behavior has long been acknowledged (Ahmad et al., 2022). Attitude has long been recognized as a key component in understanding behavioral variation in social psychology (Han et al., 2018; Mostafa, 2006). The connection between attitude toward green purchases (ATT) and actions about the environment has been the subject of numerous studies (Ahmad et al., 2022). When it comes to attitude toward a behavior, Ajzen (1991, p. 188) claims that "*the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior*". Because it significantly impacts how people make decisions and act, this variable is frequently included in models of social psychology (Han et al., 2018). There has been a lot of research on consumers' ATT

and actions about retail products. In retail product consumption, where green attributes are the goods' intrinsic, having mixed feelings about a green product might make more sense (Jeong et al., 2014). Consumers with a positive outlook on the environment are more likely to care about environmental issues and prioritize eco-social benefits. This could motivate her or him to switch to eco-friendly products. People are more likely to buy eco-friendly goods when they understand these items positively impact society (Cheung & To, 2019). Additionally, some studies indicated that attitude affected intention after the PMT factors affected attitude. People are more inclined to take action and adopt a positive attitude when they perceive a threat as close relevance to their situation (Guo et al., 2015). All things considered, ATT is a major factor in eco-friendly shopping choices (Ahmad et al., 2022). In addressing this issue, the present study makes the following hypothesis:

Hypothesis *H3:* The connection between PS and GP is mediated by ATT.

Hypothesis *H4:* ATT plays a mediating role in the connection between PV and GP.

2.4. The moderating role of green trust (GTR)

According to relationship marketing literature, trust is the primary foundation upon which a relationship rests (Chen, 2010). According to a plethora of research, consumers' perceptions of loyalty to a business can be boosted when there is trust between buyers and sellers (Li et al., 2021). When knowledge is limited, uncertainty and risk are high, and trust plays a crucial role (Choi et al., 2015). When mutual trust has been built, consumers perceive fewer risks and fewer complications when making purchases, leading to more

positive behavioral outcomes (Morgan & Hunt, 1994). Green trust (GTR) is conceptualized as "*a willingness to depend on a product, service, or brand based on the belief or expectation resulting from its credibility, benevolence, and ability about its environmental performance*" (Chen, 2010, p. 309). In the age of environmentally and socially responsible consumption, researchers found that customers' levels of green trust can impact their decision-making process (Amin & Tarun, 2021; Chen, 2010). In a study conducted by Lee (2020), it was found that consumers' perceptions of risk could be reduced through trust. This, in turn, led to an increase in the likelihood of consumers purchasing environmentally friendly products. Customers who feel more strongly about climate change and have more faith in green products will be more likely to initiate contact with suppliers of green products to learn more about them, develop the necessary PS and PV, and encourage GP. As a result, buyers concerned about climate change, and have developed confidence in eco-friendly products are more likely to consider making an eco-friendly purchase for personal and environmental reasons (Li et al., 2021). The present study maintains that GTR can regulate the positive relationship between consumers' perceived threat (PS and PV) and their GP effectiveness, which leads to the following hypothesis:

Hypothesis *H5:* GTR serves as a moderator of the relationship between PS and GP.

Hypothesis *H6:* GTR serves as a moderator of the relationship between PV and GP.

In Figure 1, we can see the interconnections between the relevant variables in this article's model.
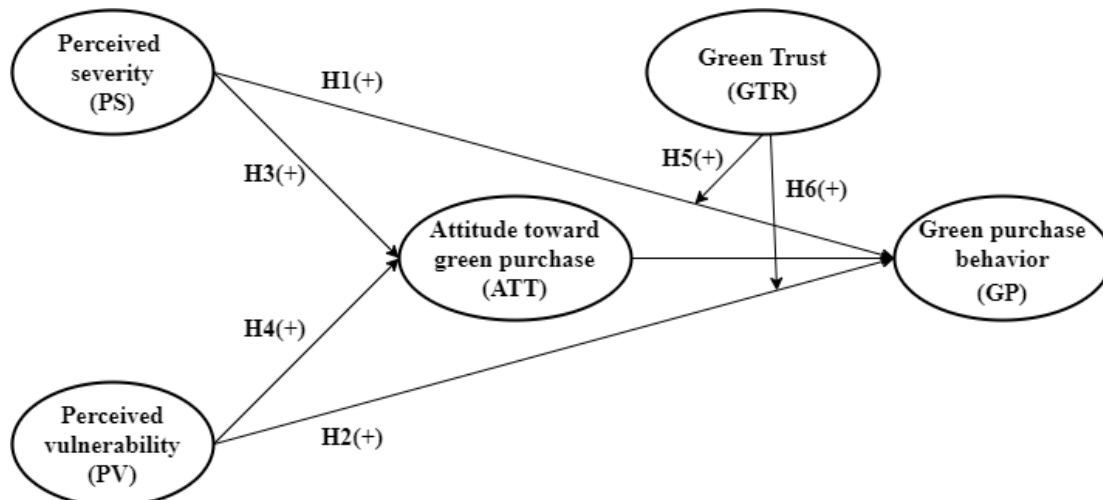
Figure 1. Hypothesized model

3. Methodology

3.1. Data collection and sample

All five of the research model's constructs are measured by the questionnaire items used in our study. Following a back-and-forth translation process (Brislin, 1970), a student who is bilingual in English and Vietnamese translated the scale items into Vietnamese. A second student then translated them back into English. An expert in the field who is fluent in English double-checked both the translated and original versions (Nguyen et al., 2019). The questionnaire was pilot-tested with a small group of young consumers (n = 10) (Ha et al., 2022). The final questionnaire was revised based on the comments to improve its structure and content comprehension. We chose Ho Chi Minh City as the site for this study's data collection because it meets many of the criteria for green consumption, including a large population of young people with advanced environmental literacy, affluent lifestyles, and easy access to eco-friendly goods. Respondents in Ho Chi Minh City, Vietnam, were selected using the snowballing method and surveyed using a structured, self-administered questionnaire. The target population consists of undergraduate students from Ho Chi Minh

City since it is one of the biggest cities in Vietnam and a hub for higher education for students from all over the country. A structured questionnaire was employed for data collection. Using snowball sampling, 450 questionnaires were distributed between March and May 2024. Snowballing is used for data collection because it is a fast method to find answers (Wang et al., 2022). A total of 302 completed surveys were subsequently utilized. The survey has a response rate of approximately 67.11 percent. Appendix 1 (*see Appendix 1 online*) provides a detailed breakdown of the collected data's descriptive statistics.

3.2. Measurement of constructs

The measurement scales that were a part of this study have been proven reliable and valid in different settings. On a five-point Likert scale, 1 signifies "strongly disagree" and 5 means "strongly agree" for each question. Initially, the four-item perceived severity (PS) scale and the four-item perceived vulnerability (PV) scale were adapted from Champion (1999) and Rainear and Christensen (2017). Second, Ritter et al. (2015) and Cheung and To (2019) were used to measure the three-item attitude toward green purchase (ATT) scale. Third, the five-item green trust (GTR) scale of Chen

(2010) and Amin and Tarun (2021) was used for measurement. Lastly, the three-item green purchase behavior (GP) scale was based on Kim and Choi (2005) and Ahmad et al. (2022).

3.3. Data Analysis

Scholars are using more structural equation modeling (SEM) to investigate the mediating effect of variables within a model, in response to the growing need to investigate the effect of mediators (Manosuthi et al., 2020). AMOS 24 was used for the analysis. The structural model was estimated after the measurement model had been validated in a two-step process (Anderson & Gerbing, 1988). Tested structural models include: The first assessed the mediating role of ATT on the PS-GP, and PV-GP connections, and the second assessed the moderating role of GTR on the PS-GP, and PV-GP links.

4. Empirical findings

4.1. Evaluation of measurement model

Before assessing the measurement model, we eliminated the PS4, PV4, GTR5, and GP4 items (because of cross-loading) (Hair et al., 2019). The data must first be assumed to be normally distributed, this is a crucial step (Ha et al., 2022; Collier, 2020). The kurtosis and skewness tests are used to evaluate the normalcy of the data. The data is considered normal if the skewness is less

than an absolute of 3.0 and the kurtosis is smaller than 7.0, (Collier, 2020). The normality test results demonstrate that the data are normally distributed, with kurtosis falling between -1.781 (PS2) and 4.192 (PV2) and skewness between -1.659 (GP2) and -0.156 (PS2).

Statistical tests like Cronbach's alpha, AVE, CR, and standardized regression weights (Hair et al., 2019) were used to check the study instrument for convergent validity. The results (*see Appendix 2 online*) demonstrate the following: Cronbach's alpha values are greater than the recommended level of 0.7; all measures had AVEs greater than the recommended value of 0.50 (PS = 0.712 to AGP = 0.884); all measures had CRs greater than the recommended value of 0.70 (PS = 0.880 to AGP = 0.958); and all items had standardized regression weights greater than the recommended value of 0.5 per (Hair et al., 2019).

We employed Henseler et al.'s (2015) HTMT ratio of correlations to evaluate the scale's discriminant validity. The HTMT ratio measures the correlation between similar constructs. A discriminant validity violation occurs when the value exceeds 0.85. The constructs' discriminant validity was confirmed by the fact that the HTMT values were less than 0.85, as revealed by our research. The HTMT values from our analysis are in Table 1.

Table 1. HTMT Analysis

	GTR	ATT	GP	PV	PS
GTR					
ATT	0.593				
GP	0.532	0.549			
PV	0.533	0.593	0.414		
PS	0.323	0.368	0.442	0.453	

The statistics for the fit of the model were very good. The following values are provided: $\chi2$ = 250.250 (df = 94, p = 0.000), CMIN/ df = 2.662, SRMR = 0.0428, CFI = 0.962, TLI = 0.952, and RMSEA = 0.074. Therefore, it can be concluded that the constructs are both valid and reliable.

4.3. Evaluation of structural model

After that, we check all our hypotheses by looking at the structural model. The following step is to estimate all the hypothesized relationships from the research model using maximum likelihood estimation (Collier, 2020). According to the model fit measures, with 118 degrees of freedom, $\chi 2 = 329.185$ and $p = 0.000$. According to Hu and Bentler (1999), the model is parsimoniously acceptable because the $\chi 2/df$ value of 2.790 falls within the 2 and 5 thresholds. Several metrics were measured, including the SRMR (0.0742), CFI (0.952), TLI (0.937), and RMSEA (0.077). In general, according to all fit indices, the model achieves a satisfactory goodness of fit (Hair et al., 2019; Hu & Bentler, 1999).

According to the path analysis, all hypotheses, except H5, receive support at various significance levels. We accept H2 and H3 at 10% ($p < 0.100$). Sample size affects p-value hypothesis testing. Increasing the sample size may improve significance. The sample size must be considered when interpreting the p-value (Anderson et al., 2017). Additionally, p-values are a continuum that measures evidence strength. Guidelines for evidence include $p < 0.001$ (very strong), $p < 0.010$ (strong), $p < 0.050$ (moderate), $p < 0.100$ (weak or trend), and $p \geq 0.100$ (insufficient) (Ganesh & Cave, 2017). Therefore, in this study, H2 and H3 are supported at the 10% level, which may be due to the sample size not being large enough.

The results of the hypothesis testing for the structural model assessment can be observed in Table 2. There are various levels of statistical significance for all hypotheses.

Table 2. Hypotheses testing of structural model

Hypothesized relationships	Proposed effects	SRW	Results
H1: PS → GP	Positive	0.165**	Supported
H2: PV → GP	Positive	0.149†	Supported
H3: PS → ATT → GP	Positive	0.035†	Supported
H4: PV → ATT → GP	Positive	0.180***	Supported
H5: PSxGTR → GP	Positive	**- 0.189**	**Not Supported**
H6: PVxGTR → GP	Positive	0.285***	Supported

*Note: *** p < 0.001; ** p < 0.010; * p < 0.050; †p < 0.100.*

4.4. Mediation analysis

A bootstrapping mediation analysis revealed the relationships between PS, PV, ATT, and GP. For each of the roughly 1,999 permuted samples (which also included the original, unpermuted data, for a total of 2,000 samples) used in the permutation methods, 2,000 bootstrap samples were drawn for the bootstrap methods (Taylor & MacKinnon, 2012). The analysis was executed with a 95% confidence level for the bias-corrected confidence interval. The data indicate that the links PS-GP and PV-GP are partly mediated through ATT. The mediation test results are summarized in Table 3.

Table 3. Mediation Analysis Results

Relationship	Mediation link	Estimate	Probability	Conclusion
H3: PS – ATT – GP		0.035	< 0.100	Partial mediation
H4: PV – ATT – GP		0.180	< 0.001	Partial mediation

Notes: ***p < 0.001; **p < 0.010; * p < 0.050; †p < 0.100.*

4.5. Moderation analysis

Models developed for the examination process included all variables, including the independent, dependent, moderating, and interaction terms (Collier, 2020). There is no moderating influence of GTR on the connection between PS and GP. H5 is therefore not supported. Figure 2 confirms that GTR moderates the relationship between PV and GP effectively, indicating that PV's positive effect on GP was stronger ($\beta = 0.285$, p < 0.001), supporting H6. This study linked the two moderator degrees to identify the high and low levels of PV, thereby demarcating the moderating effects of GTR (Dawson, 2014). The role of GTR in moderation is depicted in Figure 2. It also emphasizes how GTR, particularly high GTR levels, enhances the positive correlation between PV and GP.
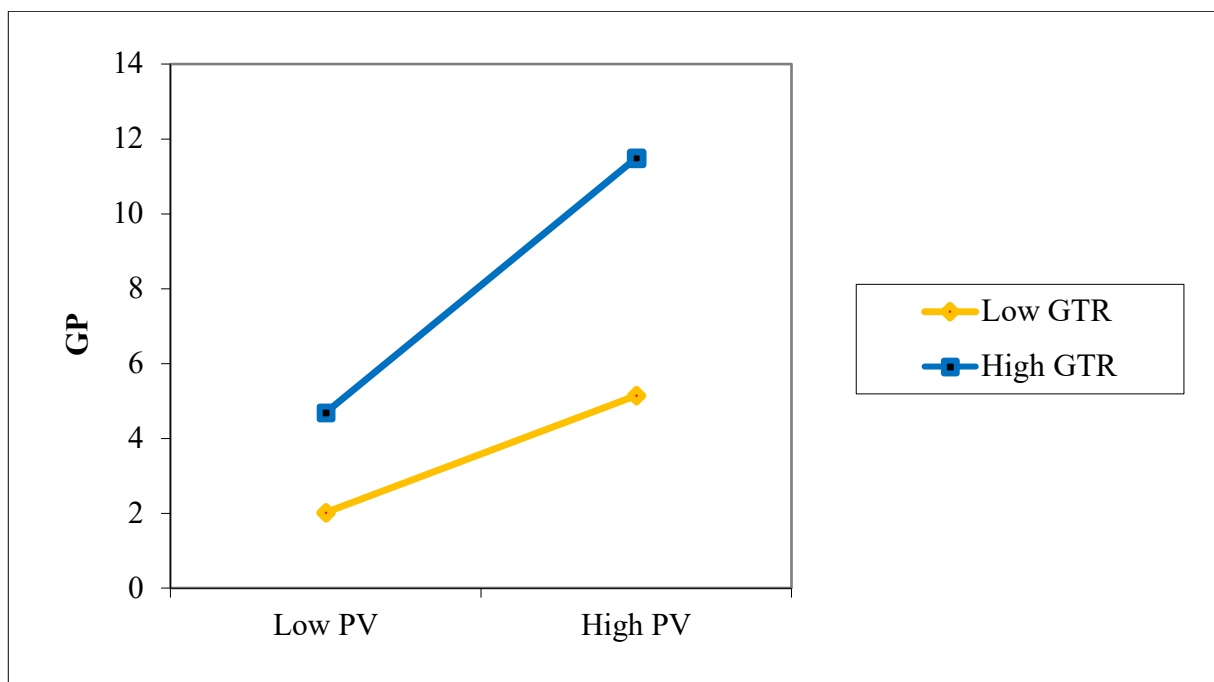
Figure 2. The moderating effect of GTR on the positive link PV-GP

4.5. Discussion

Based on the PMT theory, this work aimed to investigate GP among young Vietnamese consumers. All hypothesized relationships were supported by the data, except H5. The results of SEM analysis of the factors influencing the GP of consumers showed that PV and PS significantly and positively affect GP (H1 and H2 were supported). This confirms what had been found before (Al-Sharafi et al., 2023; Ruan et al., 2020). According to this finding, student's GPs may be impacted by their perceptions of the severity, vulnerability, damage, and environmental challenges. Put simply, people who have a deep comprehension of the issue of environmental degradation are more inclined to utilize green products daily. Theoretically, the fear arousal process boosts protection motivation by amplifying feelings of severity and exposure. Consistent with this idea, PMT suggests that PS and PV should be positively linked to protection motivation (Rainear & Christensen, 2017).

A mediating role for ATT in the connection between PS, PV, and PEB was considered in H3 and H4. The results showed that the relationship between PS, PV, ATT, and GP were supported. This discovery lends credence to the findings of previous research (Pang et al., 2021), showing that customers are more inclined to have a favorable ATT when they are well-informed about the impact and susceptibility of a challenge. These findings are similar to those of Guo et al. (2015), who demonstrated that PMT components influence the attitude-based adoption intention of m-health services. ATT influences how customers act in an environmentally conscious way (Ahmad et al., 2022). Ottman (2017) also found support for this claim and proposed that consumers who have an ATT are willing to change their purchasing or consumption behavior, as well as pay much more for green products.

The results of the moderating effect tests indicated that GTR positively moderated the impact of PV on GP (H6 was supported). However, GTR's ability to moderate the connection between PS and GP was rejected in the tests. Previous research has explored the moderating effect of GTR on the relationship between environmental concern and GP (Li et al., 2021) and the interplay of green customer value and GP (Wang et al., 2022), but no studies have investigated this effect on PV-GP binding. Our research hypotheses were supported by the results, which showed that when GTR was high, PV enhanced the promotion effect of GP. As previously stated, trust is an emotional state in which one is prepared to risk exposure in return for a positive expectation of how they will act (Wang et al., 2022).

5. Implications and conclusion

5.1. Theoretical implication

The theoretical contributions of the present study are embodied in the following aspects. To begin with, despite PMT's prominence in health behavior research (Ruan et al., 2020) and Prentice-Dunn and Rogers (1986), Prentice-Dunn and Rogers's (1986) suggestion that it is generalizable to any risk context, it has been underutilized in studies examining GP. Consequently, the results of this work add to our understanding of how climate change affects the GP of young consumers in Vietnam and have intriguing implications for future research. This study adds to the growing body of theoretical literature on green marketing by exploring the elements impacting GP through the lens of PMT.

Second, the "attitude-behavior gap" is a topic of continuous discussion that posits people may have positive attitudes toward things (Ahmad et al., 2022), but they may not always act on them (Sharma et al., 2019). This frequently relates to eco-friendly consumer behavior. This

study investigates the relationship between Vietnamese consumers and the "attitude-behavior gap" concept. This work closes this gap by demonstrating the crucial regulatory function of ATT on PV-GP and PS-GP links.

Last, our research is the first related to this kind to find that GTR significantly moderates the relationship PV-GP. We are closely monitoring the influence of GTR as a moderator on the interaction between PV and GP. According to the work, GTR significantly positively impacts the relationship between PV-GP. The findings enabled a more comprehensive understanding of the relationship between PV and GP. Additionally, researching GTR's moderating effect enhanced PMT theory and laid the groundwork for further investigation.

5.2. Practical implication

Multiple practical implications are anticipated from the current study's results. Because of its comparatively younger average population and rapid economic development, Vietnam is garnering significant attention from multinational corporations as a new consumer market. Given that Vietnamese youth are regarded as a promising green product niche market, green marketers must comprehend the thinking behind Vietnamese youths' responses to eco-friendly purchases. Research shows that PS and PV improve students' GP in two ways: directly and indirectly through ATT. Instead of focusing on the negative consequences of not using environmentally friendly products, providers should highlight the positive aspects of using them as well as the effects of PMT components. Next, providers should give case studies of customers who benefited greatly from using green products but who, when confronted with significant challenges, chose not to use the providers' products. Based on the study's findings, ATT is a key mediator; to improve GP, it would be wise to take steps to raise awareness about the importance of protecting the environment, the inherent value of all living things, the negative effects of environmental degradation on human health and social welfare, and the growing responsibility of various industries and businesses to adhere to environmental principles.

The findings showed that PV amplified the promotion effect of GP when GTR was high. Hence, building consumers' trust in environmentally conscious marketing is critical. Businesses must find how marketing green products with energy-saving features, indicators, and associated publicity information affect consumers' trust in those products and services. Customers might not fully grasp the benefits of eco-friendly products that save energy if those features aren't displayed clearly. Consequently, businesses must improve their green product and environmental label certification systems and standardize their certification practices. Businesses enhance green product detection and supervision, punish the disclosure of false certifications and green claims, level the playing field between manufacturers and consumers, and create markets for safe and healthy green consumption.

5.3. Conclusion

Based on using the PMT as a theoretical framework, this research looked at GP in Vietnamese students. The findings indicate that both PS and PV substantially positively impact GP. Furthermore, the results indicate that PS and PV indirectly impact GP through ATT. Moreover, GTR serves as a moderator for the correlation between PV and GP. In conclusion, this study contributes new information to the literature on GP. It also provides additional evidence of the PMT's success in green marketing research by introducing ATT and GTR as new constructs and establishing a new embodiment of causal relationships between PMT structures. As a result, the predictive power of the theory is enhanced.

5.4. Limitations and Future Research Suggestions

The study's generalizability may be limited due to a number of factors, notwithstanding its findings. First, this study was conducted based on a cross-sectional study and data were collected at a specific point of time. This research only focuses on the respondents of one city in Vietnam. Future research should use a larger and more representative sample drawn from not only Ho Chi Minh City but also from other big cities. Different consumer generations can be included in the future sample for the comparison purpose. Additionally, time and financial constraints have led to the exclusion of some potential predictors from this study. Future studies may consider other potential variables for generalization.

Acknowledgement

References

Adnan, A., Ahmad, A., & Khan, M. N. (2017). Examining the role of consumer lifestyles on ecological behavior among young Indian consumers. *Young Consumers*, *18*(4), 348-377. https://doi.org/10.1108/YC-05-2017-00699

Ahmad, F. S., Rosli, N. T., & Quoquab, F. (2022). Environmental quality awareness, green trust, green self-efficacy and environmental attitude in influencing green purchase behaviour. *International Journal of Ethics and Systems*, *38*(1), 68-90. https://doi.org/10.1108/IJOES-05-2020-0072

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179-211. https://doi.org/10.1016/0749-5978(91)90020-T

Al-Sharafi, M. A., Al-Emran, M., Arpaci, I., Iahad, N. A., AlQudah, A. A., Iranmanesh, M., & Al-Qaysi, N. (2023). Generation Z use of artificial intelligence products and its impact on environmental sustainability: A cross-cultural comparison. *Computers in Human Behavior*, *143*. https://doi.org/10.1016/j.chb.2023.107708

Amin, S., & Tarun, M. T. (2021). Effect of consumption values on customers' green purchase intention: a mediating role of green trust. *Social Responsibility Journal*, *17*(8), 1320-1336. https://doi.org/10.1108/SRJ-05-2020-0191

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411-423. https://doi.org/10.1037/0033-2909.103.3.411

Anderson, S. F., Kelley, K., & Maxwell, S. E. (2017). Sample-Size Planning for More Accurate Statistical Power: A Method Adjusting Sample Effect Sizes for Publication Bias and Uncertainty. *Psychological Science*, *28*(11), 1547-1562. https://doi.org/10.1177/0956797617723724

Bai, L., Wang, M., & Gong, S. (2019). Understanding the antecedents of organic food purchases: The important roles of beliefs, subjective norms, and identity expressiveness. *Sustainability*, *11*(11). https://doi.org/10.3390/su11113045

Bockarjova, M., & Steg, L. (2014). Can protection motivation theory predict pro-environmental behavior? explaining the adoption of electric vehicles in the Netherlands. *Global Environmental Change*, *28*, 276-288. https://doi.org/10.1016/j.gloenvcha.2014.06.010

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, *1*(3), 185-216. https://doi.org/10.1177/135910457000100301

Jeong, E., Jang, S., Day, J., & Ha, S. (2014). The impact of eco-friendly practices on green image and customer attitudes: An investigation in a café setting. *International Journal of Hospitality Management*, *41*(2014), 10-20. https://doi.org/10.1016/j.ijhm.2014.03.002

Champion, V. L. (1999). Revised susceptibility, benefits, and barriers scale for mammography screening. *Research in Nursing & Health*, *22*(4), 341-348. https://doi.org/10.1002/(SICI)1098-240X(199908)22:4<341::AID-NUR8>3.0.CO;2-P

Chen, Y.-S. (2010). The drivers of green brand equity: green brand image, green satisfaction, and green trust. *Journal of Business Ethics*, *93*, 307-319. https://doi.org/10.1007/s10551-009-0223-9

Chen, Y.-S., & Chang, C.-H. (2013). Greenwash and green trust: the mediation effects of green consumer confusion and green perceived risk. *Journal of Business Ethics*, *114*, 489-500. https://doi.org/10.1007/s10551-012-1360-0

Cheung, M. F. Y., & To, W. M. (2019). An extended model of value-attitude-behavior to explain Chinese consumers' green purchase behavior. *Journal of Retailing and Consumer Services*, *50*, 145-153. https://doi.org/10.1016/j.jretconser.2019.04.006

Choi, H., Jang, J., & Kandampully, J. (2015). Application of the extended VBN theory to understand consumers' decisions about green hotels. *International Journal of Hospitality Management*, *51*, 87-95. https://doi.org/10.1016/j.ijhm.2015.08.004

Collier, J. E. (2020). *Applied structural equation modeling using AMOS: Basic to advanced techniques* (1st ed.). New York: Routledge. https://doi.org/10.4324/9781003018414

Dawson, J. F. (2014). Moderation in Management Research: What, Why, When, and How. *Journal of Business and Psychology*, *29*, 1-19. https://doi.org/10.1007/s10869-013-9308-7

Ganesh, S., & Cave, V. (2018). P-values, p-values everywhere! *New Zealand Veterinary Journal*, *66*(2), 55-56. https://doi.org/10.1080/00480169.2018.1415604

Gardner, G. T., & Stern, P. C. (2002). *Environmental problems and human behavior* (2nd Ed.). Pearson Custom Publishing. https://toc.library.ethz.ch/objects/pdf03/e06_978-0-536-68633-6_01.pdf

Guo, X., Han, X., Zhang, X., Dang, Y., & Chen, C. (2015). Investigating m-health acceptance from a protection motivation theory perspective: gender and age differences. *Telemedicine and e-Health*, *21*(8), 661-669. https://doi.org/10.1089/tmj.2014.0166

Ha, M.-T., Ngan, V. T. K., & Nguyen, P. N. D. (2022). Greenwash and green brand equity: The mediating role of green brand image, green satisfaction and green trust and the moderating role of information and knowledge. *Business Ethics, the Environment & Responsibility*, *31*(4), 904-922. https://doi.org/10.1111/beer.12462

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning.

Han, H., Lee, M. J., & Kim, W. (2018). Promoting towel reuse behaviour in guests: A water conservation management and environmental policy in the hotel industry. *Business Strategy and the Environment*, *27*(8), 1302-1312. https://doi.org/10.1002/bse.2179

Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*, 115-135. https://doi.org/10.1007/s11747-014-0403-8

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Keshavarz, M., & Karami, E. (2016). Farmers' pro-environmental behavior under drought: Application of protection motivation theory. *Journal of Arid Environments*, *127*, 128-136. https://doi.org/10.1016/j.jaridenv.2015.11.010

Kim, Y., & Choi, S. M. (2005). Antecedents of green purchase behavior: An examination of collectivism, environmental concern, and PCE. *Advances in Consumer Research*, *32*(2005), 592-599. https://www.researchgate.net/publication/233894746

Kothe, E. J., Ling, M., North, M., Klas, A., Mullan, B. A., & Novoradovskaya, L. (2019). Protection motivation theory and pro-environmental behaviour: A systematic mapping review. *Australian Journal of Psychology*, *71*(4), 411-432. https://doi.org/10.1111/ajpy.12271

Lai, C. K. M., & Cheng, E. W. L. (2016). Green purchase behavior of undergraduate students in Hong Kong. *The Social Science Journal*, *53*(1), 67-76. https://doi.org/10.1016/j.soscij.2015.11.003

Lee, Y.-K. (2020). The Relationship between green country image, green trust, and purchase intention of Korean products: Focusing on Vietnamese gen Z Consumers. *Sustainability*, *12*(12). https://doi.org/10.3390/su12125098

Li, G., Yang, L., Zhang, B., Li, X., & Chen, F. (2021). How do environmental values impact green product purchase intention? The moderating role of green trust. *Environmental Science and Pollution Research*, *28*, 46020-46034. https://doi.org/10.1007/s11356-021-13946-y

Manosuthi, N., Lee, J.-S., & Han, H. (2020). Predicting the revisit intention of volunteer tourists using the merged model between the theory of planned behavior and norm activation model. *Journal of Travel & Tourism Marketing*, *37*(4), 510-532. https://doi.org/10.1080/10548408.2020.1784364

Marikyan, D., & Papagiannidis, S. (2023). Protection Motivation Theory: A review. In S. Papagiannidis (Ed.), *TheoryHub Book* (pp. 78-93). University of Bristol. https://open.ncl.ac.uk/theory-library/TheoryHubBook.pdf

Morgan, R. M., & Hunt, S. D. (1994). The commitment-trust theory of relationship marketing. *Journal of Marketing*, *58*(3), 20-38. https://doi.org/10.1177/002224299405800302

Mostafa, M. M. (2006). Antecedents of Egyptian consumers' green purchase intentions. *Journal of International Consumer Marketing*, *19*(2), 97-126. https://doi.org/10.1300/J046v19n02_06

Nguyen, M. T. T., Nguyen, L. H., & Nguyen, H. V. (2019). Materialistic values and green apparel purchase intention among young Vietnamese consumers. *Young Consumers*, *20*(4), 246-263. https://doi.org/10.1108/YC-10-2018-0859

Oakley, M., Mohun Himmelweit, S., Leinster, P., & Casado, M. R. (2020). Protection motivation theory: a proposed theoretical extension and moving beyond rationality-the case of flooding. *Water*, *12*(7). https://doi.org/10.3390/w12071848

Ottman, J. (2017). *The new rules of green marketing: strategies, tools, and inspiration for sustainable branding* (1st ed.). London: Routledge. https://doi.org/10.4324/9781351278683

Pang, S. M., Tan, B. C., & Lau, T. C. (2021). Antecedents of consumers' purchase intention towards organic food: integration of theory of planned behavior and protection motivation theory. *Sustainability*, *13*(9). https://doi.org/10.3390/su13095218

Prentice-Dunn, S., & Rogers, R. W. (1986). Protection Motivation Theory and preventive health: beyond the health belief model. *Health Education Research*, *1*(3), 153-161. https://doi.org/10.1093/her/1.3.153

Rainear, A. M., & Christensen, J. L. (2017). Protection motivation theory as an explanatory framework for proenvironmental behavioral intentions. *Communication Research Reports*, *34*(3), 239-248. https://doi.org/10.1080/08824096.2017.1286472

Ritter, Á. M., Borchardt, M., Vaccaro, G. L. R., Pereira, G. M., & Almeida, F. (2015). Motivations for promoting the consumption of green products in an emerging country: exploring attitudes of Brazilian consumers. *Journal of Cleaner Production*, *106*, 507-520. https://doi.org/10.1016/j.jclepro.2014.11.066

Roberts, J. A., & Bacon, D. R. (1997). Exploring the subtle relationships between environmental concern and ecologically conscious consumer behavior. *Journal of Business Research*, *40*(1), 79-89. https://doi.org/10.1016/S0148-2963(96)00280-9

Rogers, R. W. (1975). A Protection Motivation Theory of Fear Appeals and Attitude Change1. *The Journal of Psychology*, *91*(1), 93-114. https://doi.org/10.1080/00223980.1975.9915803

Rogers, R. W., & Prentice-Dunn, S. (1997). Protection motivation theory. In D. S. Gochman (Ed.), *Handbook of health behavior research 1: Personal and social determinants,* 113-132. New York: Plenum Press.

Ruan, W., Kang, S., & Song, H. (2020). Applying protection motivation theory to understand international tourists' behavioural intentions under the threat of air pollution: A case of Beijing, China. *Current Issues in Tourism*, *23*(16), 2027-2041. https://doi.org/10.1080/13683500.2020.1743242

Shafiei, A., & Maleksaeidi, H. (2020). Pro-environmental behavior of university students: Application of protection motivation theory. *Global Ecology and Conservation*, *22*. https://doi.org/10.1016/j.gecco.2020.e00908

Sharma, K., Aswal, C., & Paul, J. (2023). Factors affecting green purchase behavior: A systematic literature review. *Business Strategy and the Environment*, *32*(4), 2078-2092. https://doi.org/10.1002/bse.3237

Sharma, N., Saha, R., & Rameshwar, R. (2019). "I don't buy LED bulbs but I switch off the lights": Green consumption versus sustainable consumption. *Journal of Indian Business Research*, *11*(2), 138-161. https://doi.org/10.1108/JIBR-01-2018-0040

Soomro, R. B., Mirani, I. A., Sajid Ali, M., & Marvi, S. (2020). Exploring the green purchasing behavior of young generation in Pakistan: opportunities for green entrepreneurship. *Asia Pacific Journal of Innovation and Entrepreneurship*, *14*(3), 289-302. https://doi.org/10.1108/APJIE-12-2019-0093

Taylor, A. B., & MacKinnon, D. P. (2012). Four applications of permutation methods to testing a single-mediator model. *Behavior Research Methods*, *44*(3), 806-844. https://doi.org/10.3758/s13428-011-0181-x

Tzeng, S.-Y., & Ho, T.-Y. (2022). Exploring the effects of product knowledge, trust, and distrust in the health belief model to predict attitude toward dietary supplements. *SAGE Open*, *12*(1). https://doi.org/10.1177/21582440211068855

Wang, Y. M., Zaman, H. M. F., & Alvi, A. K. (2022). Linkage of green brand positioning and green customer value with green purchase intention: the mediating and moderating role of attitude toward green brand and green trust. *SAGE Open*, *12*(2). https://doi.org/10.1177/21582440221102441

Wei, C.-F., Chiang, C.-T., Kou, T.-C., & Lee, B. C. Y. (2017). Toward Sustainable Livelihoods: Investigating the Drivers of Purchase Behavior for Green Products. *Business Strategy and the Environment*, *26*(5), 626-639. https://doi.org/10.1002/bse.1942

Zhao, Y., Ni, Q., & Zhou, R. (2018). What factors influence the mobile health service adoption? A meta-analysis and the moderating role of age. *International Journal of Information Management*, *43*, 342-350. https://doi.org/10.1016/j.ijinfomgt.2017.08.006

Zhuang, W., Luo, X., & Riaz, M. U. (2021). On the factors influencing green purchase intention: A meta-analysis approach. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.644020