

Examining the Mediating Effects of Perceived Behavioral Control and Purchase Intention on Sustainable Consumer Behavior

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Abstract

This study examines the relationships and mediation effects among conscientiousness, perceived behavioral control, purchase intention, and purchase behavior towards sustainable-labeled products. Using a cross-sectional survey design with self-reported data, the research employs statistical methods to analyze these relationships. The findings validate hypotheses H1 through H7, revealing significant direct and mediation effects among the studied variables. The results highlight that conscientiousness positively influences purchase behavior through the mediating roles of perceived behavioral control and purchase intention. From a practical perspective, marketers and policymakers can enhance sustainable purchasing behavior by fostering consumer conscientiousness and perceived behavioral control through targeted education, transparent communication, and improved accessibility to sustainable products. This study offers valuable insights into the multi-step process through which conscientiousness drives sustainable purchasing behavior, emphasizing the pivotal roles of perceived behavioral control and purchase intention.

Keywords: Sustainable Labelling, Packaging, Perceived Behavioral Control, Conscientiousness, Purchase Intention, Purchase Behavior

Introduction (Syafiq)

The rising emphasis on sustainability has significantly influenced consumer behavior, prompting a shift towards products labeled as sustainable (Sharma, 2021). This trend highlights the need to understand the psychological and behavioral factors that drive individuals to prefer these products over conventional alternatives. Among the various personality traits, conscientiousness, a dimension of the Big Five personality traits, has emerged as a crucial predictor of pro-environmental behavior (Akhtar, 2022). Conscientious individuals, known for their sense of responsibility, organization, and goal-oriented behavior, tend to show a stronger commitment to purchasing sustainable products (Khan et al. 2021).

This study examines the impact of conscientiousness on the intention to purchase sustainable-labeled products, proposing that perceived behavioral control (PBC) mediates this relationship.

Conscientiousness has been extensively explored within the context of consumer behavior, particularly in relation to ethical and sustainable consumption. Previous research indicates that conscientious individuals are more inclined to engage in behaviors aligning with their values, such as supporting environmentally friendly practices (Ababneh 2021). This is consistent with the theory of planned behavior (TPB), which posits that behavioral intentions are influenced by attitudes, subjective norms, and perceived behavioral control (La Barbera & Ajzen, 2021). Conscientious consumers may exhibit stronger positive attitudes toward sustainable products and perceive greater control over their purchasing decisions, thereby enhancing their purchase intentions. While the direct link between conscientiousness and sustainable consumption is well documented (Paetz, 2021; Kim et al. 2021), the mediating role of perceived behavioral control warrants further investigation.

Perceived behavioral control (PBC) refers to an individual's perception of the ease or difficulty of performing a particular behavior, influenced by both internal and external factors (Shufiana et al. 2021). PBC is a central component of the TPB and plays a critical role in determining behavioral intentions (Akter & Hasan, 2023). Within the context of sustainable consumption, PBC includes elements including product availability, product knowledge, and the purchase's perceived ability to further environmental objectives.

Conscientious individuals, typically more organized and informed, may perceive higher control over their purchasing choices, thereby reinforcing their intentions to buy sustainable-labeled products. The previous study hypothesizes that PBC mediates the relationship between conscientiousness and purchase intention (Zhang et al. 2020), suggesting that conscientious consumers indirectly enhance their sustainable purchasing behavior through increased perceived control.

Literature Review and Hypothesis Development (Syafiq)

Conscientiousness and Perceived Behavioral Control (PBC)

Previous studies provide valuable insights into the enduring impact of conscientiousness on PBC (Paiman et al. 2023). Over time, conscientious individuals consistently engage in behaviors that reinforce their sense of control. In the context of consumer behavior, particularly regarding the purchase of sustainable-labeled products, conscientiousness plays a significant role (Hummel, 2022). Conscientious consumers are likely to engage in responsible consumption behaviors, driven by their goal-oriented nature and sense of duty towards societal and environmental well-being (Patel et al. 2024). They are motivated to make purchases that align with their values and ethical standards, which often include sustainability. Conscientious individuals, with their strong sense of responsibility and diligent planning, are more likely to feel confident in their ability to make informed and impactful purchasing decisions (Hoffmann & Risse 2020). Their proactive approach includes researching product labels, understanding the implications of their purchases, and anticipating the benefits of sustainable consumption (Siraj et al. 2022). This enhanced PBC makes them more likely to intend to purchase sustainable-labeled products (Chen, 2020). Based on the literature, it is proposed that:

Hypothesis 1 (H1): Conscientiousness has a significant positive relationship with perceived behaviour control of products with sustainable labeling on packaging.

Conscientiousness and Purchase Intention

Conscientiousness is a personality trait that is characterized by traits such as being responsible, reliable, and dependable. Recent studies have investigated the impact of conscientiousness on purchase intention. A study by Pekdemir et al. (2021) found that conscientiousness was positively related to purchase intention for green products. The study also found that this relationship was partially mediated by environmental concern and attitudes towards green products. Similarly, a study by Zhao et al. (2021) investigated the impact of conscientiousness on purchase intention for sustainable fashion products. The study found that conscientiousness was positively related to purchase intention for sustainable fashion products. The study also found that this relationship was partially mediated by perceived value and perceived credibility. Another study by Cho et al. (2020) examined the impact of conscientiousness on purchase intention for luxury products. The study found that conscientiousness was positively related to purchase intention for luxury products. The study also found that this relationship was partially mediated by perceived quality and perceived value. In addition to the above studies, other research has also investigated the relationship between conscientiousness and purchase intention for various products and services. A study by Shu et al. (2021) examined the impact of conscientiousness on purchase intention for eco-friendly travel products. The study found that conscientiousness was positively related to purchase intention for eco-friendly travel products. The study also found that this relationship was partially mediated by environmental concern and perceived usefulness. Recent literature suggests that conscientiousness does play a role in shaping purchase intention. Therefore, it is proposed that:

Hypothesis 2 (H2): Conscientiousness has a significant positive relationship with the purchase intention of products with sustainable labeling on packaging.

Perceived Behavioral Control (PBC) and Purchase Intention (PI)

Perceived behavioral control, a construct originating from the TPB, refers to an individual's perception of the ease or difficulty associated with performing a behavior, influenced by past experiences and anticipated obstacles (Ajzen, 1991). Chen and Chai's (2021) study revealed that perceived behavioral control significantly impacts consumers' purchase intentions toward products featuring sustainable labeling on packaging. It was revealed that consumers who perceive greater control over their behavior are more inclined to purchase such products. Various factors, including personal values, environmental attitudes, and social norms, were identified as influencers of perceived behavioral control. However, the study pinpointed gaps in existing literature, particularly the oversight of the moderating effects of individual differences on the relationship between perceived behavioral control and purchase intentions concerning products with sustainable labeling on packaging (Chen & Chai, 2021). Smith et al. (2022) research underscored the pivotal role of perceived behavioral control in determining consumers' purchase intention regarding products featuring sustainable labeling on packaging. These findings stress the importance of crafting interventions aimed at bolstering consumers perceived behavioral control toward such products. Zhang and Li (2021) shed light on the positive influence of perceived behavioral control on consumers' purchase intentions regarding products with sustainable labeling on packaging. Factors like environmental concern, social norms, and personal values were identified as shaping

perceived behavioral control. The study emphasized the significance of information cues, such as eco-labels, in augmenting consumers' perceived behavioral control regarding the purchase of products with sustainable labeling on packaging. The research highlighted the necessity for further exploration into the mechanisms underlying the relationship between perceived behavioral control and purchase intention concerning products with sustainable labeling on packaging. Based on the literature, it is proposed that:

Hypothesis 3 (H3): Perceived behavioral control has a significant positive relationship with the purchase intention of products with sustainable labeling on packaging.

Mediating effects of Perceived Behavioral Control (C-PBC-PI)

Conscientiousness, a personality trait characterized by self-discipline, organization, and goal-directed behavior, has garnered attention in consumer behavior research for its potential influence on sustainable consumption practices. Studies such as those by Soutter, & Möttus (2021), and Kesenheimer & Greitemeyer (2021), have established a positive association between conscientiousness and pro-environmental attitudes and behaviors. These findings suggest that individuals high in conscientiousness are more likely to engage in environmentally responsible actions, including the purchase of products with sustainable labeling on packaging. Perceived behavioral control, derived from the Theory of Planned Behavior (TPB), represents individuals' beliefs about their ability to perform a behavior successfully. According to Ajzen (1991), perceived behavioral control significantly influences behavioral intentions and subsequent actions. Research by Joshi et al. (2019) and Sultan, et al. (2020) has highlighted the importance of perceived behavioral control in predicting sustainable consumption behaviors, indicating that individuals with higher levels of perceived control are more likely to engage in environmentally friendly actions. Based on the literature, it is proposed that:

Hypothesis 4 (H4): Perceived behavioral control mediates the relationship between Conscientiousness and Purchase Intention of products with sustainable labeling on packaging.

Mediating Effects of Purchase Intention (C-PI-PB)

A growing body of research has explored the intricate relationship between individual personality traits, consumer behaviors, and sustainable consumption practices (Duong, 2022). Within this context, the mediating role of purchase intention has emerged as a significant factor in understanding how personality traits, such as conscientiousness, influence actual purchase behavior of products with sustainable labeling on packaging. Conscientiousness, a personality trait characterized by self-discipline, organization, and goal-directed behavior, has been linked to various pro-environmental attitudes and behaviors in prior studies. Liu, et al. (2021) found a positive association between conscientiousness and environmentally responsible actions, including recycling and energy conservation. Duong, (2022) identified conscientiousness as a predictor of pro-environmental behavior, highlighting its role in fostering sustainable consumption practices.

Jin et al. (2020) found that individuals with higher levels of perceived control were more likely to engage in environmentally friendly actions, such as purchasing organic or eco-labeled products. Liu and Wang (2018) observed a positive association between perceived behavioral control and sustainable consumption behaviors, suggesting its importance in shaping consumer decisions. Based on the literature, it is proposed that:

Hypothesis 5 (H5): Purchase intention mediates the relationship between conscientiousness and purchase behavior of products with sustainable labeling on packaging.

Mediating Effects of Purchase Behaviour Control and Purchase Intention (C-PBC-PI-PB)

Sustainable labeling on products provides consumers with information about the environmental and social impact of their purchases, making them more likely to purchase products with sustainable labels (Potter et al. 2021). Positive attitudes towards sustainable products significantly enhance purchase intentions, which in turn lead to actual purchases (Costa et al. 2021). Perceived behavioral control is also a significant predictor of both purchase intentions and actual purchase behavior (Rehman et al., 2019). Conscientious individuals may perceive higher behavioral control when purchasing sustainable products, as they are typically more organized and planful (Eastman et al. 2021). Tarka et al. (2022) show that that conscientiousness influences purchase behavior through the mediation roles of purchase intention and purchase behavior control. Kautish et al. (2019) and Sheng et al. (2019) support this hypothesis which shows that conscientiousness positively affects attitudes towards sustainable products, which enhances purchase intentions. Based on the literature, it is proposed that:

Hypothesis 6 (H6): Perceived Behavior Control and Purchase Intention mediates the relationship between conscientiousness and purchase behavior of products with sustainable labeling on packaging.

Mediating Effects of Purchase Intention (PBC-PI-PB)

Perceived behavior control, often referred to as perceived behavioral control (PBC), stems from Ajzen's Theory of Planned Behavior (TPB). PBC reflects an individual's perception of the ease or difficulty of performing a particular behavior, influenced by past experiences and anticipated obstacles (Ajzen, 1991). Studies show that PBC significantly influences purchase behavior, as individuals with higher perceived control over their actions are more likely to translate their intentions into actual purchases (Hagger et al. 2022). For sustainable products, factors such as availability, affordability, and knowledge significantly impact PBC. When consumers feel that sustainable products are accessible and within their budget, their PBC increases, positively affecting their purchase behavior (Ogiemwonyi, 2022). Numerous studies confirm that purchase intention is a strong predictor of purchase behavior. The stronger the intention, the more likely it is that the consumer will follow through with the purchase (Kytö et al. 2019). In the context of sustainable products, purchase intention is influenced by environmental concern, ethical beliefs, and the perceived benefits of sustainable consumption (Lazaroiu et al. 2019). Studies indicate that consumers are more likely to purchase products with sustainable labels when they believe these labels reflect genuine environmental benefits (Taufique et al. 2019). Empirical studies support the mediating role of purchase intention in various contexts. Liu et al. (2021) found that purchase intention partially mediates the relationship between PBC and actual purchase behavior in health-related behaviors. In the context of sustainable products, studies indicate that purchase intention mediates the effect of PBC on purchase behavior (Zaremohzzabieh et al. 2021; Kautish et al. 2019). When consumers feel in control of purchasing sustainable products, their intention to buy these products strengthens, which in turn, leads to actual purchase behavior (Sharma & Foropon, 2019). Based on the literature, it is proposed that:

Hypothesis 7 (H7): Purchase intention mediates the relationship between perceived behavior control (PBC) and purchase behavior of products with sustainable labeling on packaging.

Underpinning Theories

Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) has been extensively utilized to explore the factors impacting the purchase behavior of products featuring sustainable labeling. TPB, depicted in Figure 1, posits that attitudes, subjective norms, and perceived behavioral control can forecast behavioral intentions, subsequently shaping actual behavior. Recent studies have employed this framework to analyze how these factors influence consumer decisions regarding purchasing products adorned with sustainable labeling. For instance, a study conducted by Aitken, (2020) concluded that attitudes towards products with sustainable labeling, subjective norms, and perceived behavioral control significantly predicted purchase intentions of such products. They found a positive association between attitudes towards sustainable labeling and purchase intentions, indicating that consumers with more favorable attitudes towards sustainability are more inclined to intend to purchase products featuring sustainable labeling. Similarly, subjective norms, which signify the perceived social pressure to engage in a behavior, were identified as a positive influence on purchase intentions. Lastly, perceived behavioral control, reflecting the perceived ease or difficulty of performing a behavior, was shown to positively impact purchase intentions. Consumers exhibiting higher confidence in their ability to purchase products with sustainable labeling were more likely to intend to do so. Another study by Riskos et al. (2021) discovered that the relationship between attitudes towards the purchasing behavior of products with sustainable labeling was partially mediated by the purchase intentions of such products. This implies that attitudes towards sustainable labeling can indirectly affect purchase behavior through their influence on purchase intentions. Recent research reaffirms the applicability of TPB in comprehending sustainable labeling purchase behavior. Utilizing the TPB framework can help identify the key factors influencing consumer purchase intentions and facilitate the development of effective interventions aimed at promoting products with sustainable labeling.

Trait Theory

Trait theory offers a widely employed framework for grasping individual disparities in personality and has been applied across various sectors, including sustainable consumption behaviors. Among the personality traits extensively scrutinized concerning sustainable consumption, openness to experience and conscientiousness stand out. Openness to experience encompasses qualities like creativity, inquisitiveness, and a readiness to embrace novelty. Past research has illustrated that individuals with elevated levels of openness to experience are more prone to adopt sustainable behaviors, such as sustainable purchasing (Tanner et al., 2019). This inclination could stem from their heightened environmental awareness and proactive pursuit of sustainable products. Conversely, conscientiousness is typified by traits like organization, accountability, and self-discipline. Studies indicate that individuals demonstrating high conscientiousness are more predisposed to engage in sustainable behaviors, including sustainable purchasing and intention (Thøgersen, 2019). This propensity arises from their tendency to deliberate on the long-term consequences of their actions and make choices that align with their values. Moreover, evidence suggests a positive correlation between sustainable purchasing behavior and purchase intention (Schwartz & Loewenstein, 2017). Essentially, individuals engaging in sustainable purchasing are more likely

to harbor favorable attitudes toward sustainability and intend to persist in such behaviors in the future. This observation resonates with the Theory of Planned Behavior (TPB), emphasizing the importance of attitudes and perceived behavioral control in molding behavior (Ajzen, 1991). The literature indicates that personality traits like openness to experience and conscientiousness serve as pivotal predictors of sustainable labeling packaging purchase behavior, and such behavior correlates positively with purchase intention. These insights hold significant implications for marketers and policymakers striving to promote sustainable consumption, underscoring the potential effectiveness of targeting individuals with specific personality traits to foster sustainable behavior.

Methodology

Data Collection and Sample Strategy

This study utilizes a conclusive research design to explore the relationships between conscientiousness, perceived behavioral control, purchase intention, and purchase behavior, with perceived behavioral control and purchase intention serving as mediating factors. The extensive sample of Malaysian working adults ensures that the findings are generalizable, making them relevant for managerial decision-making. The results provide valuable insights for marketers on implementing sustainable labeling practices and for government initiatives focused on raising awareness.

A single cross-sectional research design was chosen for its efficiency in data collection. Due to limited research resources, a quantitative approach and convenience sampling were employed. A structured questionnaire, validated for accuracy, was distributed to Malaysian working adults and collected via Google Forms from July to November 2023. In 2023, Malaysia's population was estimated at 32.7 million (Chan et al., 2024), with approximately 15.39 million working adults out of a labor force of about 16 million. Working adults were selected as respondents because of their decision-making role in household purchases (Mamedov et al., 2021) and their literacy and awareness of sustainability issues (Keller et al., 2007), enabling them to make environmentally beneficial purchasing decisions. According to the central limit theorem, the sampling distribution of sample means approaches a normal distribution as the sample size increases, regardless of the population's distribution. This holds true for sufficiently large samples (typically $n > 30$), allowing for reliable statistical inferences about the population (Mohammad Rafiqul Islam, 2018).

Construction of the Research Instrument and Measures

All variables were sourced from well-established and validated references. They were evaluated using a five-point Likert scale, with options ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The Cronbach's alpha results indicated acceptable reliability, with α values between 0.830 and 0.934, aligning with the recommended range of 0.60 to 0.90 as suggested by Hair et al. (2017).

The purchase behavior questionnaire had a Cronbach's alpha (α) of 0.912. Four questions were asked: "It gives me a better feeling when I use products with sustainable labeling on packaging", "I feel for the environment, but I don't have any information about sustainable labeling on packaging", "I may buy products with sustainable labeling on packaging provided I have sufficient information about it", and "I may buy products with sustainable labeling on the packaging, provided it is easily available".

The purchase intention questionnaire had a Cronbach alpha of 0.830. Four questions were asked: "I intend to purchase products with sustainable labeling on packaging in the future", "I would continue to see myself purchase products with sustainable labeling on packaging", "I would purchase products with sustainable labeling on the packaging if it could benefit other people", and "I would seriously consider purchasing products with sustainable labeling on packaging again".

The perceived behavioral control questionnaire had a Cronbach alpha of 0.934. Five questions were asked: "I have the knowledge and ability to purchase products with sustainable labeling on packaging", "I am confident that I can purchase products with sustainable labeling on packaging", "It will be entirely up to me whether or not I purchase products with sustainable labeling on packaging", "If I wanted to, I could easily purchase products with sustainable labeling on packaging", and "My purchase of products with sustainable labeling on the packaging would demand more planning time".

The Conscientiousness questionnaire had a Cronbach alpha of 0.859. Five questions are being used to assess conscientiousness, there are: "I carry out my purchase thoroughly", "I am a reliable consumer", "I persevere until the purchase is finished", "I make purchases efficiently", and "I make plans and follow through with them".

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Ethical Considerations

This research was conducted with strong adherence to ethical principles and standards. Participants' confidentiality and anonymity were rigorously upheld, with no identifiable information collected or disclosed. Participation was voluntary, and informed consent was obtained from all participants before they completed the questionnaires.

Data Analysis and Results (Vina)

Preliminary Data Analysis

The dataset was screened for multivariate outliers using Mahalanobis distance (D2) before analysis. D2 measures "a case's distance from the centroid of the remaining cases, where the centroid is the point created at the intersection of the means of all the variables" (Tabachnick et al., 2007). Cases with a probability associated with their D2 less than 0.001 were considered outliers. No outliers were detected, so all 164 responses were included in further analysis.

Following the outlier screening, the dataset underwent a normality analysis. According to Tabachnick and Fidell (2007), normality assumes that each variable is normally distributed. Testing for normality is crucial before finalizing any statistical analysis, as it examines the data distribution. A perfectly normal distribution is bell-shaped, symmetrical, and has equal mean, median, and mode values (Pallant, 2007). If variables are not normally distributed, the statistical test results may be compromised (Tabachnick and Fidell, 2007).

In this study, normality was assessed using skewness and kurtosis values. Skewness indicates the symmetry of the distribution, while kurtosis indicates the peak. According to Hair et al. (2010), data is considered normal if skewness is between -2 and +2, and kurtosis is between -7 and +7. Table 1 shows that the skewness and kurtosis values for each variable fall within these thresholds, indicating a normal distribution.

Demographic Analysis

Out of the 164 participants, 104 (63.4%) were female, while 60 (36.6%) were male, indicating a higher percentage of female participation. This finding aligns with a study by Chang-Da Wan (2018), which reported an overrepresentation of females in Malaysian public universities, except in certain fields. The age group of 20 to 30 years old was the most represented among respondents, with 83 individuals (50.6%). This is consistent with a study by Fook et al. (2021), which found that most university students fall within this age range. Additionally, 76.2% of respondents were single, likely reflecting the predominance of younger participants. Regarding education, 73.2% held a diploma or bachelor's degree, potentially influenced by the survey's use of English. In terms of income, the highest representation was among those earning below RM1,000 per month, aligning with Malaysia's B40 category for lower-income groups.

Measurement and Structural Model Assessments

This section utilizes Partial Least Squares (PLS) version 4 software, a tool for Structural Equation Modeling (SEM), to analyze the data. PLS-SEM was chosen for this study to forecast the impacts of perceived behavioral control, openness to experience, conscientiousness, and purchase intention on purchase behavior. The model underwent two stages of assessment. Firstly, confirmatory factor analysis (CFA) was performed using consistent PLS algorithms to evaluate the reliabilities and validities of the constructs (measurement model). Secondly, the hypothesized relationships among study variables were tested using bootstrapping with Smart-PLS software version 4 (Smart-PLS 4) (structural model assessment). Figure 2 illustrates the conceptual model of this study.

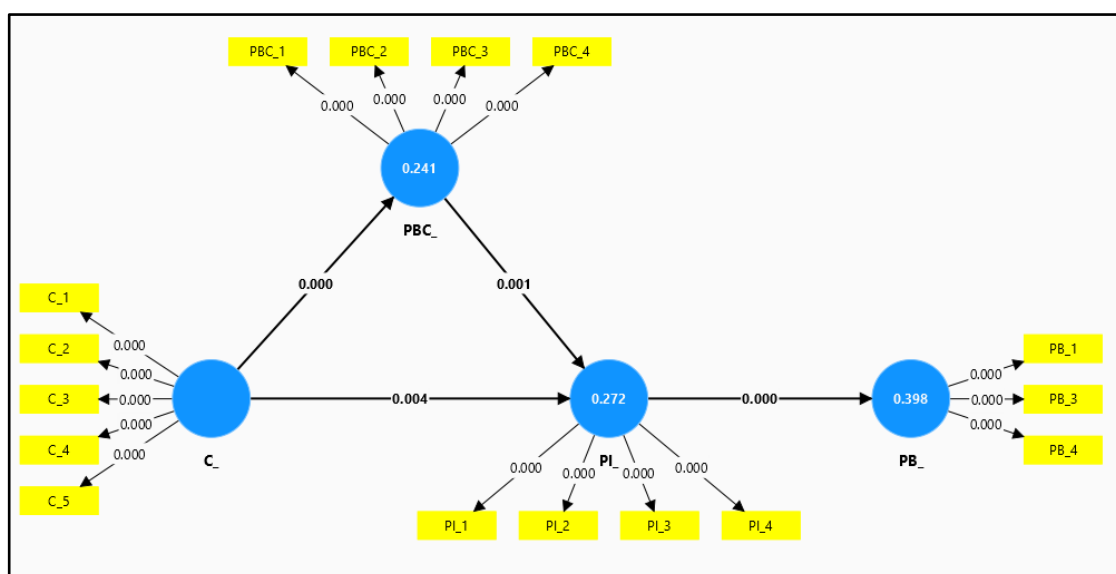


Figure 2: Conceptual model

Measurement Model

Indicator Reliability

The consistency of the constructs was measured using the indicator or factor loadings of their items. The threshold for factor loadings was determined based on previous studies and established guidelines, which typically range from 0.5 to 0.707 (Chin, 1988). Other recommendations include 0.5 (Straub, 1989), 0.450 (Lewis et al., 2005), 0.4-0.7 (Hair et al., 2017), and 0.3 (Lederer and Sethi in Lewis et al., 2005) for exploratory research. This study followed Hair et al. (2017), retaining factor loadings between 0.4 and 0.7 only if the average variance extracted (AVE) was above 0.5 and composite reliability exceeded 0.6. Consequently, factors with loadings between 0.40 and 0.95 were included for further analysis.

Internal Consistency Reliability

One of the criteria assessed was internal consistency using Cronbach's alpha, with a threshold of 0.6 or higher deemed acceptable (Hair et al., 2014). The second test was composite reliability, with constructs retained if they had values of 0.6 and above. Together, these tests provide evidence of internal consistency and reliability. As shown in Table 1, all latent constructs met these criteria, demonstrating strong reliability.

Table 1

Construct Reliability

Name	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha	CR	AVE
Conscientiousness	3.657	.6070	-.402	1.692	0.810	0.82	0.566
Perceived behavioral control	3.709	.7063	-.874	2.326	0.852	0.88	0.693
Purchase behavior	3.7622	.59895	-.289	2.003	0.797	0.807	0.711
Purchase intention	3.8537	.61978	-.116	.482	0.833	0.835	0.667

Convergent Validity

The next criterion assessed was convergent validity, which measures how well individual indicators reflect their construct compared to other constructs (Urbach & Ahlemann, 2010). This is evaluated using the average variance extracted (AVE). According to Hair et al. (2014), an AVE value above 0.5 is considered valid. As shown in Table 1, all variables met the minimum criteria for AVE, thereby establishing the study's convergent validity.

Discriminant Validity

Discriminant validity measures how well a construct differs from other constructs (Hair et al., 2017). It ensures that a reflective construct has the strongest relationship with its own indicators in the PLS path model (Hair et al., 2017). While the Fornell-Larcker criterion (1981) was once the standard test for discriminant validity, it has fallen out of favor. Henseler, Ringle, and Sarstedt (2015) introduced the Heterotrait-Monotrait (HTMT) ratio of correlations, which demonstrated superior performance in their Monte Carlo simulations, with specificity and

sensitivity rates of 97% to 99%. This study used HTMT.85, HTMT.90, and HTMT inference to assess discriminant validity. As shown in Table 2, the results confirm the study's discriminant validity.

Table 2

HTMT.85, HTMT.90 and HTMT inference results

	Conscientiousness	Perceived behavioral control	Purchase behavior	Purchase intention
Conscientiousness				
Perceived behavioral control	0.564			
Purchase behavior	0.443	0.334		
Purchase intention	0.534	0.515	0.765	

Summary of the Measurement Model Assessment

In summary, the measurement model has established reliability, convergent validity, and discriminant validity. Given that all items met the required criteria, none were excluded. Consequently, the measurement model is deemed suitable for the subsequent phase, which involves the assessment of the structural model.

Assessment of the Structural Model*Collinearity Assessment*

Collinearity arises when two or more exogenous variables measure the same construct, potentially leading to redundancy if both are utilized simultaneously. Table 3 displays collinearity results derived from the Smart-PLS 4 output, showcasing the variance inflation factors (VIF) for all items. These VIF values consistently remain below the threshold values of 5 (Hair et al., 2014) and 3.3 (Diamantopoulos and Siguaw, 2006). As a result, it was determined that collinearity has not reached a critical level for any formative constructs, thereby posing no impediment to the estimation of the PLS path model. This indicates that the constructs exhibit low correlation, and thus, all constructs are retained for further analysis.

Table 3

Summary of Collinearity Analysis

	Conscientiousness	Perceived behavioral control	Purchase behavior	Purchase intention
Conscientiousness		1.000		1.318
Perceived behavioral control				1.318
Purchase behavior				
Purchase intention			1.000	

Coefficient of Determination Value (R^2)

The coefficient of determination (R^2) is a common method used to evaluate the structural model, computed as the squared correlation between specific exogenous and endogenous

constructs. It quantifies the proportion of variance explained by exogenous variables on the endogenous variable, with values ranging from 0 to 1. A higher R^2 value suggests greater predictive accuracy, typically interpreted as substantial (0.75), moderate (0.50), or weak (0.25). The R^2 for PBC was 0.241, signifying that 24.1% of the variance was accounted for by its exogenous construct. For PB, the R^2 was 0.398, indicating that exogenous variables explained 39.8% of the variance. Additionally, the R^2 for PI was 0.272, indicating that exogenous variables explained 27.2% of the variance. Overall, the coefficients of determination for these variables were weak.

Assessment of Effect Size (f^2)

This evaluation involves studying the change in R^2 when one exogenous variable is excluded from the model (Hair et al., 2014). Put simply, f^2 measures how much a predictor variable contributes to the overall R^2 value of that construct in the structural model. Interpretations of f^2 values are: 0.02 as weak, 0.15 as medium, and 0.35 as a large effect (Cohen, 1998). According to the results, conscientiousness has a medium effect on purchase behavior control and has no significant effect on purchase intention, with the reported f^2 values of 0.318 and 0.096 respectively. Additionally, purchase behavior control has no significant effect on purchase intention as the f^2 value was 0.094. Notably, purchase intention has large effect on purchase behavior as the f^2 value reported was 0.662. Hence, this demonstrated that purchase intention strongly influences purchase behavior.

Summary of the Structural Model Assessment

Hypothesis Testing

Direct Relationship

To validate the proposed hypotheses and the structural model, the path coefficient between two latent variables was examined. A path coefficient value of at least 0.1 is typically required to indicate a significant impact within the model. In this study, hypotheses were evaluated by analyzing the statistical significance of the path coefficients using t-values and confidence intervals. This analysis was conducted through bootstrapping, a resampling method involving 5000 samples. Bootstrapping, as described by Chin (1998), is a non-parametric method used to estimate the precision of the PLS estimate. The results are presented in Table 4, and further discussion on the hypotheses follows.

Table 4

Summary of hypotheses testing results for direct relationships

Direct relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values	2.5%	97.5%	Decision
C-PBC	0.285	0.296	0.071	4.031	0.000	0.155	0.430	Support
C - PI	0.147	0.151	0.046	3.223	0.001	0.066	0.245	Support
PBC - PI	0.189	0.197	0.060	3.141	0.002	0.078	0.316	Support

Mediation Analysis

In this study, bias-corrected bootstrapping was utilized to assess mediation. This method considers mediation to be present if the confidence interval spans zero. When zero falls within these intervals, it implies that the constructs may lack a relationship at certain points,

undermining confidence in sustained mediation. Table 5 outlines the indirect relationships and the conclusions drawn from the mediation analysis.

Table 5: Hypothesis testing for indirect relationships and mediation

Indirect relationships	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values	2.5%	97.5%	Decision
C – PBC – PI	0.147	0.151	0.046	3.223	0.001	0.066	0.245	Support
C – PI – PB	0.192	0.200	0.070	2.750	0.006	0.057	0.330	Support
C – PBC – PI – PB	0.093	0.096	0.031	3.005	0.003	0.042	0.163	Support
PBC – PI – PB	0.189	0.197	0.060	3.141	0.002	0.078	0.316	Support

Discussions

Conscientiousness (C) and Perceived Behavioral Control (PBC)

Based on Table 4, H1 is supported. H1 investigates the relationship between Conscientiousness (C) and Perceived Behavioral Control (PBC). This result supports H1. The direct relationship between conscientiousness (C) and perceived behavioral control (PBC) was found to be statistically significant. The original sample path coefficient (O) is 0.285, indicating a moderately strong positive effect of conscientiousness on perceived behavioral control. The sample mean (M) is 0.296, and the standard deviation (STDEV) is 0.071. The T statistic for this relationship is 4.031, which is substantially higher than the threshold value of 1.96, suggesting that the observed effect is statistically significant at the 0.05 level. The P value is 0.000, confirming a highly significant relationship, as it is well below the commonly accepted significance level of 0.05. The 95% confidence interval ranges from 0.155 to 0.430, further supporting the reliability of this finding by not including zero. These results demonstrate robust evidence that conscientiousness positively influences perceived behavioral control, aligning with the proposed Hypothesis 1 (H1). The decision to support this hypothesis is based on the statistical significance and the positive direction of the relationship. The result established that conscientious individuals often exhibit higher self-efficacy and better control of impulsiveness, thus less procrastination in completing their tasks in the workplace among textile managers/executives. (Singh & Bala, 2020). This heightened sense of control makes them feel more capable of influencing outcomes through their behavior, leading to a stronger PBC. Additionally, conscientious individuals are typically more organized and thorough in their approach to tasks, which further enhances their belief in their ability to succeed. Studies have shown that the structured and proactive nature of conscientious people facilitates effective coping strategies and adaptive behaviors among Italian people, thereby reinforcing their PBC (Guarnera et. al., 2024). Thus, the relationship between conscientiousness and PBC highlights the importance of personality traits in shaping perceptions of control and subsequent behavioral intentions.

Conscientiousness and Purchase Intention

Based on Table 4, H2 is supported. H2 investigates the relationship between Conscientiousness and purchase intention. The direct relationship between conscientiousness and purchase intention has garnered significant attention in recent consumer behavior research, particularly in the context of sustainability and ethical consumption. Conscientiousness,

encompassing environmental, ethical, and social awareness, directly influences consumers' intentions to purchase products that align with their values. For instance, a study by Joshi and Rahman (2017) found that heightened environmental consciousness positively impacts consumers' intention to buy green products among educated young Delhi. This relationship is rooted in the alignment of consumers' values with their purchasing behavior, as conscious consumers are motivated by their awareness of the environmental and social implications of their choices (Joshi & Rahman, 2017). Han et al. (2018) demonstrated that ethical consciousness through personal norms, including awareness of fair-trade practices and labor conditions, directly enhances consumers' intentions to support ethical brands. This suggests that as consumers become more aware of the broader impact of their consumption, they are more likely to intend to make purchases that reflect their ethical considerations. Verma and Chandra (2018) highlighted that social consciousness, such as awareness of the societal benefits of supporting local businesses, directly increases purchase intentions for locally sourced products. These findings indicate that consciousness acts as a pivotal factor in shaping purchase intentions, independent of other mediating variables. Therefore, enhancing consumer consciousness through education and transparent communication about product impacts can directly drive the intention to purchase sustainably and ethically.

Perceived Behavioral Control (PBC) and Purchase Intention (PI)

Based on Table 4, H3 is supported. H3 investigates the relationship between Perceived Behavioral Control (PBC) and Purchase Intention (PI). This result supports H3. The direct relationship between perceived behavioral control (PBC) and purchase intention (PI) is similarly statistically significant. The original sample path coefficient (O) is 0.189, with a sample mean (M) of 0.197 and a standard deviation (STDEV) of 0.060. The T statistic for this relationship is 3.141, again surpassing the threshold value of 1.96, indicating statistical significance at the 0.05 level. The P value is 0.002, supporting the significance of the relationship. The 95% confidence interval ranges from 0.078 to 0.316, confirming the reliability of the finding by excluding zero. This positive relationship indicates that perceived behavioral control has a positive effect on purchase intention, aligning with Hypothesis 3 (H3). The decision to support this hypothesis is based on the statistically significant T statistic, the low P value, and the positive direction of the relationship. This finding is supported by a study by Peña-García, et. al (2020), where the result demonstrated a positive relationship between PBC and intention to adopt electronic commerce among consumers in Colombia and Spain. These studies found that individuals who perceive fewer obstacles and greater control over their purchasing process are more likely to intend to buy products or services. This perception of control can be influenced by factors such as financial resources, access to information, and prior experience. When consumers feel confident in their ability to navigate these factors, their purchase intentions are significantly strengthened. He et al. (2018) also discovered that perceived behavioral control has a more significant impact on the purchase intention of electric vehicles (EVs) among high-income groups within Chinese families. Thus, PBC plays a crucial role in shaping consumers' purchase intentions by instilling a sense of confidence and capability in their decision-making process. However, a study by Shen et al. (2022) found that perceived behavioral control does not influence the purchase intention of cold chain aquatic products (CCAP) among Chinese consumers.

Perceived behavioral control (PBC) mediates relationships between Conscientiousness (C) and Purchase Intention (PI)

Based on Table 5, the PBC mediates the relationship between conscientiousness and Purchase Intention. This result supports H4. Perceived behavioral control (PBC) plays a crucial mediating role between consciousness and purchase intention, particularly in the context of environmentally conscious consumer behavior (Ajzen, 1991). Recent studies have highlighted that consciousness, particularly environmental consciousness, significantly affects consumers' purchase intentions through PBC. A study by Nguyen et al. (2019) found that consumers with higher environmental awareness are more likely to believe they have control over purchasing eco-friendly products, thereby increasing their intention to make such purchases. Similarly, Wang et al. (2020) demonstrated that when consumers are conscious of the environmental impact of their purchases, they feel more empowered to choose sustainable options, bolstering their perceived control and ultimately their purchase intentions. This mediating effect suggests that interventions aimed at enhancing consumers' consciousness should also focus on strengthening their perceived behavioral control. Providing information and resources that make sustainable choices more accessible and feasible can boost consumers' confidence in their ability to make environmentally responsible purchases. This finding is supported by Luan and Lin (2020). Thus, PBC serves as a critical link that transforms consciousness into actionable purchase intentions, emphasizing the need for a dual approach to promote sustainable consumer behavior.

Purchase Intention (PI) Mediates the Relationship between Conscientiousness (C) and Purchase Behaviour (PB)

Based on Table 5, the purchase intention mediates the relationship between conscientiousness and Purchase Behaviour. This result supports H5. The mediation effect of purchase intention (PI) on the relationship between conscientiousness (C) and purchase behavior (PB) is also statistically significant. The original sample path coefficient (O) is 0.192, with a sample mean (M) of 0.200 and a standard deviation (STDEV) of 0.070. The T statistic for this relationship is 2.750, exceeding the critical value of 1.96, indicating significance at the 0.05 level. The P value is 0.006, reinforcing the significance of the mediation effect. The 95% confidence interval ranges from 0.057 to 0.330, ensuring that zero is not within this interval, thus validating the mediation effect. This finding supports the hypothesis that purchase intention mediates the relationship between conscientiousness and purchase behavior. It was found that conscientious consumers often perceive higher levels of control over their purchasing decisions, which enhances their confidence in their purchase intentions and leads to consistent purchase behavior (Hasan et al., 2024). Thus, conscientiousness influences purchase behavior positively through the mediating effect of purchase intention, highlighting the integral role of personality traits in consumer behavior.

Perceived Behavioral Control (PBC) and Purchase Intention (PI) Mediates the Relationship between Conscientiousness (C) and Purchase Behaviour (PB)

Based on Table 5, Perceived Behavioral Control and Purchase Intention mediates the relationship between conscientiousness and Purchase Behaviour. This result supports H6. The complex mediation effect involving conscientiousness (C), perceived behavioral control (PBC), purchase intention (PI), and purchase behavior (PB) is statistically significant as well. The original sample path coefficient (O) is 0.093, with a sample mean (M) of 0.096 and a standard deviation (STDEV) of 0.031. The T statistic for this indirect relationship is 3.005, which is well

above the threshold of 1.96, indicating significance at the 0.05 level. The P value is 0.003, confirming the significance of this mediation pathway. The 95% confidence interval ranges from 0.042 to 0.163, ensuring the exclusion of zero and validating the mediation effect. This result supports the hypothesis that the combined mediating effects of perceived behavioral control and purchase intention significantly influence the relationship between conscientiousness and purchase behavior. This highlights the multi-step process through which conscientiousness drives sustainable purchasing behavior, as supported by Wu, & Rasheed, (2020). Highly conscientious individuals are more likely to engage in detailed planning and goal-setting, leading to a stronger sense of PBC, according to a study by Wang et al., (2021) among Xi'an consumers. This enhanced PBC results from their ability to manage resources effectively and navigate potential obstacles confidently, which positively impacts their purchase intentions (Abrar et al., 2021). Consequently, conscientious consumers are more likely to form strong intentions to purchase, as they feel capable of executing their buying plans. (Li & Yu, 2022). In another study by Yusliza et al (2022), it was also found that when individuals perceive high control and have strong purchase intentions, they are more likely to follow through on these intentions. Therefore, conscientiousness influences purchase behavior through a serial mediation pathway involving PBC and purchase intention, demonstrating the complex interplay of personality traits and cognitive factors in consumer behavior.

Purchase Behavior Control (PBC) Mediates the Relationship between Perceived Behavioral Control (PBC) and Purchase Behavior (PB)

Based on Table 5, the PBC mediates the relationship between perceived behavioral control (PBC) and purchase behavior (PB). This result supports H7. The mediation effect of purchase intention (PI) on the relationship between perceived behavioral control (PBC) and purchase behavior (PB) is similarly significant. The original sample path coefficient (O) is 0.189, with a sample mean (M) of 0.197 and a standard deviation (STDEV) of 0.060. The T statistic for this relationship is 3.141, which is greater than the critical value of 1.96, indicating statistical significance at the 0.05 level. The P value is 0.002, supporting the significance of the mediation effect. The 95% confidence interval ranges from 0.078 to 0.316, confirming that zero is not included in this interval and validating the mediation effect. This finding supports the hypothesis that purchase intention mediates the relationship between perceived behavioral control and purchase behavior, suggesting that individuals who perceive greater control over their purchasing behavior are more likely to translate their purchase intentions into actual buying actions for sustainable-labeled products. This finding is supported by the study of Rehman et al. (2019). Research supports the mediating role of purchase intention in this relationship. Studies have shown that consumers with higher PBC are more confident in navigating the purchasing process, resulting in stronger purchase intentions (Peña-García et al., 2020). This confidence stems from factors such as having sufficient resources, knowledge, and opportunities to make a purchase. When individuals feel capable and in control, they are more likely to intend to purchase, and these intentions strongly predict actual buying behavior (Cahyanaputra et al., 2022). Therefore, PBC positively influences purchase behavior through the mediating effect of purchase intention, highlighting the interplay between control perceptions and consumer actions.

The key discovery of this study is the robust and positive correlation between conscientiousness and perceived behavioral control, which significantly influences purchase

intention. The Theory of Planned Behavior (TPB) proves effective in elucidating both the intention to purchase and the actual purchasing behavior of products with sustainable labels.

Conclusion

This research underscores the intricate relationships among conscientiousness, perceived behavioral control (PBC), purchase intention, and purchase behavior. The findings highlight that conscientiousness positively influences PBC, which in turn affects purchase intention. Moreover, conscientiousness directly enhances purchase intention. The study also reveals that conscientiousness impacts purchase intention through its mediation of PBC. Furthermore, conscientiousness indirectly influences purchase behavior via purchase intention, while PBC similarly influences purchase behavior through this mediation. These findings collectively emphasize the importance of personality traits and perceived control in shaping consumer intentions and behaviors toward sustainable and ethical purchasing decisions.

The research's significant contribution lies in advancing the understanding of consumers' intentions to purchase products featuring sustainable labels. The study makes theoretical and practical strides in promoting sustainable consumption of such products in Malaysia. It adds to the scholarly discourse by introducing a conceptual framework and presenting innovative findings, such as the positive relationship between conscientiousness and purchase behavior mediated by perceived behavioral control (PBC) and purchase intention. Our findings open avenues for practitioners and academics to delve deeper into emerging areas like green marketing, sustainable consumption, and the impact of sustainable labeling.

Limitations

This study explores the relationship between conscientiousness, perceived behavioral control, purchase intention, and purchase behavior towards sustainable-labeled products. However, it has limitations. The self-reported data may introduce bias, as participants may overestimate their pro-environmental intentions due to social desirability. The cross-sectional nature of the study limits the ability to draw causal inferences, and longitudinal studies are needed to understand the evolution of these relationships over time. Omitted variable bias is another limitation, as the study did not include other relevant factors such as environmental awareness, social influence, and economic constraints. This could lead to an incomplete understanding of the dynamics at play. The sample may not be fully representative of the general population, and future research should aim to include a more diverse and representative sample. Lastly, the specific context of sustainable-labeled products may limit the applicability of the findings to other types of sustainable behaviors or different product categories. Consumer behavior towards sustainability may vary across different contexts, so the findings should be interpreted with caution when applied to other areas.

Future Research

Future research should address the limitations identified to better understand the factors influencing sustainable consumption behavior. Longitudinal studies can capture the dynamic nature of relationships between conscientiousness, perceived behavioral control, purchase intention, and purchase behavior over time. Experimental designs can determine the causal impact of perceived behavioral control and purchase intention on actual purchasing behavior. A broader range of variables, including environmental awareness, social norms, and economic

constraints, can provide a more holistic view of sustainable purchasing behavior. The variables such as age, gender, income, and education can aid in pinpointing the population segments most impacted by conscientiousness and perceived behavioral control. Expanding the scope of research to include different product categories and sustainable behaviors beyond product purchases can help determine the validity of observed relationships across different contexts and generalize findings. Mixed-methods approaches, combining quantitative surveys with qualitative interviews, can enrich the understanding of underlying motivations and barriers to sustainable consumption. This approach can uncover deeper psychological and contextual factors that are not easily captured through surveys alone, providing a more nuanced understanding of sustainable behavior drivers.

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