Sustainable Labelling on Packaging: Does It Impact Purchase Behavior?

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ABSTRACT

The purpose of this paper is to identify and empirically examine the impact of perceived behavior control, openness to experience and conscientiousness on the purchase behavior of sustainable labelling products. Additionally, this study also investigates the role of purchase intention as a potential mediating variable on the relationships between independent and dependant variables. The study develops a set of hypotheses that are tested through a survey of 164 consumers, which are working adults in Malaysia. The hypothesized model is tested through structural equation modelling, using a statistical software, Smart-PLS version 4. The results indicated that perceived behavioral control and conscientiousness significantly influence purchase behavior of the consumers. Moreover, purchase intention is found to be significantly mediated the relationship between openness to experience and purchase behavior as well as conscientiousness and purchase behavior. The study highlights the valuable insights for management by providing recommendations to companies and decision-makers aiming to promote sustainable purchasing.

Keywords: Sustainable Labelling, Perceived Behavioral Control, Openness to Experience, Conscientiousness, Purchase Intention, Purchase Behavior
JEL Classifications: Q56, D12, M31, C93

1. INTRODUCTION

According to Borsellino et al. (2020), there has been a significant increase in the demand for sustainable product in recent times. This can be attributed to consumers' increased awareness of sustainability-related regulatory bodies and their communication with one another regarding the social, ecological, and ethical value of food products (Futtrup et al., 2021). Sustainable labelling allows consumers learn about and evaluate the sustainability qualities of food products, which will help them make better decisions about what to buy (Alam et al., 2023).

Stakeholders expect businesses to shift their focus towards environment-friendliness and reduced carbon footprints, leading to a redefining of strategy formulation and implementation across supply chain and marketing (Siraj et al., 2022). Sustainable

marketing is an important strategy in this vein, focusing on creating demand for eco-friendly products while maximizing profits to attain environmental sustainability. Sustainable labels, also known as "green labels," "eco-friendly labels," "eco-labels," "environment-friendly labels" and "organic labels," can be very useful in communicating and motivating consumers towards sustainable consumption (Cleveland et al., 2020; De Canio et al., 2021).

For firms to strategically position their products in the market, it's essential that they understand which attributes customers associate with the sustainability of their offerings (Nozari et al., 2021). Companies are now starting to use labels to make pertinent statements when selling their products (Díaz et al., 2020). Consumers place varying degrees of value on sustainability-oriented aspects depending on the type of product, according to empirical research (Testa et al., 2020). It is now essential to pursue

sustainable consumption practices in numerous areas, such as the cosmetics industry, where consumer behavior significantly affects market dynamics (Musa et al., 2023).

Generational differences in consumers' sustainable consumption patterns are also a concern, with millennials being one of the most interesting generations in this respect (Falke et al., 2022). The younger generation is usually more inclined towards solving social problems and environmental issues than other generations, and they can be targeted to promote such behaviors. The millennials are considered to be leading the transformation of the marketing landscape and exerting crucial influence on the buying behavior of other generations (Chopra et al., 2021).

The theory of planned behavior (TPB) is among the most reliable frameworks for comprehending and analysing sustainable consumer behavior and organic consumption (Liu et al., 2020; Sheoran and Kumar, 2022). This approach is being used more often by studies to characterise the attitude-intention interactions related to sustainable consumer behavior by creating connections between cognitive factors. However, very little literature exists that is considered to explain the relationships of attitude, intention, and behavior concerning sustainable consumer behavior.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Perceived Behavioral Control-Purchase Behavior

Recent studies underscore the significant influence of perceived behavioral control (PBC) on purchase behavior across various contexts. Alnawas and Algharabat (2020) demonstrated that individuals perceiving greater control over their online purchasing behavior are more inclined to make online purchases. Similarly, Alshurideh et al. (2021) found a positive relationship between PBC and purchase intention for green products, highlighting that those feeling more in control of their ability to buy green are more likely to intend to do so. However, the impact of PBC on purchase behavior can vary based on product type. Biswas and Roy (2021) discovered that PBC has a stronger effect on purchasing hedonic products compared to utilitarian ones. This shows that individuals feeling more control over buying luxury items are more likely to make those purchases. Individual personality traits can also influence the relationship between PBC and purchase behavior. Kim and Kim (2021) found that PBC has a stronger impact on purchase behavior for individuals with high levels of extraversion, indicating that those with greater confidence are more likely to act on their purchase intentions when feeling in control of their buying behavior. Current studies highlight the critical influence that perceived behavioral control has on purchasing decisions, even if this influence depends on several variables, including the nature of the product and the characteristics of the individual (Hagger et la., 2022; Wijekoon and Sabri, 2021). Therefore, it is proposed that:

Hypothesis 1 (H_1): Perceived behavioral control has significant positive relationship with purchase behavior of products with sustainable labelling on packaging.

2.2. Openness to Experience and Purchase Behavior

Recent research suggests that individual differences in openness to experience play a critical role in shaping consumer behavior. Openness to experience is defined as a trait that reflects an individual's willingness to engage with novel and diverse experiences, including their appreciation for aesthetics, curiosity, and imagination. While previous studies have explored the link between openness and various consumer behaviors, recent research has focused on how openness to experience influences purchase behavior. One study by Wang et al. (2021) found that individuals high in openness to experience were more likely to engage in exploratory purchasing behavior, seeking out new and unique products that align with their individual values and preferences. Additionally, individuals high in openness were more likely to make impulsive purchases, driven by their curiosity and desire for novel experiences. However, another study by Liu et al. (2021) found that while openness to experience was positively associated with the willingness to pay for environmentally friendly products, this effect was moderated by individual differences in risk perception. Specifically, individuals high in openness were more willing to pay for environmentally friendly products, but only when they perceived the risks associated with their current consumption behaviors to be high. Recent research suggests that openness to experience is an important individual difference variable that can have significant implications for consumer behavior. Understanding how this trait shapes purchase behavior can provide valuable insights for marketers and advertisers seeking to connect with consumers on a deeper level. Therefore, it is proposed that:

Hypothesis 2 (H_2): Openness to experience has significant positive relationship with purchase behavior of products with sustainable labeling on packaging.

2.3. Conscientiousness and Purchase Behavior

Conscientiousness, a trait characterized by self-discipline, responsibility, and goal-directed behavior, has been found to influence various aspects of purchase behavior. One study by Zhang et al. (2022) found that individuals high in conscientiousness were more likely to engage in planned and deliberate purchase behavior. They were less likely to make impulsive purchases and more likely to consider the long-term consequences of their purchases. Additionally, individuals high in conscientiousness were more likely to engage in research and comparison shopping before making a purchase, suggesting a more thorough decision-making process. Another study by Becker and Renner (2021) found that conscientiousness was positively related to sustainable consumer behavior. Specifically, individuals high in conscientiousness were more likely to choose environmentally friendly products and to engage in pro-environmental behaviors such as recycling and reducing energy consumption. Nonetheless, a study by Haws et al. (2014) found that while conscientiousness was positively related to avoiding frivolous spending, it was negatively related to the enjoyment of luxury consumption. Individuals high in conscientiousness may be less likely to engage in luxury consumption due to their focus on practicality and goal-directed behavior. Based on the aforementioned literature, it is suggested that conscientiousness is an important personality trait that can

influence various aspects of purchase behavior. Understanding how this trait shapes consumer behavior can provide valuable insights for marketers and advertisers seeking to effectively target and appeal to different consumer segments. Hence, it is proposed that:

Hypothesis 3 (H_3): Conscientiousness has significant positive relationship with purchase behavior of products with sustainable labeling on packaging.

2.4. Perceived Behavioral Control and Purchase Intention

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. Chen and Chai's (2021) study unveiled that perceived behavioral control significantly impacts consumers' purchase intention toward products featuring sustainable labeling on packaging. It was revealed that consumers perceiving 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 moderating effects of individual differences on the relationship between perceived behavioral control and purchase intention concerning products with sustainable labeling on packaging (Chen and Chai, 2021). Moreover, Smith et al.'s (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(Hasan & Suciarto, 2020). Additionally, 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 (Chen et al., 2022; Chen et al., 2020). Nevertheless, 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, hence it is proposed that:

Hypothesis 4 (H_4): Perceived behavioral control has significant positive relationship with purchase intention of products with sustainable labeling on packaging.

2.5. Openness to Experience and Purchase Intention

Openness to experience is a personality trait that is characterized by imagination, creativity, and a willingness to try new things. Recent studies have investigated the impact of openness to experience on purchase intention. A study by Li and Yu (2022) found that openness to experience was positively related to purchase intention for luxury fashion products. The study also found that this relationship was partially mediated by brand prestige and perceived value. Similarly, a study by Duong (2022) investigated the impact of openness to experience on purchase intention for eco-friendly products. The study found that openness to experience was positively related to purchase intention for eco-friendly products. The study also found that this relationship was partially mediated by perceived benefits and perceived social norms. Another study by Putra et al. (2020) examined the impact of openness to experience on purchase intention for innovative products. The study found that openness to experience was positively related to purchase intention for innovative products. The study also found that this relationship was partially mediated by perceived usefulness and perceived ease of use. In addition to the above studies, other research has also investigated the relationship between openness to experience and purchase intention for various products and services. For example, a study by Chou and Lin (2021) examined the impact of openness to experience on purchase intention for luxury hotels. The study found that openness to experience was positively related to purchase intention for luxury hotels. The study also found that this relationship was partially mediated by perceived quality and perceived value. Based on the literature, openness to experience does play a role in shaping purchase intention. Openness to experience has been found to be positively related to purchase intention for various products and services, including luxury fashion products, eco-friendly products, innovative products, and luxury hotels. Therefore, it is proposed that:

Hypothesis 5 (H_5): Openness to experience has significant positive relationship with purchase intention of products with sustainable labeling on packaging.

2.6. 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 attitude 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. For example, 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 6 (H$_6$): Conscientiousness has significant positive relationship with purchase intention of products with sustainable labeling on packaging.

2.7. Purchase Intention and Purchase Behavior

Purchase intention and purchase behavior are two key concepts in consumer behavior research. Purchase intention refers to a consumer's subjective probability of buying a product or service in the future, while purchase behavior refers to the actual act of buying a product or service. A study by Yang and Mattila (2021) examined the relationship between purchase intention and online review ratings on purchase behavior. They found that purchase intention partially mediated the relationship between online review ratings and purchase behavior. Specifically, online review ratings had a direct positive effect on purchase behavior, but this effect was partially mediated by purchase intention. This suggests that consumers' intentions to purchase a product or service can be influenced by online reviews, which in turn affect their actual purchase behavior. Similarly, another study by Wang et al. (2021) investigated the impact of social media marketing on purchase intention and purchase behavior. They found that social media marketing had a positive effect on both purchase intention and purchase behavior. Furthermore, purchase intention partially mediated the relationship between social media marketing and purchase behavior. This suggests that social media marketing can influence consumers' purchase behavior by shaping their purchase intentions.

On the other note, a study by Khan and Kim (2021) found that purchase intention did not always predict actual purchase behavior for eco-friendly products. They found that purchase intention was only a significant predictor of purchase behavior when consumers perceived the product to have a high level of environmental benefits. This suggests that the relationship between purchase intention and purchase behavior may depend on the perceived benefits of the product. Moreover, the relationship between purchase intention and purchase behavior may also depend on individual differences in personality traits. A study by Hsu and Huang (2021) found that purchase intention fully mediated the relationship between perceived value and purchase behavior for individuals with high levels of need for cognition (i.e., a tendency to engage in effortful thinking). However, for individuals with low levels of need for cognition, perceived value had a direct positive effect on purchase behavior, bypassing purchase intention. This suggests that the role of purchase intention in predicting purchase behavior may be more important for individuals who are more cognitively engaged. In summary, recent studies suggest that purchase intention partially or fully mediates the relationship between various antecedents (e.g., online reviews, social media marketing, perceived value) and purchase behavior, depending on the perceived benefits of the product and individual differences in personality traits. Understanding the complex relationship between purchase intention and purchase behavior can provide valuable insights for marketers and advertisers seeking to influence consumers' purchase decisions. Hence, it is proposed that:

Hypothesis 7 (H$_7$): Purchase intention has significant positive relationship with purchase behavior of products with sustainable labeling on packaging.

2.8. Mediating Effects of Purchase Intention

2.8.1. Perceived behavioral control, purchase intention and purchase behavior

Perceived behavioral control and purchase intention have been identified as significant predictors of purchase behavior in the TPB. However, the role of purchase intention in mediating the relationship between perceived behavioral control and purchase behavior remains unclear. A study by Huang et al. (2020) examined the mediating effect of purchase intention on the relationship between perceived behavioral control and online purchase behavior. They found that purchase intention partially mediated the relationship between PBC and online purchase behavior. Specifically, individuals with higher levels of PBC were more likely to have a stronger purchase intention, which in turn led to greater online purchase behavior. Similarly, a study by Xie et al. (2021) investigated the mediating effect of purchase intention on the relationship between perceived behavioral control and green product purchase behavior. They found that purchase intention fully mediated the relationship between perceived behavioral control and green product purchase behavior. This suggests that individuals with higher levels of perceived behavioral control are more likely to have a stronger purchase intention, which in turn leads to greater green product purchase behavior. However, the mediating effect of purchase intention may depend on the context of the purchase decision.

A study by Kwon and Kim (2021) found that purchase intention only partially mediated the relationship between PBC and purchase behavior for hedonic products (e.g., luxury goods), but not for utilitarian products (e.g., household items). This suggests that the role of purchase intention in mediating the relationship between perceived behavioral control and purchase behavior may be more important for products that are associated with emotional benefits. Moreover, the mediating effect of purchase intention may also depend on individual differences in personality traits. A study by Kim and Kim (2021) found that purchase intention fully mediated the relationship between perceived behavioral control and purchase behavior for individuals with low levels of neuroticism, but not for those with high levels of neuroticism. This suggests that the role of purchase intention in mediating the relationship between perceived behavioral control and purchase behavior may be more important for individuals with more stable and confident personalities. In summary, recent studies suggest that purchase intention partially or fully mediates the relationship between perceived behavioral control and purchase behavior, depending on the context of the purchase decision and individual differences in personality traits. Understanding the mediating role of purchase intention can provide valuable insights for marketers and advertisers seeking to encourage consumers to make purchases. Therefore, it is proposed that:

Hypothesis 8 (H$_8$): Purchase intention mediates the relationship between perceived behavioral control and purchase behavior of products with sustainable labeling on packaging.

2.8.2. Openness to experience, purchase intention and purchase behavior

Recent studies have explored the interplay between personality traits and consumer behavior, with a specific emphasis on the mediating function of purchase intention. Openness to experience, characterized by traits like imagination, creativity, and receptiveness to new encounters, exerts a significant influence on consumer behavior. One crucial element that might mediate this connection is purchase intention. Qin et al. (2020) scrutinized the mediating role of purchase intention in the relationship between openness to experience and purchasing conduct. Their findings unveiled that purchase intention entirely mediated the association between openness to experience and exploratory buying behavior, denoting a propensity to try novel and unfamiliar products. This suggests that individuals with high openness to experience are more inclined to harbor favorable purchase intentions toward innovative items, which subsequently influences their actual buying behavior.

Similarly, Li et al. (2020) investigated the mediating influence of purchase intention on the correlation between openness to experience and impulsive purchasing behavior. They observed that purchase intention fully mediated this relationship, indicating that individuals with high openness to experience are more prone to hold positive purchase intentions toward novel and stimulating products, thereby leading to impulsive buying behavior.

However, Liu et al. (2021) discovered that the mediating effect of purchase intention on the relationship between openness to experience and green purchasing behavior was moderated by perceived risk. Specifically, they found that this mediating effect was more pronounced for individuals perceiving high risk, implying that those with high openness to experience are more likely to cultivate positive purchase intentions toward eco-friendly products when they perceive elevated risks associated with their current consumption behavior. Hence, it is proposed that:

Hypothesis 9 (H_9): Purchase intention mediates the relationship between openness to experience and purchase behavior of products with sustainable labeling on packaging.

2.8.3. Conscientiousness, purchase intention and purchase behavior

Conscientiousness, marked by qualities like self-discipline, organization, and responsibility, significantly influences consumer behavior. Recent studies have examined how purchase intention mediates the link between conscientiousness and purchasing patterns. Wang et al. (2020) investigated this mediating role in the context of conscientiousness and ethical consumption behavior. Their findings showed that purchase intention partially mediates this relationship, indicating that conscientious individuals are more inclined to hold positive intentions toward ethical products, thereby impacting their actual purchasing decisions. A study by Li et al. (2020) delved into the mediation of purchase intention in the correlation between conscientiousness and responsible consumption behavior. Their findings revealed that purchase intention completely mediated the link between conscientiousness and responsible consumption behavior. This suggests that individuals with high conscientiousness are more inclined to develop positive purchase intentions toward responsible products, thus influencing their actual purchasing behavior. However, it's important to acknowledge that the mediation of purchase intention may not be uniform across all types of purchase behavior. He et al. (2020) found that the mediating effect of purchase intention on the relationship between conscientiousness and green purchase behavior was moderated by environmental concern. Specifically, they found that the mediating effect of purchase intention was stronger for individuals with high environmental concern, suggesting that conscientious individuals are more likely to have positive purchase intentions towards environmentally friendly products when they have a strong sense of environmental responsibility.

The degree to which purchase intention serves as a mediator may vary depending on the level of product involvement. In a study conducted by Chen and Liu (2021), it was observed that the mediating role of purchase intention in the link between conscientiousness and luxury consumption behavior was more pronounced for products with low involvement compared to those with high involvement. This suggests that conscientious individuals are more likely to exhibit positive purchase intentions toward luxury goods when the products are of low involvement or when they are not essential for meeting basic needs. In summary, recent research highlights the importance of purchase intention as a key mediating factor in the relationship between conscientiousness and purchase behavior. Gaining insights into the underlying mechanisms driving this relationship can offer valuable guidance for marketers and advertisers aiming to target and resonate with consumers who possess high conscientiousness. Therefore, it is proposed that:

Hypothesis 10 (H_{10}): Purchase intention mediates the relationship between conscientiousness and purchase behavior of products with sustainable labeling on packaging.

2.9. Underpinning Theories
2.9.1. 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 et al. (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

Figure 1: Theory of planned behavior model
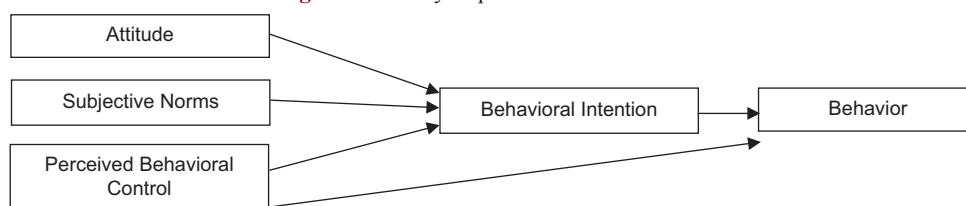
control, reflecting the perceived ease or difficulty of performing a behavior, was shown to positively impact purchase intentions. Consumers exhibiting higher confidence in their ability to purchase products with sustainable labeling were more likely to intend to do so. Another study by Riskos et al. (2021) discovered that the relationship between attitudes towards 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 labelling.

2.9.2. 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 and 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.

3. METHODOLOGY

3.1. Data Collection and Sample Strategy

This study employs a conclusive research design to examine the relationship between openness to experience, conscientiousness, and perceived behavioral control with purchase behavior, mediated by purchase intention. The large sample of Malaysian working adults allows for generalization of findings, which are also suitable for managerial decision-making. The results provide valuable insights for marketers on adopting sustainable labeling and for government initiatives to raise awareness. A single cross-sectional research design was utilized due to its efficiency in data collection. A quantitative approach and convenience sampling were employed because of limited research resources. A structured questionnaire, validated for accuracy, was distributed to consumers in Malaysia, who are working adults, and collected via Google Forms from July to November 2023. Malaysia's population was estimated at 32.7 million in 2023 (Chan et al., 2024), with approximately 15.39 million working adults out of a labor force of around 16 million. Working adults were chosen as respondents for their decision-making capacity in household purchases (Jin et al., 2020; Jung et al., 2020; Mamedov and Khatibi, 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, a sample size of 30 allows the studentized sampling distribution to approximate a standard normal distribution, ensuring the normality of the sampling distribution.

3.2. Construction of the Research Instrument and Measures

All measures of the research's variables were adopted from well-established and validated research standards. These variables were measured on a five-point Likert scale ranging from 1 to 5, where 1 represented "Strongly Disagree" and 5 "Strongly Agree." Given the variables' well-established validity and reliability in prior literature, conducting a pilot study was deemed unnecessary.

Purchase behavior was measured with a scale developed validated by Curvelo et al. (2019), with a Cronbach alpha (α) = 0.912. A sample item of the scale is "It gives me a better feeling when I use products with sustainable labeling on packaging." The scale demonstrated acceptable reliability for this research, with the values of α = 0.813 and composite reliability (CR) = 0.821, exceeding the minimum threshold of 0.70.

Purchase intention was measured by adapting a scale developed by Mendoza et al., (2022), with α = 0.830. A sample item of the scale is "I intend to purchase products with sustainable labeling on packaging in the future." The scale demonstrated acceptable reliability for this research, with the values of α = 0.845 and CR = 0.895, exceeding the minimum threshold of 0.70.

Perceived behavioral control was measured with a scale developed and validated by Zhou et al. (2022) with α = 0.934. A sample item of the scale is "I am confident that I can purchase products with sustainable labeling on packaging." The scale demonstrated acceptable reliability for this research, with the values of α = 0.876 and CR = 0.867, exceeding the minimum threshold of 0.70.

Openness to experience was measured by a scale developed by John and Srivastava (1999), adapted by Misron (2022) with α = 0.900. A sample item of the scale is "I always come up with new ideas." The scale demonstrated acceptable reliability for this research, with the values of α = 0.859 and CR = 0.890, exceeding the minimum threshold of 0.70.

Conscientiousness was measured by a scale developed by John and Srivastava (1999), adapted by Misron (2022) with α = 0.859. A sample of the scale is "I carry out my purchase thoroughly." The scale demonstrated acceptable reliability for this research, with the values of α = 0.811 and CR = 0.864, exceeding the minimum threshold of 0.70.

3.3. Ethical Considerations

This research was conducted with the utmost commitment to ethical principles and standards. The confidentiality and anonymity of all participants were strictly maintained, and no identifiable information was collected or reported in the study. Participation in this research was voluntary, and all participants were provided with informed consent before completing the questionnaires.

4. DATA ANALYSIS AND RESULTS

4.1. Preliminary Data Analysis

The data set was screened for multivariate outliers using Mahalanobis distance (D2) before analysis. D2 is the distance of "a case 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 & Fidell, 2007). Cases with a probability associated with their D2 <0.001 were considered outliers. There were no case detected as an outlier, hence all 164 responses were taken for further analysis. After testing for outliers, the dataset was subjected to 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 distribution symmetry, while kurtosis indicates the peak. According to Hair et al. (2010), data is 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 normal distribution.

4.2. Demographic Analysis

Out of the 164 participants, 104, or 63.4%, were female, while 60, or 36.6%, were male, indicating a higher percentage of female participation. This aligns with a study by Chang-Da (2018), which found that females are overrepresented in Malaysian public universities, except in certain fields. Among respondents, the age group of 20-30 years old was most represented, with 83 individuals, or 50.6%. This matches findings from a study by Fook et al. (2021), where most university students fell 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, with English proficiency potentially influencing this result due to the survey's language. In terms of income, the highest representation was among those earning below RM 1,000/month, consistent with Malaysia's B40 category for lower-income groups.

4.3. Measurement and Structural Models Assessments

This section presents data analysis using partial least squares (PLS) version 4 software, a tool for structural equation modelling (SEM). PLS-SEM was used for the present study as its objective was to predict the effects of perceived behavioral control, openness to experience, conscientiousness and purchase intention on purchase behavior. The model of this study was assessed in two stages. First, a confirmatory factor analysis (CFA) was conducted using consistent PLS algorithms to assess the reliabilities and validities of the constructs (measurement model). Second, bootstrapping the Smart-PLS software version 4 (Smart-PLS 4) was used to test the hypothesised relationship among study variables (structural model assessment). Figure 2 shows the conceptual framework of this study.

4.3.1. Measurement model

The measurement model defines the relationship between items and latent variables (Henseler et al., 2009). There are 23 items corresponding to 5 latent variables:

Table 1: Construct reliability

Construct	Skewness	Kurtosis	Cronbach's alpha	Composite reliability	AVE
Conscientiousness	−0.402	1.692	0.811	0.864	0.559
Openness to experience	−0.317	1.398	0.859	0.89	0.618
Perceived behavioral control	−0.874	2.326	0.876	0.867	0.577
Purchase intention	−0.116	0.482	0.845	0.895	0.681
Purchase behavior	−0.289	2.003	0.813	0.821	0.559

Figure 2: Conceptual framework
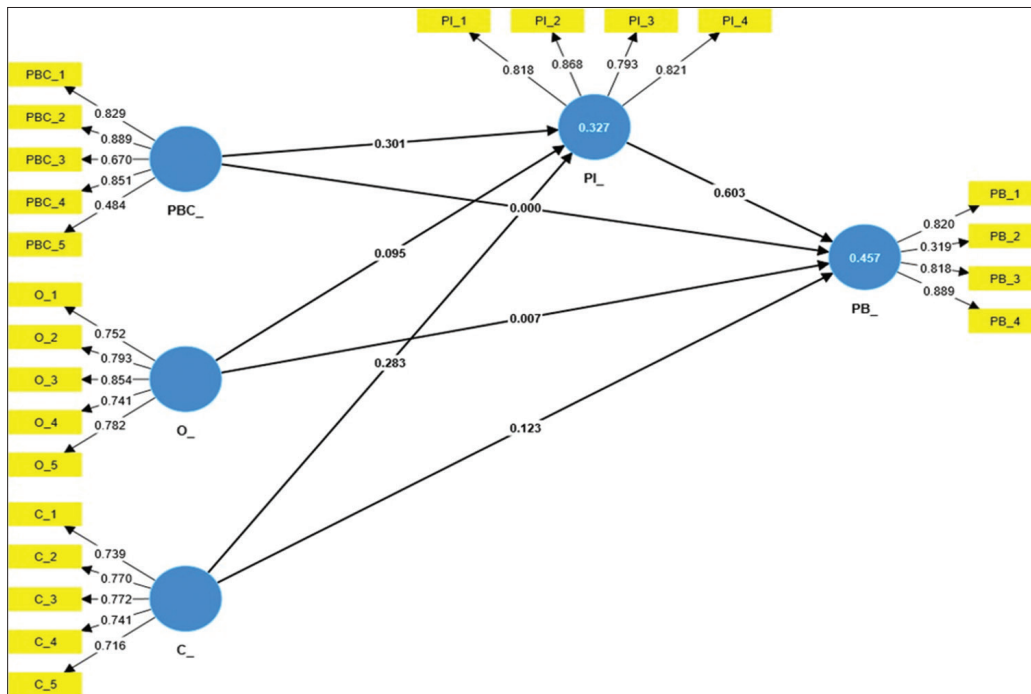
1. Perceived behavioral control (PBC1, PBC2, PBC3, PBC4, PBC5)
2. Openness to experience (O1, O2, O3, O4, O5)
3. Conscientiousness (C1, C2, C3, C4, C5)
4. Purchase intention (PI1, PI2, PI3, PI4)
5. Purchase behavior (PB1, PB2, PB3, PB4)

Following Hair et al. (2014), the measurement model includes both reflective and formative constructs. The study used composite reliability (CR) and Cronbach's alpha to evaluate internal consistency, and average variance extracted (AVE) and factor outer loadings to assess convergent validity.

4.3.1.1. Indicator reliability
The consistency of the constructs was measured using the indicator or factor loadings of their items. The threshold for factor loadings was based on previous studies and established guidelines, typically ranging from 0.5 to 0.707 (Chin, 1988), but other recommendations include 0.5 (Straub, 1989), 0.450 (Lewis et al., 2005), 0.4-0.7 (Hair et al., 2017), and 0.3 (Lederev 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 AVE was above 0.5 and composite reliability exceeded 0.6. Thus, factors with loadings between 0.40 and 0.95 were kept for further analysis.

4.3.1.2. Internal consistency reliability
One of the criteria assessed was internal consistency using Cronbach's alpha, with a threshold of 0.6 or higher (Hair et al., 2014) considered acceptable. The second test was composite reliability, retaining constructs with values of 0.6 and above. These tests together provide evidence of internal consistency reliability. Table 1 shows that all latent constructs met the criteria for these tests, demonstrating strong reliability.

4.3.1.3. Convergent validity
The next criterion assessed was convergent validity, which measures how well individual indicators reflect their construct compared to other constructs (Urbach and 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. Table 1 shows the AVE results for each variable, indicating that all variables met the minimum criteria for AVE. Therefore, the study's convergent validity was established.

4.3.1.4. 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 relationships with its own indicators in the PLS path model (Hair et al., 2017). The Fornell-Larcker criterion (1981) was previously the standard test for discriminant validity but has fallen out of favor. Henseler et al. (2015) introduced the Heterotrait-Monotrait (HTMT) ratio of correlations, which showed superior performance in their Monte Carlo simulations, with specificity and sensitivity rates of 97-99%. The present study used HTMT.85, HTMT.90, and HTMT inference to assess discriminant validity. Table 2 shows the results, indicating the study's discriminant validity.

Table 2: HTMT.85, HTMT.90 and HTMT inference results

Construct	C	O	PBC	PB	PI
C					
O	0.718				
PBC	0.617	0.58			
PB	0.522	0.391	0.431		
PI	0.59	0.464	0.563	0.818	

PBC: Perceived behavioral control, PB: Purchase behavior, PI: Purchase intention, HTMT: Heterotrait-Monotrait

Table 2 presented that the maximum HTMT value was 0.818, which is below the 0.85 threshold (Henseler et al., 2015), indicating that discriminant validity is established for HTMT.85 and HTMT.90. Additionally, the HTMT inference results show no zero value within the confidence intervals, and the upper confidence limits are below 1. This means that all HTMT values are significantly distinct from each other, as confirmed by the complete bootstrapping. Therefore, discriminant validity is established.

4.3.1.5. Summary of the measurement model assessment
In summary, the measurement model has confirmed reliability, convergent validity, and discriminant validity. Since all items met the minimum criteria, none were deleted. Thus, the measurement model is adequate for the next phase, the structural model assessment.

4.3.2. Assessment of structural model
After evaluating the measurement model, the structural model analysis ensued, aiming to ascertain its predictive capabilities and the interrelations between latent variables. This phase involved several steps: first, assessing collinearity among constructs using the variance inflation factor (VIF); second, examining path coefficients, mediation, and significance through algorithms and bootstrapping; third, gauging the coefficient of determination (R^2) to determine predictive accuracy; fourth, analyzing the effect size (f^2) of latent constructs on the dependent variable; fifth, reporting predictive relevance (Q^2) and model fit.

4.3.2.1. Collinearity assessment
Collinearity occurs when two or more exogenous variables measure the same thing, leading to redundancy if both are used simultaneously. In this study, Table 3 presents collinearity results from Smart-PLS 4 output, showing 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). Consequently, it was concluded that collinearity hasn't reached a critical level for any formative constructs, posing no issue for the estimation of the PLS path model. This suggests that the constructs are not correlated, and thus, all constructs are retained for further analysis.

The path coefficients, indicating hypothesized relationships between constructs, are evaluated. These standardized values range from −1 to +1, with estimates closer to +1 suggesting a strong positive relationship and those closer to −1 indicating a strong negative relationship. A value near zero indicates a weak relationship, whether positive or negative. Bootstrapping was employed to assess the significance of these coefficients. The results for each construct demonstrated positive indications.

Table 3: Summary of collinearity analysis

Construct	C	O	PBC	PB	PI
C				1.902	1.783
O				1.708	1.695
PBC				1.566	1.432
PB					
PI				1.485	

PBC: Perceived behavioral control, PB: Purchase behavior, PI: Purchase intention

4.3.2.2. Coefficient of determination value (R^2)
The coefficient of determination (R^2) is a common method for assessing the structural model, calculated as the squared correlation between specific exogenous and endogenous constructs. It measures the variance explained by exogenous variables on the endogenous variable, with values ranging from 0 to 1. A higher value indicates greater predictive accuracy. Typically, values of 0.75, 0.50, and 0.25 are considered substantial, moderate, and weak, respectively. Table 4.17 displays the R^2 and adjusted R^2 results for purchase behavior (PB) and purchase intention (PI). For PB, the R^2 was 0.457, meaning 45.7% of the variance was explained by its exogenous constructs. For PI, the R^2 was 0.327, indicating that exogenous variables described 32.7% of the variance. Overall, the coefficients of determination for these variables were moderate.

4.3.2.3. Assessment of effect size (f^2)
This assessment involves examining the change in R^2 when one exogenous variable is excluded from the model (Hair et al., 2014). In simpler terms, 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 large effect (Cohen, 1998). Based on the results obtained, it has been indicated that openness to experience has no effect on purchase intention, as its effect size was below 0.02. However, conscientiousness and purchase behavior control have a small effect on purchase intention. Furthermore, purchase intention has a strong effect on purchase behavior.

4.3.2.4. Assessment of predictive relevance (Q^2)
The model's predictive power is checked using Stone-Geisser's Q^2 and Hair et al.'s criterion. If the value is above zero, it indicates good predictive relevance. This is tested by a blindfolding procedure, which removes and predicts each data point systematically. Two conditions are considered: specifying endogenous reflective constructs and setting a distance omission (D) value. Since there were 164 cases, a D value of 7 was chosen. The Q^2 values obtained were 0.118 for purchase behavior (PB) and 0.240 for purchase intention (PI), both above zero, showing the model's predictive relevance.

4.3.2.5. Summary of structural model assessment
Overall, the structural model has offered empirical backing for collinearity, path coefficients, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2) of the constructs. These assessments indicate that the model meets the minimum criteria for each aspect. As a result, the structural model is considered adequate and suitable for the next phase of analysis, which involves hypothesis testing and mediation analysis.

4.4. Hypothesis Testing
4.4.1. Direct relationship
To validate the proposed hypotheses and the structural model, the path coefficient between two latent variables was examined. Based on the rules of thumb, a path coefficient value of at least 0.1 is needed to signify a certain impact within the model. In this study, hypotheses were tested by assessing the statistical significance of the path coefficients using t-values and confidence intervals.

Table 4: Summary of hypotheses testing results

Direct relationships	Standard beta (β)	Standard error (SE)	t-value	P-value	Confidence intervals		Decision
					2.5%	97.5%	
PBC→PB	0.200	0.064	3.150	0.002	0.085	0.335	Supported
O→PB	0.064	0.061	1.046	0.296	−0.051	0.190	Not supported
C→PB	0.190	0.067	2.819	0.005	0.058	0.325	Supported
PBC→PI	0.300	0.089	3.376	0.001	0.127	0.482	Supported
O→PI	0.096	0.091	1.049	0.294	−0.075	0.284	Not supported
C→PI	0.284	0.094	3.033	0.002	0.089	0.463	Supported
PI→PB	0.667	0.055	12.096	0.000	0.551	0.770	Supported

PBC: Perceived behavioral control, PB: Purchase behavior, PI: Purchase intention

Table 5: Hypothesis testing for indirect relationships and mediation

Indirect relationships	Standard beta (β)	Standard error (SE)	t-value	P-value	Confidence intervals		Decision
					2.5%	97.5%	
PBC→PI→PB	0.064	0.061	1.046	0.296	−0.051	0.190	Not supported
O→PI→PB	0.190	0.067	2.819	0.005	0.058	0.325	Supported
C→PI→PB	0.200	0.064	3.150	0.002	0.085	0.335	Supported

PBC: Perceived behavioral control, PB: Purchase behavior, PI: Purchase intention

This was done through bootstrapping, a resampling method with 5000 samples. Chin (1998) describes bootstrapping as a non-parametric method used to estimate the precision of the PLS estimate. Table 4 below presents the results, and the decisions on the hypotheses are discussed further.

4.4.2. Mediation analysis
In this study, bias-corrected bootstrapping was used to test mediation. This means that mediation is considered present when zero falls between the upper and lower confidence interval values. If zero exists within these intervals, it suggests that the constructs may not have a relationship at some point, which undermines the confidence in sustained mediation. Table 5 provides the details of indirect relationships and the decisions made regarding mediation analysis.

5. DISCUSSION

Based on the results reported in the earlier part of this paper, there are significant relationships between perceived behavioral control and purchase behavior. This result aligns with Arya et al. (2024), who found that perceived behavioral control influences sustainable food consumption among young Indians. Hence, H_1 is supported. Moreover, the findings of this study indicated an insignificant relationship between openness to experience and purchase behavior, leading to the rejection of H_2. The result is inconsistent with Bhatnagar's et al. (2020) study, which found that openness to experience strongly predicts green purchase behavior among consumers in malls and department stores in the Delhi-NCR (National Capital Region). Additionally, this study identified a significant positive relationship between conscientiousness and purchase behavior, supporting H_3. This finding aligns with the study of Duong (2022), which reported a strong relationship between conscientiousness and green consumption among 611 consumers in Vietnamese cities.

The findings of this study revealed a significant positive relationship between perceived behavioral control and purchase intention, supporting H_4. This result is corroborated by Memon et al. (2020), who found that perceived behavioral control significantly and positively influences halal purchase intention among Pakistani consumers. Additionally, Zhuang et al. (2021) demonstrated that perceived behavioral control has a significant relationship with green purchase intention in 19 out of 27 systematic literature reviews using a meta-analysis approach. On the contrary, the findings of this study revealed an insignificant positive relationship between openness to experience and purchase intention, thus not supporting H_5. However, this result is inconsistent with Chaturvedi et al. (2020), who found that openness to experience significantly and positively influences the purchase intention of organic food in emerging markets, specifically in India. Nevertheless, the result is consistent with Iqbal et al. (2018), who found that openness to experience did not affect the online purchase intention of Pakistani customers. In addition, the study reported a significant positive relationship between conscientiousness and purchase intention, supporting H6. This result is consistent with the findings of Chaturvedi et al. (2020), which demonstrated that conscientiousness has a significant and positive influence on the purchase intention of organic food among university students in India. Notably, the findings of this study indicate a significant positive relationship between purchase intention and purchase behavior, thereby supporting H_7. This outcome is congruent with the findings of Lim et al. (2016), who observed that purchase intention and online shopping behavior exhibited a robust correlation among university students in Perlis, Malaysia.

Subsequently, the indirect relationships among the variables are examined. This study revealed an insignificant mediating effect of purchase intention on the relationship between perceived behavioral control and purchase behavior. Hence, H8 is not supported. The result is inconsistent with a study done by Keke et al. (2022), which demonstrate that purchase intention indeed acts as a mediator in the relationship between perceived behavioral control and the actual behavior of Indonesian consumers in utilizing airline co-branded cards. Furthermore, purchase intention significantly mediates the relationship between openness to experience and purchase behavior, thus supporting H9. This finding

aligns with the research conducted by Alcivar et al. (2023), which indicates that openness to experience significantly and directly influences entrepreneurial intention among university graduates. Additionally, entrepreneurial intention is likely to translate into behavior, particularly when encountered difficulties are low, across three private and three state universities in the coastal region of Ecuador. Moreover, this study reported a significant mediating effect of purchase intention on the relationship between conscientiousness and purchase behavior, thus supporting H10. This finding resonates with the research conducted by Nasser Al-Nuaimi et al. (2017), which revealed that conscientiousness was linked with intentions, ultimately translating into behavior regarding the ethical use of information and communication technologies (ICTs) among students at Sultan Qaboos University in the Sultanate of Oman.

In conclusion, the finding demonstrates that the model is indeed fit. TPB framework is suitable for comprehending the purchase behavior of products with sustainable labels, with purchase intention as the highest predictors of purchase behavior of products with sustainable labels. With this confirmation, TPB's reputation as a useful theoretical framework for comprehending and forecasting consumer behavior in the sustainability area is strengthened. The findings also confirm the applicability of the Trait theory in predicting the customer's purchase behavior of products with sustainable labels, as conscientiousness is found to be the highest contributor to purchase behavior. The study also confirmed the applicability of purchase intention as the mediating factor in the relationship between traits theory and purchase behavior, whereby purchase intention mediates the relationship between openness to experience and purchase behavior, and between conscientiousness and purchase behavior.

6. CONCLUSION

In conclusion, this study provides empirical support for the Theory of Planned Behavior (TPB) and Trait Theory in understanding sustainable consumer behavior. It reveals significant relationships between traits like openness to experience, conscientiousness, perceived behavioral control, purchase intention, and purchase behavior of products with sustainable labels. This strengthens the reputation of TPB and Trait Theory as valuable frameworks for understanding and predicting consumer behavior in sustainability. Moreover, the study offers valuable insights for management by providing recommendations to companies and decision-makers aiming to promote sustainable purchasing. It highlights the factors influencing consumers' decisions to buy products with sustainable labels, aiding marketers and brand managers in crafting effective campaigns. By understanding traits like conscientiousness and perceived behavioral control as predictors of purchase intention and behavior, businesses can tailor their marketing strategies to resonate with consumer values and preferences.

Furthermore, the study underscores the importance of considering individual personality traits in advertising and product placement strategies. By recognizing the influence of traits such as conscientiousness on consumer decision-making, businesses can better segment their target market and design tailored interventions.

For instance, appealing to conscientious consumers by emphasizing the environmental and social benefits of sustainable products can encourage positive attitudes and purchase intentions.

Additionally, the study emphasizes the role of perceived behavioral control in consumer purchasing decisions, highlighting the importance of removing barriers and facilitating access to sustainable products. Businesses can enhance consumer decision-making towards sustainability by addressing factors like product availability, pricing, and accessibility, thus promoting the adoption of products with sustainable labels. Finally, the study's findings hold implications for government organizations and policymakers seeking to promote environmental preservation and sustainability. By understanding the psychological factors driving sustainable consumer behavior, policymakers can design targeted interventions and legislative measures. This may include initiatives like eco-labeling, consumer education campaigns, and incentives for sustainable product manufacturing and promotion, ultimately contributing to broader societal goals of environmental sustainability and resource conservation.

6.1. Limitations
There are a few limitations that should be considered since it might affect how robust and generalizable the results are. Initially, the study's dependence on a convenience sample technique might potentially result in selection bias, as participants were selected from a particular group of working adults attending a private institution in Malaysia's Klang Valley. The results of this sample technique may not be entirely representative of the larger customer base in Malaysia or other places, which would restrict how broadly the findings may be applied to other demographic or geographic groupings. More representative and varied sample techniques might be used in future studies to guarantee that the results apply to a larger spectrum of consumer groups.

The study may have overlooked the complicated and multifaceted nature of consumer behavior regarding sustainable products due to its exclusive concentration on gathering quantitative data using survey questionnaires. Survey tools provide a methodical way to gather data, but it may not fully represent the breadth and complexity of customer opinions, motives, and decision-making processes. Future studies should use qualitative techniques like focus groups or in-depth interviews to supplement quantitative data in order to obtain a more thorough knowledge of the variables impacting customer behavior towards products with sustainable labels. Researchers can improve the interpretation and analysis of the results by identifying underlying reasons and barriers that may not be revealed by quantitative surveys alone by combining qualitative insights.

Also, since the study relies on self-reported data, social desirability bias may be introduced because respondents may give answers that are more acceptable in society than ones that really represent their opinions and behaviors. This bias may cause positive views towards sustainable items to be overestimated while real buying behavior is underestimated. Future study might use different techniques, including observational studies or experimental designs, to evaluate consumer behavior in more controlled

environments in order to lessen this constraint. Through the utilisation of a variety of research methodologies and data sources, researchers may augment the validity and dependability of their findings, therefore furnishing a more comprehensive comprehension of consumer behavior with respect to products with sustainable labels.

6.2. Future Research

This study has several limitations that could create opportunities for future research. Firstly, no product or brand categories were investigated. Therefore, specific product or brand categories should be examined in future research. Secondly, consumers from different demographic factors, such as gender, age, generations, income, and education levels, may moderate the relationship between TPB and personality traits and purchase intention of products with sustainable labels. Future studies should look at these demographic factors to determine the factors influencing the purchase intention of products with sustainable labels. Thirdly, future studies could increase the sample size to be more comprehensive and differentiate between the public and private sector working adults. Fourthly, the suggestion is to study the purchase behavior of local products or brands in Malaysia. Fifthly, future study can gain a more in-depth understanding of consumers' purchases of sustainable products by using other theories, such as Roger's innovation diffusion theory. Sixthly, future research can incorporate the moderating effect of the presence of children in families. Seventhly, future research can add environmental concerned into the model, which can help to explain the purchase behavior of products with sustainable labels. Finally, the study only used one instrument, a questionnaire survey. The researcher suggests that the qualitative method of in-depth interviews could be a suitable way to find more factors that could influence consumers toward purchasing products with sustainable labels.

7. ACKNOWLEDGMENT

REFERENCES

Aitken, R., Watkins, L., Williams, J., Kean, A. (2020), The positive role of labelling on consumers' perceived behavioral control and intention to purchase organic food. Journal of Cleaner Production, 255, 120334.

Ajzen, I. (1991), The theory of planned behavior. Organizational behavior and human decision processes, 50(2), 179-211

Alam, S.S., Wang, C.K., Masukujjaman, M., Ahmad, I., Lin, C.Y., Ho, Y.H. (2023), Buying behavior towards eco-labelled food products: Mediation moderation analysis. Sustainability, 15(3), 2474.

Alcivar, E.E., Casas-Rosal, J.C., Jimber del-Rio, J.A., Ceular-Villamandos, N. (2023), Influence of training and personality traits on entrepreneurial intention and behavior. TEM Journal, 12(1), 253-264.

Alnawas, I., & Algharabat, R. (2020), The influence of perceived behavioral control on online purchasing behavior. Journal of Marketing Analytics, 8(4), 243-255.

Alshurideh, M., Alnawas, I., & Qaddour, J. (2021), The mediating role of purchase intention in the relationship between perceived behavioral control and green product purchase behavior. Journal of Cleaner Production, 305, 127060.

Arya, B., Chaturvedi, S., Bhati, N.S. (2024), Extending the theory of planned behavior to predict sustainable food consumption. Environment, Development and Sustainability, 26, 31277-31300.

Becker, L., Jaakkola, E. (2020), Customer experience: Fundamental premises and implications for research. Journal of the Academy of Marketing Science, 48, 630-648.

Bellomo, M., Pleyers, G. (2021), Sustainable Cosmetics: The Impact of Packaging Materials, Environmental Concern and Subjective Norm on Green Consumer Behavior. Belgium: Louvain School of Management, Université Catholique de Louvain.

Bhatnagar, A., Verma, S., Singh, V.K., Dasgupta, A. (2020), Openness to experience and green purchase behavior: A multiple mediation analysis. Management and Economics Research Journal, 6(3), 1-9.

Biswas, D., & Roy, S. K. (2021), Perceived behavioral control, self-efficacy, and impulse buying tendency: Moderating effects of product type. Journal of Business Research, 134, 64-77.

Borsellino, V., Schimmenti, E., El Bilali, H. (2020), Agri-food markets towards sustainable patterns. Sustainability, 12(6), 2193.

Chan, H.K., Sem, X., Ivanova Reipold, E., Pannir Selvam, S.B.A., Salleh, N.A., Mohamad Gani, A.H.B., Fajardo, E., Shilton, S., Hassan, M.R.A. (2024), Usability and acceptability of oral fluid- and blood-based hepatitis C virus self-testing among the general population and men who have sex with men in Malaysia. PLoS Global Public Health, 4(1), e0001770.

Chang-Da, W. (2018), Student enrolment in Malaysian higher education: is there gender disparity and what can we learn from the disparity? Compare: A Journal of Comparative and International Education, 48(2), 244-261.

Chaturvedi, M.P., Kulshreshtha, K., Tripathi, V. (2020), The big five personality traits as predictors of organic food purchase intention: Evidence from an emerging market. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(7), 10202-10218.

Chen, X., & Cai, W. (2021), A systematic literature review of perceived behavioral control and purchase intention of sustainable labeling packaging. Journal of Packaging Technology and Research, 10(3), 413-426.

Chen, H.S., Liang, C.H., Liao, S.Y., Kuo, H.Y. (2020), Consumer attitudes and purchase intentions toward food delivery platform services. Sustainability, 12(23), 10177.

Chen, H., & Liu, X. (2021), The impact of consumer personality traits on luxury consumption behavior: the mediating role of purchase intention. Journal of Fashion Marketing and Management: An International Journal, 25(3), 328-345.

Chen, X., Rahman, M.K., Rana, M.S., Gazi, M.A.I., Rahaman, M.A., Nawi, N.C. (2022), Predicting consumer green product purchase attitudes and behavioral intention during COVID-19 pandemic. Frontiers in Psychology, 12, 760051.

Chin, W. W. (1998), The partial least squares approach to structural equation modelling. Modern Methods for Business Research, 295(2), 295-336.

Cho, H. J., Park, S., & Park, J. E. (2020), Conscientiousness and purchase intention: The mediating role of perceived quality and perceived value in luxury products. Sustainability, 12(4), 1317.

Chopra, A., Avhad, V., Jaju, A.S. (2021), Influencer marketing: An exploratory study to identify antecedents of consumer behavior of millennial. Business Perspectives and Research, 9(1), 77-91.

Cleveland, M., Robertson, J.L., Volk, V. (2020), Helping or hindering:

Environmental locus of control, subjective enablers and constraints, and pro-environmental behaviors. Journal of Cleaner Production, 249, 119394.

Curvelo, I.C.G., Watanabe, E.A.d.M. & Alfinito, S. (2019), Purchase intention of organic food under the influence of attributes, consumer trust and perceived value. Revista de Gestão, 26(3), 198-211

De Canio, F., Martinelli, E., Endrighi, E. (2021), Enhancing consumers' pro-environmental purchase intentions: The moderating role of environmental concern. International Journal of Retail and Distribution Management, 49(9), 1312-1329.

Diamantopoulus, A. & Siguaw, A. (2006), Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. British Journal of Managaement, 17(4), 263-282

Díaz, L.D., Fernández-Ruiz, V., Cámara, M. (2020), An international regulatory review of food health-related claims in functional food products labeling. Journal of Functional Foods, 68, 103896.

Duong, C.D. (2022), Big Five personality traits and green consumption: bridging the attitude-intention-behavior gap. Asia Pacific Journal of Marketing and Logistics, 34(6), 1123-1144.

Duong, C.D. (2022), Big Five personality traits and green consumption: Bridging the attitude-intention-behavior gap. Asia Pacific Journal of Marketing and Logistics, 34(6), 1123-1144.

Falke, A., Schröder, N., Hofmann, C. (2022), The influence of values in sustainable consumption among millennials. Journal of Business Economics, 92(6), 899-928.

Fornell, C., and Larcker, D. F. (1981), Evaluating structural equation models with unobservable variables and measurement error. J. Mark. Res. 18, 39-50

Fook, C.Y., Narasuman, S., Abdul Aziz, N., Tau Han, C. (2021), Smartphone usage among university students. Asian Journal of University Education (AJUE), 7(1), 282-291.

Futtrup, R., Tsalis, G., Pedersen, S., Dean, M., Benson, T., Aschemann-Witzel, J. (2021), Is the whole more than the sum of its parts? Challenges and opportunities for a holistic consumer-friendly sustainability label on food. Sustainable Production and Consumption, 28, 1411-1421.

Mendoza, O. G., Rosales, V. M. G., Leyva-Hernández, S. N., Arango-Ramírez, P. M., & Velasco-Aulcy, L. (2022), Environmental Knowledge, Perceived Behavioral Control, And Employee Green Behavior In Female Employees Of Small And Medium Enterprises In Ensenada, Baja California. Frontiers in Psychology, 13, 2-19

González, D.H. (2020), Influence of variables to reduce the intention and behavior purchase gaps in eco-label food products. Multidisciplinary Business Review, 13(1), 71-81.

Hagger, M.S., Cheung, M.W.L., Ajzen, I., Hamilton, K. (2022), Perceived behavioral control moderating effects in the theory of planned behavior: A meta-analysis. Health Psychology, 41(2), 155.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2010), Multivariate Data Analysis. 7th ed. New Jersey: Prentice Hall.

Hair, J. F., Sarstedt, M., Hopkins, L., & Kuppelwieser, V. G. (2014), Partial Least Squares Structural Equation Modelling (PLS-SEM): An Emerging Tool in Business Research. European Business Review, 26(2), 106-121.

Hair, J.F.J., Hult, G.T.M., Ringle, C.M., Sarstedt, M. (2017), A Primer On Partial Least Squares Structural Equation Modeling (PLS-SEM). 2nd ed. Thousand Oaks, CA: Sage Publications Inc.

Hasan, H.N., Suciarto, S. (2020), The influence of attitude, subjective norm and perceived behavioral control towards organic food purchase intention. Journal of Management and Business Environment, 1(2), 132.

Haws, K. L., Winterich, K. P., & Naylor, R. W. (2014), Seeing the world through GREEN-tinted glasses: Green consumption values and

responses to environmentally friendly products. Journal of Consumer Psychology, 24(3), 336-354.

He, H., Guo, J., & Chen, J. (2020), The impact of consumer personality traits on green purchase behavior: The mediating role of purchase intention. Journal of Retailing and Consumer Services, 57, 102174.

Henseler, J., Ringle, C. M., & Sinkovies, R. R. (2009), The use of partial least squares path modelling in international marketing. Advances in International Marketing, 20(1), 277-319.

Henseler, J., Ringle, C.M. & Sarstedt, M. (2015), A new criterion for assessing discriminant validity in variancebased structural equation modeling. J. Acad. Market. Sci. 43(1), 115-135.

Hsu, C. L., & Huang, C. H. (2021), Exploring the moderating effect of need for cognition on the relationships among perceived value, purchase intention, and purchase behavior. Journal of Business Research, 135, 230-239.

Huang, S., Yu, C., & Fang, Y. (2020), The mediating effect of purchase intention on the relationship between perceived behavioral control and online purchase behavior. Journal of Business Research, 110, 90-100.

Iqbal, M.K., Raza, A., Mushtaq, H., Ahmed, F., Havidz, I.L.H. (2018), Research on exploring the influence of customer's openness to experience on online purchase intention. Journal of Business and Management, 20(6), 14-18.

Jin, J., Zhao, Q., Santibanez-Gonzalez, E.D. (2020), How Chinese consumers' intentions for purchasing eco-labeled products are influenced by psychological factors. International Journal of Environmental Research and Public Health, 17(1), 265.

John, O.P., Srivastava, S. (1999), The big five trait taxonomy: History, measurement, and theoretical perspectives. In: Pervin, L.A., John, O.P., editors. Handbook of Personality: Theory and Research. 2nd ed. New York: Guilford. p102-138.

Jung, H.J., Choi, Y.J., Oh, K.W. (2020), Influencing factors of Chinese consumers' purchase intention to sustainable apparel products: Exploring consumer "attitude-behavioral intention" gap. Sustainability, 12(5), 1770.

Keke, Y., Dida, S., Sugiana, D., Suryana, A. (2022), Perceived behavior control on actual behavior in using airline co-brand card. Journal of Positive School Psychology, 6(8), 3091-3097.

Keller, A.C., Smith, K.T.L., Smith, M. (2007), Do gender, educational level, religiosity, and work experience affect the ethical decision-making of U.S. accountants? Critical Perspectives on Accounting, 18(3), 299-314.

Khan, M. A., & Kim, J. (2021), Green purchase behavior of eco-friendly products: The role of purchase intention and perceived environmental benefits. Journal of Cleaner Production, 318, 128479.

Kim, S., & Kim, D. (2021). The impact of personality traits on the relationship between perceived behavioral control and purchase behavior: Focusing on the moderating role of neuroticism. Sustainability, 13(5), 2505.

Kim, S., & Kim, D. (2021), The impact of personality traits on the relationship between perceived behavioral control and purchase behavior: Focusing on the moderating role of extraversion. Sustainability, 13(1), 300.

Kwon, Y., & Kim, J. (2021), The effect of perceived behavioral control on purchase intention and behavior: The moderating role of product type. Sustainability, 13(1), 383.

Lewis, B.R., Templeton, G.F. & Byrd, T.A. (2005), A methodology for construct development in MIS research. European Journal of Information Systems, 14(4), 388-400.

Lim, Y.J., Osman, A., Salahuddin, S.N., Romle, A.R., Abdullah, S. (2016), Factors influencing online shopping behavior: The mediating role of purchase intention. Procedia Economics and Finance, 35, 401-410.

Li, D. & Yu, D. (2022), The impact of consumer positive personality on

the purchase behavior of smart products. Front Psychol. 14, 1-15.

Li, X., Li, Z., & Liang, J. (2020), Exploring the relationship between personality traits, purchase intention and impulsive buying behaviour in mobile commerce. Behaviour & Information Technology, 39(7), 772-786.

Liu, M.T., Liu, Y., Mo, Z. (2020), Moral norm is the key: An extension of the theory of planned behavior (TPB) on Chinese consumers' green purchase intention. Asia Pacific Journal of Marketing and Logistics, 32(8), 1823-1841.

Mamedov, A.A., Khatibi, J.T. (2021), Impact of brand image, price, and quality on purchasing decision on foreign clothing companies among working adults in Kazakhstan, Central Asian Economic Review, 1(6), 28-42.

Memon, Y.J., Azhar, S.M., Haque, R., Bhutto, N.A. (2020), Religiosity as a moderator between theory of planned behavior and halal purchase intention. Journal of Islamic Marketing, 11(6), 1821-1836.

Misron, A.B. (2022), Emotional Intelligence as a Mediator in Personality Traits and Digital Literacy to Customer-Oriented Behaviour among Nursing Students in Malaysia. Malaysia: Universiti Teknologi Malaysia.

Musa, N.C., Salleh, M.S.M., Boon, K.T., Ab Aziz, A., Tyller, C., Liang, T.C., Jee, W.W. (2023), Malaysian women's intention to purchase green cosmetic products. Insight Journal, 10(1), 257-261.

Nasser AL-Nuaimi, M., Bouazza, A., Abu-Hilal, M.M., Al-Aufi, A. (2017), The psychometric properties of an information-ethics questionnaire. Performance Measurement and Metrics, 18(3), 166-179.

Nozari, H., Szmelter-Jarosz, A., Ghahremani-Nahr, J. (2021), The ideas of sustainable and green marketing based on the internet of everything-the case of the dairy industry. Future Internet, 13(10), 266.

Pallant, J. (2007), SPSS Survival Manual: A Step-by-Step Guide to Data Analysis using SPPS. Australia: Allen and Unwin.

Pekdemir, I., Dogan, E., & Ersoz, F. (2021), The impact of conscientiousness on green purchase intention: The role of environmental concern and attitude towards green products. Journal of Cleaner Production, 315, 128263.

Putra, Rahmat, Fariz & Muhammad. (2020), The moderating role of openness to experience: Influence of nostalgia on purchase intention. Jurnal Kajian Manajemen Bisnis, 9, 67.

Qin, L., Wang, H., & Liu, Y. (2020). Exploratory purchasing behavior of Chinese consumers: The role of personality traits and the mediating effect of purchase intention. Journal of Retailing and Consumer Services, 53, 101962.

Rahardjo, Wahyu & Mardianti. (2023), Openness to experience and online shopping intention: A meta-analysis. Jurnal Ilmiah Ekonomi Bisnis. 28. 1-12.

Riskos, K., Dekoulou, P., Mylonas, N., Tsourvakas, G. (2021), Ecolabels and the attitude-behavior relationship towards green product purchase: A multiple mediation model. Sustainability, 13(12), 6867.

Rossi, C. & Rivetti, F. (2023), Young consumers' purchase behaviour of sustainably-labelled food products. What is the role of scepticism?, Food Quality and Preference, 105, 1-13.

Schwartz, J., Loewenstein, G. (2017), Creating a climate for sustainable food choices. In: Food and Public Health. United States: CRC Press. p149-172.

Sheoran, M., Kumar, D. (2022), Conceptualisation of sustainable consumer behavior: Converging the theory of planned behavior and consumption cycle. Qualitative Research in Organizations and Management: An International Journal, 17(1), 103-135.

Shu, W., Huang, Y., Lu, L., & Chen, Y. (2021), Exploring the effect of conscientiousness on ecofriendly travel product purchase intention: the mediating roles of environmental concern and perceived usefulness. Journal of Sustainable Tourism, 1-22.

Siraj, A., Taneja, S., Zhu, Y., Jiang, H., Luthra, S., Kumar, A. (2022), Hey, did you see that label? It's sustainable!: Understanding the role of sustainable labelling in shaping sustainable purchase behavior for sustainable development. Business Strategy and the Environment, 31(7), 2820-2838.

Smith, K., Johnson, L., & Lee, M. (2022), Perceived behavioral control and purchase intention of sustainable labeling packaging: A review of recent literature. Sustainability, 14(3), 928.

Tabachnick, B.G., Fidell, L.S. (2007), Experimental Designs using ANOVA. Pacific Grove: Thomson/Brooks/Cole.

Tanner, C., Kast, W. S., & Quandt, J. (2019), The effect of personality on ecological behavior: A multilevel analysis. Journal of Environmental Psychology, 62, 116-127.

Testa, S., Roma, P., Vasi, M., Cincotti, S. (2020), Crowdfunding as a tool to support sustainability-oriented initiatives: Preliminary insights into the role of product/service attributes. Business Strategy and the Environment, 29(2), 530-546.

Thøgersen, J. (2019), Understanding personality to improve sustainable consumer behavior. Current Opinion in Psychology, 30, 25-29.

Urbach, N., and Ahlemann, F. (2010), Structural equation modeling in information systems research using partial least squares. Journal of Information technology theory and application, 11(2), 5-40.

Wang, T., Liu, X., & Zhang, Y. (2021), Openness to experience and exploratory and impulsive purchase behavior: The mediating role of desire for uniqueness. Personality and Individual Differences, 174, 110677.

Wang, Y., Sun, C., & Zhang, J. (2021), An exploration of the relationship between impulse buying behavior and personality traits: Based on the mediating effect of emotions. Journal of Open Innovation: Technology, Market, and Complexity, 7(3), 145.

Wang, Y., Zhang, H., & Ma, H. (2020), The impact of consumer personality traits on ethical consumption behavior: The mediating role of purchase intention. Journal of Business Research, 110, 225-237.

Wijekoon, R., Sabri, M.F. (2021), Determinants that influence green product purchase intention and behavior: A literature review and guiding framework. Sustainability, 13(11), 6219.

Yang, J., & Mattila, A. S. (2021), The role of online review ratings in online purchase behavior: The mediating role of purchase intention. Journal of Hospitality and Tourism Research, 45(2), 182-195.

Zhang, Q., Husnain, M., Usman, M., Akhtar, M. W., Ali, S., Khan, M.A., & Akram, M. (2022), Interplay of eco-friendly factors and islamic religiosity towards recycled package products: A cross-cultural study. Frontiers in Psychology, 13, 840711.

Zhang, Y., & Li, J. (2021), The role of perceived behavioral control in shaping consumers' purchase intention of sustainable labeling packaging: A review of recent studies. Sustainability, 13(19), 10875.

Zhao, M., Wang, Y., & Qiu, L. (2021), Effects of conscientiousness and perceived credibility on consumers' purchase intention of sustainable fashion products. International Journal of Fashion Design, Technology and Education, 14(2), 287-297.

Zhuang, W., Luo, X., Riaz, M.U. (2021), On the factors influencing green purchase intention: A meta-analysis approach. Frontiers in Psychology, 12, 644020.