A Conceptual Analysis of the Antecedents of Willingness to Pay a Premium for Packaged Food Products with Sustainable Labels among Working Adults in Malaysia

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Abstract

The growing emphasis on environmental sustainability has significantly shaped consumer behavior, driving demand for sustainably produced products that contribute to achieving global sustainability goals. A key strategy employed by manufacturers is the use of sustainable labels on packaging, which signal to consumers that the product has been produced with environmental responsibility. While these sustainable labels often come at a premium, making the products more expensive than non-labeled alternatives, they hold the potential to influence consumer perceptions and purchasing decisions. However, limited research has examined the factors influencing the willingness to pay (WTP) premium for sustainably labeled packaged food products, particularly among working adults in Malaysia. This conceptual analysis aims to explore the antecedents that drive WTP premiums in this demographic, drawing on frameworks such as the Signaling Theory and the Diffusion of Innovation (DOI) Theory. By conceptualizing the relationship between sustainable labels and consumer behavior, the analysis seeks to identify key drivers that influence WTP for sustainably labeled packaged food. The implications of these findings for marketers and policymakers are discussed, with a focus on understanding sustainability-driven preferences in emerging markets like Malaysia. The analysis contributes to the broader field of green marketing, offering insights into consumer behavior and potential strategies for promoting sustainable consumption.

Keywords: Signaling Theory, Diffusion of Innovation (DOI) Theory, Environmental Concerns, Willingness to Pay Premium, Sustainable Label

Introduction

Sustainability has been a prominent concern for consumers, leading to an increased demand for sustainable food production systems and responsible food consumption, driven by the growing availability of sustainable products (Li & Kallas, 2021). Sustainable labeling on food

packaging refers to the inclusion of information or symbols that communicate a food product's impact on the environment, society, and/or animal welfare (Cook et al., 2023). The WTP for products with sustainable labels refers to the consumer's inclination or readiness to spend additional money on goods or services deemed environmentally friendly, socially responsible, or ethically produced (Lestari & Nita, 2021).

The United Nations Sustainable Development Goals (SDGs) offer a framework for incorporating green innovations, which enhance resource efficiency and minimize environmental impact, becoming essential for companies seeking both sustainability and competitive advantage (Abbasi Kamardi et al., 2022). According to Cook et al. (2023) sustainability labels concerning environmental impacts are carbon footprint and biodiversity loss; concerning social impacts are fair trade practices, and equal treatment of all workers; and concerning impacts towards animal welfare, such as living conditions, and use of antibiotics or hormones. Some examples are; Ecolabel, FAIRTRADE (Fairtrade International), USDA Organic, Conservation International, B Corp certification, Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC), Rainforest Alliance Certified, Green Cross, Hazard Analysis and Critical Control Points (HACCP), Good Hygiene Practices (GHPs), ISO 9001, ISO 22000, Halal, MyHIJAU, and SIRIM Eco-label, certainly reducing environmental and social detriment, attracting consumers who prioritise ethical consumption (Sesini et al., 2023). These labels are intended to provide consumers with transparency and assurance regarding the product's sustainability credentials, including factors such as its environmental impact, ethical sourcing practices, and contributions to social responsibility.

Those labels do indicate sustainability efforts, fulfilling SDG 12, which pertains to responsible consumption and production, not just complying with government requirements. For example, FSC and Rainforest Alliance certification is crucial because large-scale destruction of trees can adversely affect the climate and subsequently, impact food security (Muluneh, 2021). Certifications like Fair Trade Certified™, assure consumers that companies displaying these labels are committed to social responsibility towards farmers, workers, their families, and communities. These labels have positive effects on farmers' incomes and living standards (Knößlsdorfer et al., 2021). This highlights the significance of these sustainable labels.

Sustainable labeled products are regarded as ecological innovation under the Diffusion of Innovation (DOI) Theory, which is known for its usefulness in analyzing the characteristics of specific innovations (Hosseinikhah Choshaly, 2019). In the context of Signaling Theory, labels are seen as signals that convey the environmental and ethical qualities of the product. Consumers rely on these signals to make inferences about the product's sustainability, ethical practices, and overall quality. Certified sustainable labels have long acted as signals of sustainability, building trust and reducing search costs for consumers (Cai et al., 2017). They provide an effective marketing tool to communicate a product's social and environmental benefits. However, not all labels are perceived the same way, and whether consumers are WTP premium for a product depends on how credible they believe these labels to be. According to Huang (2024), one of the best tactics for green innovation and marketing is ensuring label credibility, followed by eco-friendly packaging and collaborative efforts.

The global market for sustainable labels was estimated to be worth USD 1,488.4 million in 2023. From 2024 to 2034, the global sustainable label market is anticipated to expand at a compound annual growth rate (CAGR) of 4.3%. With around a third of the market, food and beverage packaging continues to be the most popular end-use category (Future Market Insights, 2024). Furthermore, growing concerns about the environment encourage consumers to use their purchasing power to support responsible businesses, reshaping market dynamics (Harvard Business Review, 2021).

According to Statista (2024), products with sustainable labeling are becoming more popular in Malaysia. For instance, according to a Rakuten Insight survey, around 60% of Malaysian respondents said they would be ready to pay more for goods bearing sustainable labels (Siddharta, 2024) driven by growing environmental and ethical concerns. This trend indicates a move towards conscientious consumption, where eco-friendly attributes influence purchasing decisions and justify premium pricing (Harvard Business Review, 2021). In addition, a result from the Bain Survey (Segal, 2023), found that consumers are willing to pay a 12% premium for sustainable products. Furthermore, De Canio (2023) found that sustainably packaged products are preferred over unpackaged products in a study of 278 Italians. Thus, studying the elements influencing consumers' WTP premium for packaged food with sustainable labels is worthwhile given the industry's substantial value.

Transitioning food production systems to improve environmental sustainability may come with added costs (Thornton et al., 2023). Sustainable products are slightly more expensive due to the costs associated with obtaining sustainable raw materials and using the sustainable label (Ma et al., 2022). The higher cost of sustainable labeled products may discourage consumers, presenting a potential obstacle in the shift towards more sustainable food systems (Zhao et al., 2021). Meanwhile, obtaining certification is a complex and challenging process that requires extensive documentation, audits, and adherence to regulatory requirements. Thus obtaining a certified label comes with a significant cost (Primi et al., 2024). For instance, in Malaysia, the fees for obtaining a Halal certificate from JAKIM vary depending on the size of the company or establishment: RM100 for small companies, RM400 for medium companies, RM700 for multinational companies, RM100 for small slaughterhouses, RM400 for medium slaughterhouses, RM700 for large slaughterhouses, and RM100 for each food premise, restaurant, hotel, or caterer (Koty, 2022). These costs are only applicable for the Halal certification. In addition to Halal certification, branded packaged food products often require other certifications, each involving its process, documentation, and assessment by different entities, resulting in further costs.

As of April 2024, Malaysia has 16.56 million employed individuals (HR Asia, 2024). According to Al Mamun (2023), environmental literacy influences environmental beliefs and awareness of consequences among working adults in Malaysia. Accordingly, Qi (2024) highlighted that working adults are an increasingly important demographic for organic purchases, driven by their unique characteristics and economic capabilities. This group typically has higher disposable incomes, which makes them willing to pay more for packaged products with sustainable labels, compared to other consumer groups. Although research on the willingness of working adults in Malaysia to pay a premium for food packaging with sustainable labels is limited, this demographic continues to be a key area of interest.

Consumers with greater educational attainment were more likely to read eco-labels when it came to working people pursuing tertiary education (Primi et al., 2024). This group is essential for comprehending how sustainability views and environmental concerns affect consumer choices. Nonetheless, interviewees strongly agreed on the significance of official label certification, most likely as a result of their inadequate assessment of the inherent worth of labeling systems. In this situation, consumers frequently struggle to determine if the environmental claim has been self-declared by the producer or certified by an impartial third party, leading to uncertainty and misunderstanding (Primi et al., 2024). Moreover, the ongoing issue of greenwashing, where a company or organization invests heavily in promoting an eco-friendly brand image to boost sales, but fails to make any meaningful environmental impact, negatively affects consumers' purchase intentions (Shi & Omar, 2024). If consumers observe instances of greenwashing, their opinions of products with sustainable labels may suffer because they are more likely to question the promise of the sustainable label (Shojaei et al., 2024). Therefore, it is essential to examine whether Malaysian consumers are WTP premium for packaged food products featuring sustainable labels on the packaged food products.

The existing literature has not adequately addressed the factors influencing WTP premium for packaged food products with sustainable labels, especially in developing countries like Malaysia, where cultural, economic, and regulatory contexts differ from those of developed nations. Understanding how environmental concerns influence WTP premium is critical for policymakers and businesses aiming to enhance sustainable practices and certification adoption. This study aims to bridge this gap by investigating the interplay between environmental concerns, WTP premium, perceived relative advantage, and perceived credibility of sustainable labels among Malaysian working adults, offering insights into strategies for fostering sustainable consumption and strengthening trust in sustainability certifications.

The findings of the proposed study are anticipated to make substantial contributions to industry, academia, and policy establishment. The results will provide the industry with important information on how consumers behave when purchasing sustainable food items, enabling businesses to tailor their marketing strategies, product offerings, and sustainability initiatives effectively. In academia, this research will extend existing green marketing literature by integrating innovative perspectives, such as Signaling Theory and DOI Theory, while addressing contemporary issues like environmental concern, sustainable labels, perceived relative advantage, and perceived credibility within a unique framework. The study's findings could help legislators create policies and programs that promote sustainable consumption and promote environmentally responsible practices within the food industry.

Literature Review and Hypothesis Development
Signaling Theory
Signaling Theory suggests that there is an imbalance in the flow of product information between customers and service organizations (Spence, 1973). This information deficit often prevents consumers from distinguishing between high-quality and low-quality products. To address this issue of asymmetric information, businesses can convey signals that assist consumers in evaluating product quality (Sigurdsson et al., 2020). This theory suggests that a signal must be credible; otherwise, the recipient will ignore it and refuse to acknowledge the

logo. Individuals acknowledging the desired quality of sustainable products are willing to bear higher costs (Gomes et al., 2023). In the context of packaged food products with sustainable labels, these labels serve as signals that communicate the producer's commitment to environmental and social responsibility (Zainab & Anupama, 2022). They help bridge the gap between consumers' desire to support sustainable practices and their inability to directly observe the production process. Signaling Theory emphasizes the extra premium a person is WTP rather than the product's overall cost (Przepiorka & Berger, 2017). It shows that people who buy eco-friendly products are driven by environmental concerns and a desire for a sustainable future, proving their dedication to the environment (Berger, 2019).

Government and third-party certifications indicate the product's compliance with particular standards that have been objectively assessed by an independent entity, consumers often view these sources as more reliable (Mladenovic et al., 2024). Third-party sustainable label certifications and logos (e.g., Fair Trade, Forest Stewardship Council (FSC), Frog's Rainforest Alliance, Leaping Bunny, USDA Organic), build trust and emphasize their superiority over unlabeled alternatives (Neuhofer et al., 2023). Consumers motivated by environmental concerns or ethical considerations are more likely to interpret sustainable labels as signals of quality and alignment with their values. As a result, they are WTP premium prices to support sustainable practices (Ut-tha et al., 2021).

Diffusion of Innovation (DOI) Theory
The DOI theory outlines five distinct attributes of innovations that are empirically interconnected to some degree. In his work on the DOI, Everett Rogers (1983) identifies key characteristics; Relative advantage, Compatibility, Complexity, Trialability, and Observability, that impact the adoption of new ideas, products, or practices (Oturakci & Yuregir, 2018). Although there is a lot of research on Rogers' innovation characteristics under the DOI Theory and purchase intention or adoption, there are still insufficient studies on the influence of DOI Theory on the WTP premium for food packaging with sustainable labeling amongst working adults in Malaysia, particularly representing an emerging market, which warrants this study (Hosseinikhah Choshaly, 2019; Scott et al., 2008; Menzli et al., 2022).

The Relationship between Environment Concern (EC) and WTP Premium
Environmental concerns represent a general attitude related to consumers' cognitive and emotional assessments of the issue of "environmental protection" (Singh et al., 2023). This encompasses consumers' awareness of environmental issues, concerns about environmental risks, the potential impacts of those threats, and the lack of human action to safeguard the environment for future generations. Environmentally conscious consumers tend to adjust their purchasing behavior, opting for products with less environmental impact, and are often willing to pay more for such items (Al Mamun et al., 2018; De Canio et al., 2021). Research shows that individuals with a higher degree of environmental concern are more likely to value sustainable labels and are WTP premium if they believe a product or service will benefit the environment (Kwistianus et al., 2020).

Maduku (2024) found that consumers with strong environmental concerns are more inclined to adopt sustainable practices, influencing their intentions toward sustainable consumption, based on a study of 756 South African consumers. Additionally, a study by Minh Vu et al.(2022) on 47 Masters students majoring in Marketing found that environmentally-

conscious consumers are more likely to pay extra for green products. Another study by Volschenk et al. (2022) highlighted that due to environmental concerns, consumers are WTP premium for eco-friendly products, which has significant financial implications for businesses. These findings align with the systematic analysis of marketing journals and the research agenda suggested by Flores & Jansson (2022), which also identified environmental concerns as a critical factor in decision-making regarding the adoption of green innovation. Consequently, the proposed study posits that consumers who intend to purchase or have already adopted sustainable label products are willing to pay a premium, based on the assumption that consumers who prioritize sustainability value the environmental benefits of these labels, despite the higher prices.

On the other hand, the lack of environmental concern presents a major barrier to eco-conscious behavior (Cheah & Phau, 2011 in Gomes et al., 2023), as individuals with low environmental concern or negative attitudes toward environmental preservation are less likely to engage in pro-environmental actions (Kollmuss & Agyeman, 2002). Additionally, research has shown that pro-environmental behavior does not necessarily stem from environmental concerns alone (Tam & Chan, 2017). Therefore, a lack of environmental concern is negatively correlated with the willingness to pay a premium for green products (Wei et al., 2018). Consequently, the following hypothesis was proposed:
H1: EC positively influences the WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

The Relationship between EC and Perceived Relative Advantage (PRA)
Products with sustainable labels often suggest long-term environmental benefits, such as reduced pollution and ecosystem conservation (Duarte et al., 2024). This anticipated benefit enhances the PRA of sustainable labels, as they signal transparency in production and supply chains, a key factor for environmentally conscious consumers (Huang et al., 2024). These consumers value businesses that are transparent about their efforts to reduce their ecological footprint (Loaiza-Ramírez et al., 2022).

However, despite the strong link between sustainable labels and WTP premium, the growing awareness of greenwashing has made consumers skeptical of exaggerated claims, potentially diminishing the PRA of the packaged products with those labels (Raghavendra et al., 2024). Greenwashing refers to the deliberate misrepresentation of a company's environmental initiatives, often involving false or misleading information about their impact(Isac et al., 2024). As a result, the following hypothesis was developed:
H2: EC positively influences the PRA for packaged food products with sustainable labels among working adults in Malaysia.

The Relationship between PRA and WTP Premium
Research indicates that the PRA can significantly influence both purchase decisions (Wong & Nor, 2020) and product adoption (Bandara & Amarasena, 2018). For instance, a study by (Hosseinikhah Choshaly, 2019), which assessed 180 shoppers at the Mid Valley shopping mall in Malaysia, found that characteristics of the Diffusion of Innovations (DOI) theory; such as relative advantage, trialability, and observability; affect consumers' intentions to pay for eco-label products. This willingness is often driven by the PRA of contributing to long-term environmental sustainability, which consumers value more than the cost barrier (Wei et al.,

2018). When consumers perceive organic food as offering superior benefits, such as higher quality, health advantages, or positive environmental impact, they are more likely to justify spending more money (Fanasch & Frick, 2020). The belief that a product's eco-friendly attributes are unique and beneficial further enhances its appeal, leading to a higher WTP premium (Yu et al., 2022). This suggests that the stronger the PRA of sustainable labels, the more likely consumers are to accept premium pricing.

Additionally, research has shown that PRA also influences consumer behaviour in other contexts, such as the decision by Indonesian undergraduate students to engage in online business (Sijabat, 2024). This suggests that PRA may play a significant role not only in the adoption of innovations but also in the WTP premium for eco-friendly products.

However, consumers' WTP premium is not always influenced by the PRA of sustainable brands. Research suggests that factors such as price sensitivity can sometimes outweigh the perceived benefits of sustainability (Sheikh et al., 2023). In some cases, consumers may not perceive sustainable products as offering substantial advantages in terms of quality or value, leading them to prioritize cost over environmental benefits (Huang et al., 2024). As a result, the impact of PRA on WTP premium pricing may be limited. Based on this, the following hypothesis was proposed:

H3: The PRA positively influences the WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

PRA Mediates the Relationship between EC and WTP Premium
WTP premium for sustainable products is a key indicator of environmentally conscious consumer behavior. While EC directly impacts this willingness, research suggests that the relationship is mediated by PRA (Nuryakin & Maryati, 2022). The PRA of sustainable labels helps bridge the gap between EC and WTP premium by translating abstract values into tangible product benefits. For instance, consumers with strong EC may place higher value on attributes like energy efficiency, reduced waste, or ethical sourcing, viewing these as advantages over conventional products (Huang et al., 2024). This perception strengthens their justification for paying higher prices, as they associate their purchase with long-term ecological and social benefits. Therefore, the following hypothesis was proposed:

H4: PRA mediates the relationship between EC and the WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

The Relationship between EC and Perceived Credibility (PC)
Higher environmental consciousness increases the likelihood that consumers will believe and value eco-labels, associating them with genuine environmental benefits (Gorton et al., 2021). This trust influences their purchasing decisions, as they view sustainable labels as credible indicators of environmentally friendly practices (Ulva Arsyistawa & Hartono, 2022). As a result, stronger EC enhances the perceived credibility of sustainable labels, boosting consumer confidence in green products (Cai et al., 2017).

However, some research suggests that factors such as consumer skepticism, familiarity with the label, and perceptions of certification processes may have a greater impact on trust in eco-labels than environmental awareness alone (Kabaja et al., 2023). Additionally, external factors, like media influence and regulatory frameworks, can play a

more significant role in shaping credibility perceptions than individual EC (Trivedi et al., 2018). Greenwashing can also undermine the relationship between EC and the PC of sustainable labels (Isac et al., 2024). When consumers suspect greenwashing, their trust in eco-labels diminishes, regardless of their environmental awareness, as they question the authenticity of the claims, leading to skepticism and reduced label credibility (Dupont, 2018). As a result, the following hypothesis was proposed:

H5: EC positively influences the PC for packaged food products with sustainable labels among working adults in Malaysia.

The Relationship between PC and WTP Premium
The credibility of a sustainable label boosts consumer confidence in the product's sustainability attributes, leading to a greater willingness to invest in premium-priced green products (Oesman, 2021). When consumers view an eco-label as credible and trustworthy, they are more likely to value the environmental claims associated with the product, thereby increasing their WTP a higher price (Singh et al., 2022). The perceived credibility of sustainable labels also plays a significant role in determining WTP for products with sustainable labels, as evidenced by a study of 571 Greece consumers (Riskos et al., 2021) . Additionally, research on consumers from 124 Chinese cities and 595 Portuguese respondents found a positive correlation between perceived credibility and the WTP premium for sustainable labels on product packaging (Cai et al., 2017; Vicente et al., 2021). These findings underscore the importance of transparent and reliable labeling is in influencing consumer purchasing decisions.

However, the perceived legitimacy of sustainable labels can be significantly undermined by the issue of greenwashing (Lopes et al., 2023). When consumers believe sustainable labels to be false and misleading, their trust in the label's credibility diminishes, leading to a lower WTP premium for the product (Lestari & Nita, 2021)). As a result, even highly credible labels can become less effective if customers suspect greenwashing. Thus, the following hypothesis was proposed:

H6: PC positively influences the WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

PC Mediates the Relationship between EC and WTP Premium
The relationship between product innovative features and consumers' WTP premium for products with sustainable labels is mediated by the perceived credibility of the label (Singh et al., 2023). These dynamics highlight how perceived credibility, product innovation characteristics, and WTP interact to influence consumer behavior in sustainable consumption. Consumers are more confident in making informed decisions that align with their sustainability values when they perceive a company as credible (Lee et al., 2020). Additionally, Larceneux (2001) in Moussa and Touzani (2008), suggest that the credibility of a certification is often shaped by the credibility of the organization that issuing it. Furthermore, Shah et al. (2020) argue that label credibility is the strongest predictor of purchase intention, and fostering long-term customer relationships.

The credibility of the label reassures consumers that the product meets its environmental claims, reinforcing the connection between environmental concern and purchasing behavior (Ulva Arsyistawa & Hartono, 2022). Consumers who are more

environmentally concerned are more likely to respect and trust sustainable labeling, increasing their WTP premium for these products (Singh et al., 2023). Therefore, trust in the label amplifies the impact of environmental concerns on consumers' WTP premium prices. However, while environmental concern is a key factor in purchasing decisions, elements like price sensitivity or skepticism towards eco-labels can limit the impact of label credibility (Testa et al., 2015). Consumers may still hesitate to pay a premium if they question the authenticity of sustainability claims, regardless of their environmental concerns (Singh et al., 2023).

The study by Lee et al. (2020) explored the relationship between key environmental cues, such as sustainable labels and traceability, as well as the connection between sustainable labels and consumer understanding of certification. The findings revealed that when traceability information was combined with sustainability labels, consumers' purchase intentions were at their highest. This aligns with the study by Febriane et al. (2023), which suggests that perceived credibility positively influences both attitude and purchase intention.

According to a narrative literature review by Cook et al. (2023) on environmental, social, and animal welfare aspects of sustainability labeling published since the year 2000, consumers will not consider labeling credible or accurate if they lack trust. In such cases, this mistrust diminishes their WTP premium for food and drink products. Consumer skepticism towards environmentally friendly claims can lead to various negative effects, such as reluctance to change purchasing behaviours in favor of healthier and more sustainable options, economic-driven shifts in buying patterns, and the perception that the price difference between green and nongreen products is unreasonably high. Thus, the following hypothesis was formulated:

H7: PC mediates the relationship between EC and WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

Income Moderate the Relationship between EC and WTP Premium

According to Pham et al. (2021), consumers who are more aware of corporate social responsibility (CSR) and have higher incomes are more likely to spend extra for clothing that is labeled as organic and environmentally friendly. Additionally, even consumers with limited environmental concerns may still be WTP more for such products simply because they have more disposable income (Berens & Schiller, 2016).

However, Minh Vu et al. (2022) argued that demographic and psychographic factors are often limited in predicting or explaining pro-environmental behaviors and eco-friendly product purchases. For individuals with fewer financial resources, cost may take precedence over sustainability, reducing the impact of environmental concerns on their purchasing decisions (Al Mamun et al., 2018) Furthermore, a study conducted in South Korea found that the effect of income on WTP differs depending on the stage of environmental development; it is positive during the period of environmental improvement but negative during the pollution-intensive stage (Kim & Kim, 2024). Based on these findings, income alone may not significantly influence environmentally driven purchasing decisions. Thus, the following hypothesis was proposed:

H8: Consumers' income moderates the relationship between EC and WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

Gender Moderate the Relationship between EC and WTP Premium
Zhao et al. (2021) found that women are generally more likely than men to be concerned about the environment and to spend more on eco-friendly products. In their review of 56 systematic literature studies, Potter et al. (2021) discovered that women with higher incomes and education levels are particularly influenced by environmental sustainability labels. Additionally a study by Goedertier et al. (2024), which analyzed the preferences of 24,798 consumers across 20 countries, found that women are more WTP premium for brands that emphasize inclusivity and sustainability. However, in more masculine cultures, where male gender roles prioritize innovation, men tend to be more eager to pay for new product innovation than women (Frank et al., 2015). Similarly, Nekmahmud and Fekete-Farkas(2020) found that a significantly greater proportion of men than women, purchase green products.

Furthermore, a study of Lebanese consumers by Dagher et al., (2015) revealed that gender moderates the relationship between environmental concern and attitudes toward green purchasing behaviour. This suggests that gender's influence on purchasing decisions may vary, indicating that gender may not always moderate the relationship between environmental concern and WTP premium for eco-friendly products. As a result, the following hypothesis was developed:
H9: Consumers' gender moderates the relationship between EC and WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

Age Moderate the Relationship between EC and WTP Premium
Existing research suggests that younger consumers, particularly Generation Z, generally have a positive attitude toward sustainability (Ribeiro et al., 2023). They are often seen as more likely than previous generations to adopt sustainable practices (Goedertier et al., 2024; Liang et al., 2024). Additionally, studies show that millennials, in particular, are more concerned about the environment and are WTP premium for eco-friendly products than older generations (Mabkhot, 2024). However, older consumers may prioritize quality and affordability over sustainability, which can diminish the influence of environmental concerns on their purchasing decision (Moscovici et al, 2024).

That said, Kabaja et al. (2023) highlights that Gen Z's lack of confidence in environmental labeling could pose a significant barrier to sustainable consumption. Similarly, Frank et al.(2015) found that age has little effect on WTP premium for sustainable products. Accordingly, Potter et al.(2021) examined 56 systematic literature reviews and found conflicting results regarding the influence of age on sustainable purchasing behaviour. Consequently, the following hypothesis was established:
H10: Consumers' age moderates the relationship between EC and WTP premium for packaged food products with sustainable labels among working adults in Malaysia.

Conceptual Framework
Given the limited research on the impact of EC on WTP premium for packaged food products with sustainable labels in Malaysia, as well as the mediating role of PRA, and PC, and the moderating roles of age, income, and gender, the proposed conceptual framework is illustrated below:
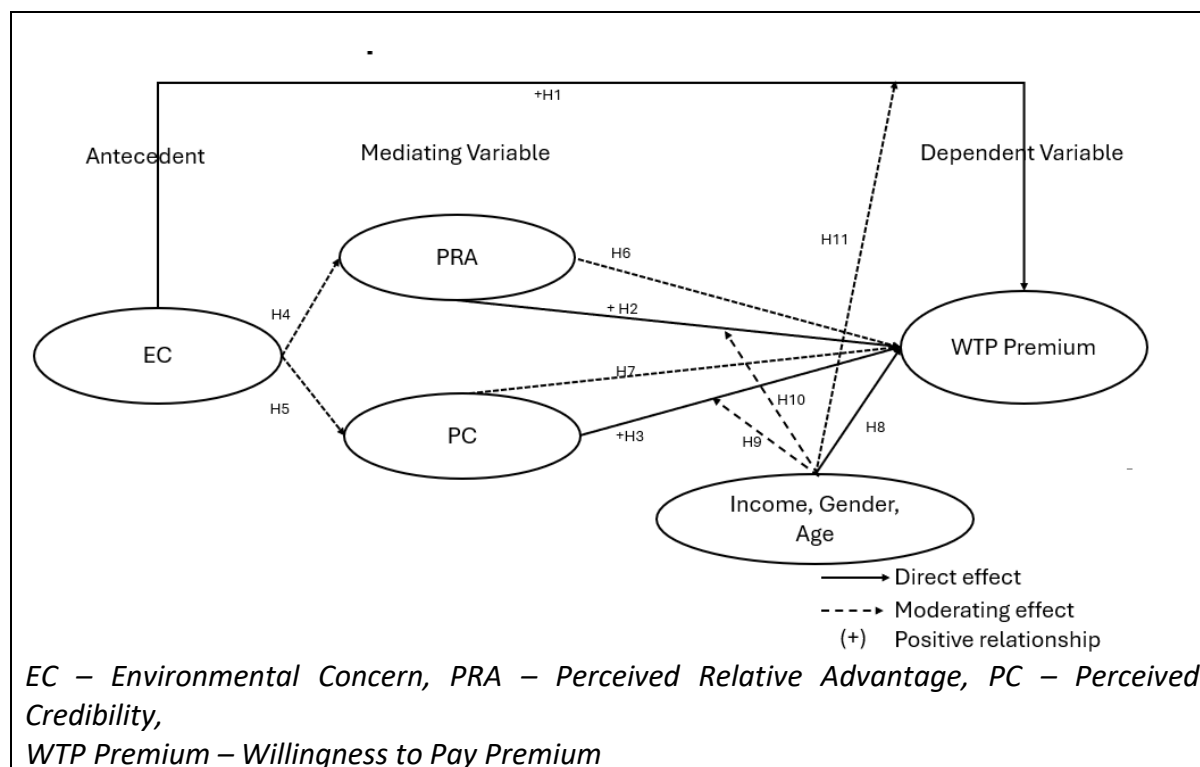
EC – Environmental Concern, PRA – Perceived Relative Advantage, PC – Perceived Credibility,
WTP Premium – Willingness to Pay Premium

Figure 1: Proposed Conceptual Framework

Research Implications
This conceptual analysis delves into the factors influencing consumers' WTP premium for packaged food products with sustainable labels, emphasizing the mediating roles of PRA and PC in the relationship between EC and WTP. By extending the frameworks of Diffusion of Innovation (DOI) Theory and Signaling Theory, this analysis provides a structured conceptual framework to understand the key elements that shape consumer decisions in the context of sustainable food packaging.

From a practical standpoint, the analysis presents several key implications for various stakeholders, including consumers, policymakers, and the packaging and labeling industry. For businesses, the analysis highlights the importance of clearly communicating sustainability initiatives by focusing on the attributes that matter most to consumers, thus helping to refine product packaging strategies. Marketers can leverage these insights to create more effective campaigns that target environmentally conscious consumers and those open to innovations in sustainable products.

For policymakers, the analysis suggests pathways to encourage sustainable consumption through regulations or incentives. For example, mandating sustainability labels on products or offering tax incentives to companies that adopt certified sustainable packaging could help drive industry-wide change.

Finally, consumers benefit from this analysis by gaining insights that allow them to make more informed purchasing choices, ensuring they can support businesses that align with their sustainability values and hold them accountable for their practices.

In conclusion, this conceptual analysis not only contributes valuable theoretical insights into consumer behavior but also provides actionable implications for businesses and policymakers seeking to influence sustainable consumption and packaging practices.

Conclusions

In conclusion, this conceptual analysis aimed to identify the key factors influencing consumers' WTP premium for packaged food products featuring sustainable labels, with particular emphasis on the mediating roles of PRA and PC. Through the application of DOI Theory and Signaling Theory, the analysis provides a deeper understanding of how EC impacts consumers' WTP premium for sustainably labeled products.

Theoretically, this analysis offers valuable insights into the complex interplay between EC, PRA, and PC, shedding light on the factors that shape consumers' WTP premium for packaged products with sustainable labels. Integrating both DOI Theory and Signaling Theory introduces a fresh conceptual framework to better understand consumer behavior in the context of sustainability-driven purchasing decisions.

From a practical perspective, the findings suggest that marketers should focus on consumers with higher environmental concerns when promoting sustainably labeled packaged food products. Emphasizing the PC and PRA of sustainable labels in marketing campaigns can help businesses effectively engage customers more likely to pay a premium for these products.

In summary, this study contributes theoretically and practically, offering a framework for understanding consumer behavior and providing actionable insights for businesses aiming to leverage sustainable labeling on the packaging in their marketing strategies.

Suggestions

This conceptual paper offers several theoretical, practical, and policy-driven strategies based on the analysis of EC influencing consumers' WTP premium for sustainably labeled packaged food products, with a particular emphasis on the mediating roles of PRA and PC.

From a theoretical perspective, while the conceptual framework provides significant insights, future research should empirically validate the proposed relationships among EC, PRA, PC, and WTP premium. Longitudinal and cross-sectional studies would be valuable in exploring the causal relationships between these variables (Kirmani & Khan, 2018). Additionally, the research could expand to consider other independent variables such as social influence (S. S. Shah & Asghar, 2023), green perceived benefits (Gomes et al., 2023), green information quality (P. Kumar et al., 2021), and quality signal at the point-of-purchase (Sigurdsson et al., 2020). Other factors such as openness to experience (Habiboğlu et al., 2024), local products (Lestari & Nita, 2021), seafood products (Sigurdsson et al., 2023), consumer durables (A. Kumar & Basu, 2023) and perceived risk (Casidy & Wymer, 2016), could further contribute to a more comprehensive understanding of consumer behaviour. Furthermore, variables like pro-environmental behaviour (PEB) (Tam & Chan, 2017), the use of experimental auctions(Chen et al., 2018), omit technologies (Sesini et al., 2023), brand image (Yuwono, 2016), and product involvement (Hsu et al., 2023), as well as the Theory of

Planned Behaviour (TPB) (Ajzen, 1991; Swaim et al., 2014), should be explored to identify their potential moderating or mediating roles.

From methodological standpoint, neuro-marketing methods (Alsharif et al., 2023) and eye-tracking studies (Eisinger Balassa Boglarka & Koteczki Reka, 2023) could be employed in future research to provide deeper insights into how consumers visually engage with sustainability labels and how these cues affect decision-making processes. These innovative techniques can capture real-time consumer responses, offering a more accurate understanding of how environmental claims are processed and how they impact purchasing intentions. Experimental methodologies, including field experiments or controlled laboratory settings, could further validate the proposed relationships between EC, PRA, and consumers' WTP premium for sustainably labeled products.

From a practical standpoint, marketers should focus on targeting consumers who are most concerned about environmental issues, as they are more likely to respond positively to sustainably labeled products. Segmenting the market based on consumers' environmental concerns will help tailor marketing strategies more effectively. Additionally, marketers should emphasize the relative advantages of sustainable products, focusing on their tangible benefits, such as superior quality, health-related benefits, and environmental impact. Clear communication around these advantages will make it easier for consumers to recognize the value of paying a premium for such products. At the same time, credibility is crucial in ensuring that sustainability claims are not perceived as misleading. Businesses should use trusted third-party certifications, such as myHijau, Halal by JAKIM, Fair Trade, and SIRIM Ecolabel, and provide transparent information about sourcing and production processes to reinforce the credibility of sustainable labels. Simplified, intuitive packaging designs that feature clear symbols, infographics, and easy access to additional product information (e.g., through QR codes) will help reduce perceived complexity and encourage consumer engagement. Marketers could also leverage social proof strategies, such as product reviews or endorsements from sustainability influencers, to increase trust and enhance the appeal of sustainably labeled products. Additionally, incentivizing trial adoption through discounts or samples may help reduce initial purchase risks, fostering long-term loyalty. Finally, businesses should aim to build lasting relationships with environmentally conscious consumers by positioning the brand as a partner in sustainability, thus strengthening consumer commitment over time.

From a policy perspective, governments and policymakers have a significant role to play in driving the adoption of sustainable labeling. Consumer education campaigns, backed by government initiatives, can help raise awareness about the environment. Educational programs targeting schools, universities, and public media can help influence purchasing decisions by making consumers more informed about the importance of sustainability. Standardizing sustainability labels is also crucial, as clear and consistent regulations will allow consumers to trust the claims made by manufacturers. Governments should collaborate with industry bodies, such as SIRIM, to define rigorous sustainability standards, ensuring the credibility of eco-labels across products. Additionally, policymakers can encourage businesses through tax exemption, grants, or public recognition to encourage them to adopt sustainable packaging practices. Finally, creating a framework for eco-label authentication would help

ensure that sustainability claims are authentic and not misleading, fostering greater consumer confidence and ultimately driving the market for sustainably labeled products.

In sum, these suggestions provide a roadmap for businesses, researchers, and policymakers to foster the growth of sustainably labeled products in the marketplace. By focusing on consumer behavior, strengthening the credibility of sustainability claims, and supporting transparent labeling practices, stakeholders can effectively contribute to a more sustainable consumer economy.

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