



The effect of eco-friendly packaging on Generation Z green purchase behavior in fast-food takeaway consumption: The roles of attitude, purchase intention, and willingness to pay

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ABSTRACT

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Green packaging has emerged as a crucial factor in the consumption of takeaway fast food since packaging factors tend to play a role in how young people consider the issue of environmental responsibility when making daily purchases. The research was carried out using participants of Generation Z in Padang City, Indonesia, to explore the effect of attitude and purchase intention as parallel mediation variables and willingness to pay as a moderating variable in determining green purchase performance. The study surveyed 400 Generation Z participants in Padang City and used SEM-PLS to understand the direct, indirect, and moderating effects among the variables proposed. The results show that the package made of environmentally friendly materials enhances consumer attitude and purchase intention. The positive relationship between purchase intention and green purchase behavior is significant and purchase intention is a significant mediator of the effect of eco-friendly packaging on green purchasing behavior in takeaway fast-food consumption of Generation Z, but not the effect of attitude. Intention to pay also arises to be an influential economic factor, as it is a direct foundation of green purchase behavior and is the main support to the correlation between purchase intention and green purchase behavior. This data indicates that behavioral intention with the backing of economic preparedness is a stronger determinant of green purchasing actions by Generation Z as opposed to the positive attitude, which is solely a determinant in urban takeaway fast-food consumption in which purchasing judgments are usually driven by convenience and perceived economic feasibility.

Contribution/Originality: This study advances the application of the Theory of Planned Behavior by positioning attitude and purchase intention as parallel mediating variables and willingness to pay as a moderating factor to explain Generation Z's green purchase behavior in takeaway fast-food consumption.

1. INTRODUCTION

Since the trend of eating fast-food items has been rapidly growing, the focus on packaging waste has been aggravated by the prevalence of single-use materials in everyday food service operations (Ramadhanti, Suryandaru, & Amelia, 2024). Non-biodegradable substances such as plastic-based packaging still add an environmental strain, prompting consumers to be increasingly choosy about products that are more environmentally responsible (Mensah, Wieck, & Rudloff, 2024). Eco-friendly packaging in this case can be viewed not only as a functional packaging quality but also as a sustainability indicator that can influence how products are assessed prior to making buying choices (Ling, Chin, Yi, & Wong, 2024). Simultaneously, labeling packaging with environmental statements may also create

a certain level of distrust in case consumers believe that the companies engage in greenwashing, particularly when the sustainability-related messages seem louder than the environmental actions that businesses actually adopt. These perceptions can undermine trust, and consumers will become more skeptical about environmental claims. Consequently, the reaction to the eco-friendly packaging depends on the functional advantages not only but on the trust in the validity of the information about the environment provided to consumers (Tu, Cui, Liu, & Yang, 2024). There is also prior evidence that environmentally oriented product attributes, such as sustainable packaging, can aid in the development of positive attitudes and help to adopt a more responsible consumption behavior (Hermanto, Astuti, Sugito, & Triatmanto, 2024).

As per the Theory of Planned Behavior (TPB), attitude and purchase intention are often deemed key predictors of real consumer behavior (Balaskas, Panagiotarou, & Rigou, 2023; Bhagat & Chauhan, 2024). But the correlation between attitude, intention, and behavior is not always a consistent one. Phenomenon of intention to behavior gap suggests that the intentions to buy green are not always converted into actual purchases (Deng & Yang, 2024; Tawde, Kamath, & ShabbirHusain, 2023). The relationship between attitude, intention, and behavior when it comes to Generation Z, who are reputed to have quite high rates of social and environmental awareness, is even more complicated. This generation is more prone to pro-environmental behavior, but value judgment and economic factors are still involved in their shopping (Duong, 2024; Kaur & Siddhey, 2025). As such, the relationship between attitude and purchase intention can be put in parallel with eco-friendly packaging, relaying the effect of green packaging on green buying behavior in the context of fast-food takeaway (Van Hoang & Le Thanh, 2024).

The fast-food takeaway consumption features that focus on practicality and cost-effectiveness can enlarge the intention-behavior gap (Shetu, 2024; Theocharis & Tsekouropoulos, 2025). Willingness to pay is one of the factors thought to have a bearing on the consistency of this relationship (Ghouse, Shekhar, Ali Sulaiman, & Azam, 2025). Consumers might also have a positive attitude and intentions towards eco-friendly packaging but fail to recognize the positive intentions when the price premium is perceived as unfair in relation to the benefits gained (Van Hoang & Le Thanh, 2024). Price sensitivity and value evaluation are significant processes in Generation Z in explaining the integrity of intention and green purchase behavior (Vishnoi, Mathur, Agarwal, Virmani, & Jagtap, 2025).

Even though the body of literature on green purchase behavior has evolved fast (Ali, Ullah, Ahmad, Cheok, & Alenezi, 2023; Naini, 2025), there are several shortcomings in the past literature. To begin with, the position taken by most of the studies is that attitude and purchase intention are in a cause-and-effect relationship without addressing the possibility that both could act as parallel mediators of an integrated model (Ge, 2025). Second, research combining psychological variables and the economic aspect of it, in particular willingness to pay as a moderating variable, remains rather limited (Ghouse et al., 2025). Third, the majority of the research addresses green products in general and lacks particular attention to the features of fast-food takeaway consumption, where single-use packaging is considered highly important (Petkowicz et al., 2024; Polas et al., 2025). Moreover, the research, which specifically targets Generation Z as the target audience of consumption, is relatively small despite the fact that the target audience has different values, preferences, and price sensitivity than any other generation (Theocharis & Tsekouropoulos, 2025).

The research gap suggests that the proposed study will examine how environmentally friendly packaging affects green purchase intention among Generation Z in the context of takeaway fast-food consumption by considering the positioning attitude and purchase intention as parallel mediators and willingness to pay as a moderator. This research, by combining the mechanisms of psychological and economic considerations into one analytical framework, expands the usage of the Theory of Planned Behavior to explain the green purchase behavior of Generation Z in the takeaway fast-food consumption scenario.

Theoretically, the present study is new in the sense that, in the framework of fast-food takeaway consumption, the attitude and purchase intention do not necessarily act as the sequential mediators as they do in the traditional TPB model, but can act at the same time as parallel mediators. Moreover, this paper also presents willingness to pay

as a conditional mechanism that elaborates how purchase intention can be converted to a real behavior. In this way, this study is an empirical addition to the literature on sustainable consumer behavior by bridging the psychological processes and economic factors in accountability regarding the intention-behavior gap in environmentally friendly buying behavior of Generation Z.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. *Theory of Planned Behavior*

One of the most popular theoretical models used in explaining and predicting human behavior is the Theory of Planned Behavior (TPB), which is used in explaining human intentions and actions in different situations, including health, marketing, and environmental behavior (Ajzen, 1991). According to this theory, the behavior of individuals is mainly influenced by behavioral intention, which is expressed as the willingness or the readiness of an individual to perform a specific action.

TPB defines behavioral intention as influenced by three significant elements that include attitude towards the behavior, subjective norms, and perceived behavioral control. Attitude shows the subjects of how individuals can evaluate a behavior, whether it is good or bad. Subjective norms are the perceived social pressure of influential persons to do or not do some behaviors, which, in the present case, could be used to influence purchase intention. Perceived behavioral control, in turn, is associated with how an individual believes that he or she is in control of performing this behavior and is manifested here with willingness to pay as one of the economic factors of making purchase decisions. The Theory of Planned Behavior (TPB) has been used to elucidate sustainable consumption and environmentally responsible behavior in many studies. Empirical results have shown that the framework is still applicable to describe green purchase behavior, especially where consumer attitudes determine the intention to buy and subsequently the eventual environmentally friendly behavior (Ge, 2025; Shetu, 2024; Wang, Musa, & Kou, 2024; Yadav & Pathak, 2017). Prior research also indicates that positive judgments about eco-friendly products are likely to enhance purchase intention, which can subsequently translate to the actual green buying behavior (Theocharis & Tsekouropoulos, 2025; Vishnoi et al., 2025). This paper applies TPB to learn how the new generation of consumers, Gen Zs, reacts to the attributes of environmentally friendly products, particularly in cases where positive attitudes prompt higher intentions when considering the use of environmentally responsible products in takeaway fast-food.

2.2. *Green Purchase Behavior*

Green purchase behavior refers to the preference of consumers that a product is environmentally responsible and able to minimize adverse environmental impact. Such an attitude shows not just environmental concern, but also concern to contribute to sustainable consumption by making daily purchasing choices. When consumers are concerned about environmental problems, the attributes related to sustainability (such as recyclable material and eco-friendly packaging) are typically considered prior to the purchase of a product (Ali et al., 2023; Hermanto et al., 2024). Green purchase behavior in consumer behavior studies is frequently linked to the psychological assessment and consumer interpretation of the environmental attributes ascribed to products. Green purchase behavior tends to be the manifestation of environmental values in real market decisions because positive attitudes toward environmentally responsible practices and awareness of environmental impact are likely to make more preferences in favor of products that contribute to sustainability (Satrianto, Gusti, Candrianto, & Nurtati, 2023). In addition to that, recent data reveal that the green purchasing behavior remains influenced by green awareness and perceptions, as well as green marketing elements like green pricing, green promotion, and eco-friendly packaging (Dutta, Chen, & Peng, 2022; Meet, Kundu, & Ahluwalia, 2024; Petkowicz et al., 2024). Within Generation Z, the heightened interest in sustainability and climate-related matters boosted interest in environmentally friendly product preferences, such as fast-food takeaway products packaged in environmentally friendly materials (Duong, 2024; Wang et al., 2024).

2.3. Eco-Friendly Packaging

Eco-friendly packaging is the packaging material that has been created to minimize environmental cost by focusing on recyclability, biodegradability, and less use of toxic substances. This kind of packaging has also become a significant strategy in sustainable marketing practice to promote environmentally responsible consumption, as packaging is a communication tool that conveys a sustainability commitment by a company to consumers. Other than a protective role, eco-friendly packaging might influence product perceptions by cueing the environmentally friendly dimension through material choice, minimal design, and information presented about the environment on the package (Polas et al., 2025; Steiner & Florack, 2023). Past experiences also indicate that packaging characteristics related to sustainability might affect consumer attitudes and reinforce purchase intention by creating a positive perception and trust of environmentally responsible products. Recent research indicates that sustainable packaging can substantially enhance consumer perceptions of products and raise their intentions to purchase sustainable products (Meet et al., 2024; Naini, 2025; Omidiran, Martins, Obadina, & Bogueva, 2024; Petkowicz et al., 2024).

Nevertheless, the responses of consumers towards eco-friendly products have largely been studied in general contexts in the past. This paper will specifically look at the takeaway fast-food consumption of Generation Z and the influence of eco-friendly packaging on consumer attitude and purchase intention of these products. It is well-known that Generation Z consumers are highly environmentally conscious and are more likely to take into account sustainability qualities during the assessment of the products. Hence, additional research is required to learn more about the connection between environmentally friendly packaging, attitude, and purchase intention. The hypotheses are as follows, based on this discussion.

H₁: Eco-friendly packaging positively influences Generation Z consumers' attitudes toward fast-food takeaway consumption.

H₂: Eco-friendly packaging positively influences Generation Z consumers' purchase intention toward fast-food takeaway consumption.

2.4. Attitude

Attitude is the positive or negative judgment of a certain object or behavior by an individual. Attitude in the literature of consumer behavior is the way people consider a behavior, according to their beliefs and perceptions. Persons displaying a more positive attitude toward a behavior tend to participate in the behavior. Recent research shows that consumer attitude is a key factor in determining green purchase behavior. Whenever consumers gain positive attitudes towards environmentally friendly practices, they are more likely to transfer the attitudes into environmentally friendly buying decisions. As an example, recent empirical findings indicate that more pro-environmental consumers are more likely to adopt green purchasing behavior, especially when considering environmental concerns and perceived environmental responsibility (Bhagat & Chauhan, 2024). Nevertheless, there is an attitude-behavior gap in previous results as well, meaning that the positive attitude toward the environment does not necessarily lead to actual green purchasing behavior, especially in cases when consumers are concerned with greenwashing or do not have much trust in environmental claims (Margariti, Hatzithomas, & Boutsouki, 2024). Generation Z consumers are now exposed to issues of environmental concerns in fast-food takeaway consumption, where a large proportion of these food products are packaged for single-use. In such circumstances, the attitude towards eco-friendly practices becomes applicable in determining whether customers are prepared to buy fast-food products packaged in environmentally friendly packages.

H₃: Attitude positively influences Generation Z consumers' green purchase behavior in fast-food takeaway consumption.

2.5. Purchase Intention

The purchase intention is generally known in the consumer behavior literature as the tendency or willingness of individuals to buy a specific product or service. This notion defines the psychological level before the actual act of buying the product, where consumers start to consider whether they will buy the product or not, depending on their

perceptions, attitudes, and product qualities (Ajzen, 1991). Behavioral intention is typically regarded as the strongest predictor of behavior in the Theory of Planned Behavior because, more often, higher intentions tend to elevate the chances of an intended action being actualized. Thus, purchase intention is a factor that is relevant in connecting consumer attitudes with the real purchase decision (Dong, Jiang, Zeng, & Kassoh, 2022; Van Hoang & Le Thanh, 2024).

Purchase intention for products that are eco-friendly is usually a significant antecedent of green purchasing in studies on sustainable consumption. There is empirical evidence that more consumers who show their intention to buy environmentally responsible products will translate that intention into actual green purchase behavior. The same studies carried out in the Philippines and India attest to the fact that the purchase intention has a strong impact on the green purchase behavior (Abeysekera, Manalang, David, & Grace Guiao, 2022; Dutta et al., 2022; Tawde et al., 2023). These results suggest that purchase intention is a significant process that interconnects environmental awareness, attitudes, as well as other psychological processes with environmentally responsible purchasing behavior. Thus, purchase intention is supposed to affect the green purchase behavior among the Generation Z consumers in fast-food takeaway consumption.

H₁: Purchase intention positively influences Generation Z consumers' green purchase behavior in fast-food takeaway consumption.

2.6. The Mediating Role of Attitude and Purchase Intention

In consumer behavior studies, the interaction between product characteristics and consumer buying behavior is not necessarily straightforward but subject to some psychological processes. In the context of the Theory of Planned Behavior (TPB), the issue of attitude and behavioral intention is often taken as an important process that determines the impact of product characteristics on customers' purchasing behavior. These psychological aspects can be used in explaining how consumers convert their judgements about environmentally friendly product characteristics into their actual purchasing behavior in the context of environmentally responsible consumption.

Recent research indicates that attitude and purchase intention may have significant mediating roles in explaining environmentally responsible consumption behavior. Responsible product qualities that are environmentally friendly, like eco-friendly packaging, can affect the perceptions and assessments of consumers of products, which in turn affects the positive attitude and increases the purchase intention towards the environmentally friendly products. Empirical studies have shown that pro-environmental attitudes and purchase intentions of consumers are important mechanisms to connect product attributes related to sustainability to green purchasing behavior (Deng & Yang, 2024; Polas et al., 2025).

Nevertheless, these mediating mechanisms have mostly been looked into individually, and seldom have parallel mediating effects of attitude and purchase intention been explored in explaining the relationship between product attributes and green purchase behavior. Hence, the current study aims to explore the parallel mediating role of attitude and purchase intention in the explanation of the association between eco-friendly packaging and green purchase behavior by Generation Z in the context of fast-food takeaway consumption. The following hypotheses have been based on the discussion above.

H₂: Attitude mediates the relationship between eco-friendly packaging and Generation Z consumers' green purchase behavior in fast-food takeaway consumption.

H₃: Purchase intention mediates the relationship between eco-friendly packaging and Generation Z consumers' green purchase behavior in fast-food takeaway consumption.

2.7. Moderating Role of Willingness to Pay

Willingness to pay is a term used to indicate how consumers are willing to pay a better price to acquire products of a certain attribute, such as environmentally friendly products. When it comes to sustainable consumption,

willingness to pay can be linked to the environmental awareness of consumers and their dedication to environmentally friendly consumption behaviors. In general, consumers with greater environmental concerns will be more ready to pay a premium for products that are seen as environmentally friendly (Kurniawan, Vincent, & Pratama, 2024; Meet et al., 2024; Munaqib et al., 2025).

Recent studies have shown that willingness to pay plays an important role in influencing consumers' green consumption behavior. The willingness of consumers to pay a price premium on environmentally friendly products is more likely to be reflected in consumer intentions to purchase the product and actual purchase decisions. However, previous studies have mostly examined willingness to pay as a direct predictor of purchase intention or green purchasing behavior (Ghouse et al., 2025; Kaur & Siddhey, 2025).

Contrastingly, this research employs willingness to pay as a moderating factor that can enhance the relationship between purchase intention and green purchase behavior. When fast-food takeaway consumption is discussed, consumers who plan to buy goods with eco-friendly packaging would not necessarily convert their intentions into tangible buying patterns if they are unwilling to pay the extra price of eco-friendly goods. Thus, the readiness to pay is likely to enhance the connection between the purchase intention and green purchase behavior of consumers (Ghorbanzadeh et al., 2025). The hypothesis presented is based on the discussion above.

H₇: Willingness to pay moderates the relationship between purchase intention and Generation Z consumers' green purchase behavior in fast-food takeaway consumption.

Based on the theoretical underpinnings and past empirical results, this paper presents a research model to investigate the relationships between eco-friendly packaging, attitude, purchase intention, willingness-to-pay, and green purchase behavior among Generation Z consumers in the fast-food takeaway consumption context. The conceptual framework (Figure 1) shows the relationship between these variables. The eco-friendly packaging would affect the purchase intention and attitude of the consumers in this model. Moreover, it is assumed that attitude and purchase intention will also affect the green purchase behavior of consumers. Moreover, the attitude and purchase intention are also considered as mediating variables in explaining the association between the eco-friendly packaging and green purchase behavior. The moderating effect of willingness to pay in the enhancement of the relationship between the purchase intention and the green purchase behavior is also examined in this study.

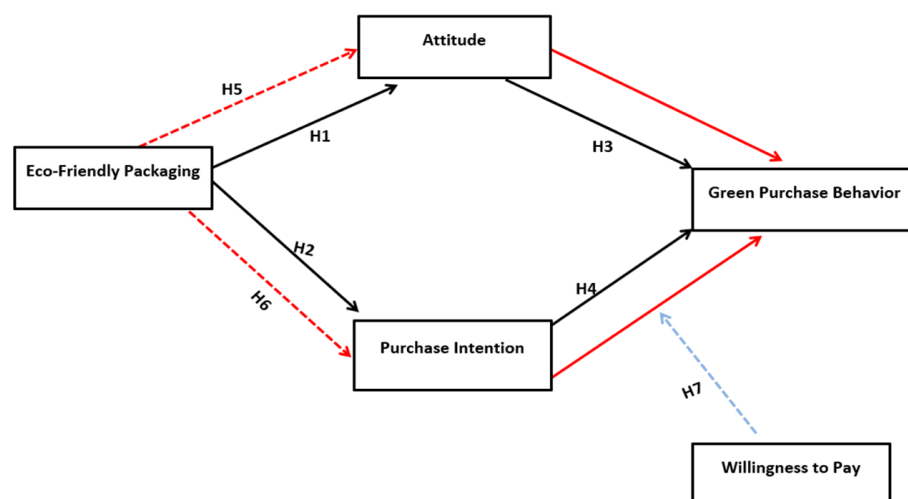


Figure 1. Proposed research model.

3. METHODS

3.1. Research Design

In this research, a quantitative methodology and a survey design will be utilized to examine the survey results of Generation Z consumers in terms of green purchase behavior in relation to the consumption of fast-food takeaways.

In order to investigate the impact of the environmentally-friendly packaging on green purchase behavior and the mediating impact of attitude and purchase intention, the moderating effect of willingness to pay, the research model was constructed.

The study population is Generation Z consumers that have bought fast-food takeaway products in Padang City, Indonesia. Four hundred (400) respondents took part in this research. This is deemed to be a sufficient sample size to analyze the structural model and also satisfied the statistical adequacy to test the validity and reliability of the research model (Miles, 2003).

A structured questionnaire was used to gather the data based on measurement indicators that have previously been used and validated in prior research. A five-point Likert scale was used to measure all items to reflect the degree of agreement of respondents with each statement (Essiz, Yurteri, Mandrik, & Senyuz, 2023).

3.2. Measurement of Variables

Some of the variables that will be analyzed in this research paper are eco-friendly packaging, attitude, purchase intention, willingness to pay, and green purchase behavior. The measurement items were based on the previous research that has exhibited reasonable levels of reliability and validity.

Each of the measurement items was measured on a five-point Likert scale between 1 (strongly disagree) and 5 (strongly agree). This scale was employed to elicit the perception of the respondents on the constructs investigated in this study.

To give a more precise idea of the variables employed in this work, the operational definitions of every variable, as well as the measurement indicators, are introduced in Table 1.

Table 1. Operational definition of variables.

No.	Variables	Operational Definition	Indicators	Scale	Source
1	Eco-friendly Packaging (X)	Eco-friendly packaging refers to consumers' perceptions of take-away fast food packaging that minimizes environmental impact through reduced carbon footprint, recyclability, sustainable design, and its ability to meet consumer expectations.	- Carbon footprint - Recyclability level - Sustainable packaging design - Environmental communication	Likert 1–5	Pant, Kumar, and Singh (2024)
2	Attitude (Z ₁)	Attitude reflects consumers' overall positive or negative evaluation of purchasing takeaway fast food products with eco-friendly packaging, shaped by environmental concern, beliefs, and trust in environmental claims.	- Positive attitude toward green products - Environmental concern - Trust in environmental claims	Likert 1–5	Krissanya, Phau, and Lim (2023)
3	Purchase Intention (Z ₂)	Purchase intention represents consumers' willingness and planned effort to purchase takeaway fast food products with eco-friendly packaging in the future.	- Intention to purchase - Brand preference - Repurchase intention	Likert 1–5	Rana and Paul (2017)
4	Green Purchase Behavior (Y)	Green purchase behavior refers to consumers' actual purchasing actions related to selecting environmentally friendly and sustainable takeaway fast food products.	- Green purchasing decision - Frequency of green product purchases	Likert 1–5	Lopes, Oliveira, and Farinha (2024)

No.	Variables	Operational Definition	Indicators	Scale	Source
			• Willingness to choose eco-friendly products • Preference for certified green products		
5	Willingness to Pay (W)	Willingness to pay denotes consumers' readiness to pay a premium price for take-away fast food products offered with eco-friendly packaging, reflecting perceived environmental value and pro-environmental orientation.	• Willingness to pay a higher price • Preference for green products despite higher prices • Perceived value of environmental benefits	Likert 1-5	Yadav and Pathak (2017)

3.3. Sampling and Data Analysis

The paper adopted purposive sampling to sample the respondents according to the objectives of the research. The selection criteria were the respondents who were members of Generation Z who had experienced buying takeaway fast-food products in Padang. Four hundred respondents who fit these criteria took part in the study. Information was gathered using a structured questionnaire, which was sent via e-mail and online on Google Forms to reach a wider audience of potential respondents. This is deemed a sufficient sample size to apply Structural Equation Modeling-Partial Least Squares (SEM-PLS) analysis since it meets the statistical criteria of testing structural models.

The analysis of data using SEM-PLS was performed based on SmartPLS software. The two-step analysis involved the measurement model (outer model) to determine construct validity, reliability, and the structural model (inner model) to determine relationships between the latent variables, including direct effects, mediation, moderation, and predictive relevance of the model.

4. ANALYSES AND RESULTS

The respondents in this study were 400 students of the Generation Z who live in Padang, 302 females and 98 males. Regarding the educational level, university students (50%), senior high school graduates (35%), and junior high school graduates (15%) dominated the respondents. Based on the intervention of the attitudinal and purchase intention mediating variables and the willingness to pay moderating variable, this paper explores the effects of environmentally-friendly packaging on enhancing the green purchasing behavior of Generation Z in consuming take-away fast-food. To test the measurement model and the structural model, Structural Equation Modeling-Partial Least Squares (SEM-PLS) was used in the analysis.

4.1. Measurement Model Assessment

The measurement model was initially tested to determine that each of the indicators met indicator reliability and convergent validity criteria before analyzing the structural relationships among variables. This assessment was done using outer loading analysis to determine the strength of the relationship between each indicator and its respective latent construct. Figure 2 shows the model of the measure along with the external loading of all the retained indicators in this research.

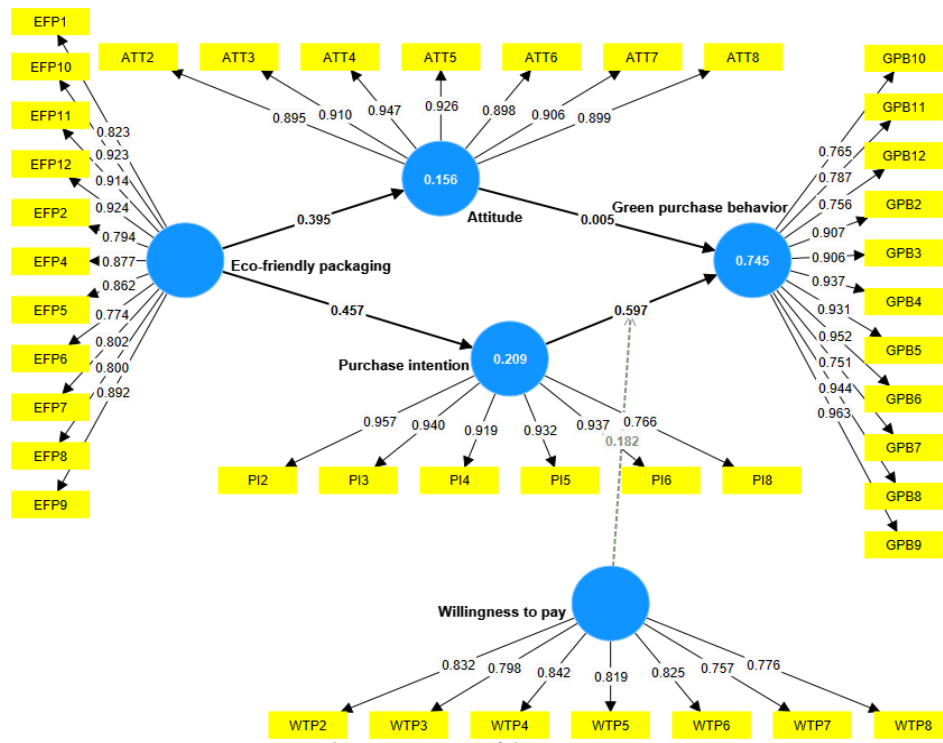


Figure 2. Outer model measurement.

A summary of the outer loading values for all indicators is presented in Table 2. All indicators exceeded the recommended minimum threshold of 0.70, indicating that all measurement items were retained in the model.

Table 2. Outer loading values of measurement indicators.

Indicators	Attitude	Eco-friendly packaging	Green purchase behavior	Purchase intention	Willingness to pay	T-Value
ATT2	0.895					55.963
ATT3	0.910					48.472
ATT4	0.947					139.097
ATT5	0.926					73.149
ATT6	0.898					47.413
ATT7	0.906					51.035
ATT8	0.899					49.229
EFP1		0.823				35.969
EFP2		0.794				27.326
EFP4		0.877				43.163
EFP5		0.862				36.296
EFP6		0.774				28.263
EFP7		0.802				32.323
EFP8		0.800				26.713
EFP9		0.892				46.854
EFP10		0.923				75.050
EFP11		0.914				59.748
EFP12		0.924				70.898
GPB2			0.907			42.852
GPB3			0.906			47.539
GPB4			0.937			69.274
GPB5			0.931			90.509
GPB6			0.952			141.898
GPB7			0.751			20.795
GPB8			0.944			95.257
GPB9			0.963			273.891
GPB10			0.765			20.397

Indicators	Attitude	Eco-friendly packaging	Green purchase behavior	Purchase intention	Willingness to pay	T-Value
GPB11			0.787			21.970
GPB12			0.756			20.108
PI2				0.957		110.029
PI3				0.940		66.256
PI4				0.919		46.646
PI5				0.932		75.322
PI6				0.937		65.580
PI8				0.766		24.203
WTP2					0.832	23.814
WTP3					0.798	20.595
WTP4					0.842	22.874
WTP5					0.819	21.018
WTP6					0.825	21.788
WTP7					0.757	25.937
WTP8					0.776	27.603

Note: EFP= Eco-friendly packaging; PI = Purchase intention; ATT = Attitude; GPB = Green purchase behavior; WTP = Willingness to pay.

The results of the outer loading show that all the indicators are sufficient to reflect their respective latent constructs. The greatest loading values were found in the purchase intention construct, with all the indicators related to the eco-friendly packaging, attitude, willingness to pay, and green purchase behavior fulfilling the convergent validity criterion. Thus, the measurement model was found to be acceptable to proceed with the measurement construct reliability and convergent validity.

4.2. Construct Reliability and Convergent Validity

Construct Reliability and convergent tests indicate that construct values are above the recommended level of Cronbach's Alpha and Composite Reliability, which is 0.70. The values of the Average Variance Extracted (AVE), of all the latent variables are also above the required minimum of 0.50, as shown in Table 3. These results indicate that all of the constructs have good internal consistency and adequate convergent validity, and this indicates that the measurement model can be further subjected to structural analysis.

Table 3. Construct reliability and convergent validity.

Construct	Cronbach's alpha	Composite reliability (ρ_a)	Composite reliability (ρ_c)	Average variance extracted (AVE)
Attitude	0.967	0.975	0.972	0.832
Eco-friendly packaging	0.963	0.964	0.967	0.731
Green purchase behavior	0.969	0.978	0.973	0.769
Purchase intention	0.958	0.959	0.967	0.830
Willingness to pay	0.924	0.962	0.929	0.652

These findings show that each construct has satisfactory internal consistency and convergent validity, which proves that the measurement model is appropriate for proceeding with structural analysis.

4.3. Discriminant Validity

The Heterotrait-Monotrait Ratio (HTMT) criterion was used to evaluate the discriminant validity. As can be seen in Table 4, the values of all the HTMTs are lower than the recommended value of 0.85, indicating that the constructs are empirically distinct. These results verify that the measurement model meets the criterion of discriminant validity and is suitable for continuing with the structural model analysis.

Table 4. Discriminant validity assessment using HTMT.

Construct	ATT	EFP	GPB	PI	WTP	WTP × PI
ATT						
EFP	0.399					
GPB	0.554	0.363				
PI	0.594	0.475	0.754			
WTP	0.552	0.234	0.628	0.473		
WTP × PI	0.300	0.255	0.161	0.392	0.277	

Note: EFP= Eco-friendly packaging; PI = Purchase intention; ATT = Attitude; GPB = Green purchase behavior; WTP = Willingness to pay.

Such findings suggest that all the constructs possess sufficient discriminant validity, which confirms that the latent variables in the model are distinct enough and can be further analyzed in terms of their structure.

4.4. Structural Model Evaluation

The structural model was tested through the coefficient of determination (R^2) that would determine the explanatory capability of exogenous variables on endogenous constructs. Table 5 shows that the R^2 of green purchase behavior is 0.745 (Adjusted $R^2 = 0.742$), which implies that the proposed model accounts for a significant percentage of the variation in green purchase behavior by Generation Z.

Meanwhile, purchase intention records an R^2 value of 0.209 (Adjusted $R^2 = 0.207$), and attitude has an R^2 value of 0.156 (Adjusted $R^2 = 0.154$). These findings indicate that the proposed model has stronger explanatory power for green purchase behavior than for purchase intention and attitude.

Table 5. R^2 and adjusted R^2 values of endogenous variables.

Construct	R-square	Adjusted R-square
Attitude	0.156	0.154
Green purchase behavior	0.745	0.742
Purchase intention	0.209	0.207

These findings show that the model is more explanatory than attitude and purchase intention in explaining green purchase behavior. Predictive relevance was used to further test the predictive ability of the model using Q^2 values, which were gained using the blindfolding test.

Table 6. Predictive relevance (Q^2) values of endogenous constructs.

Construct	$Q^2 (= 1-SSE/SSO)$
Attitude	0.123
Green purchase behavior	0.558
Purchase intention	0.171

Table 6 illustrates that all the endogenous constructs have Q^2 greater than zero, which means that the model has sufficient predictive relevance. Green purchase behavior had the highest Q^2 ($Q^2 = 0.558$), indicating that the model has strong predictive power in explaining actual green purchase behavior.

The analysis of the effect size was done using f^2 values to determine the contribution of each exogenous construct to endogenous variables. Using the recommended thresholds, the f^2 values of 0.02, 0.15, and 0.35 are associated with small, medium, and large effect sizes, respectively. Table 7 presents the results.

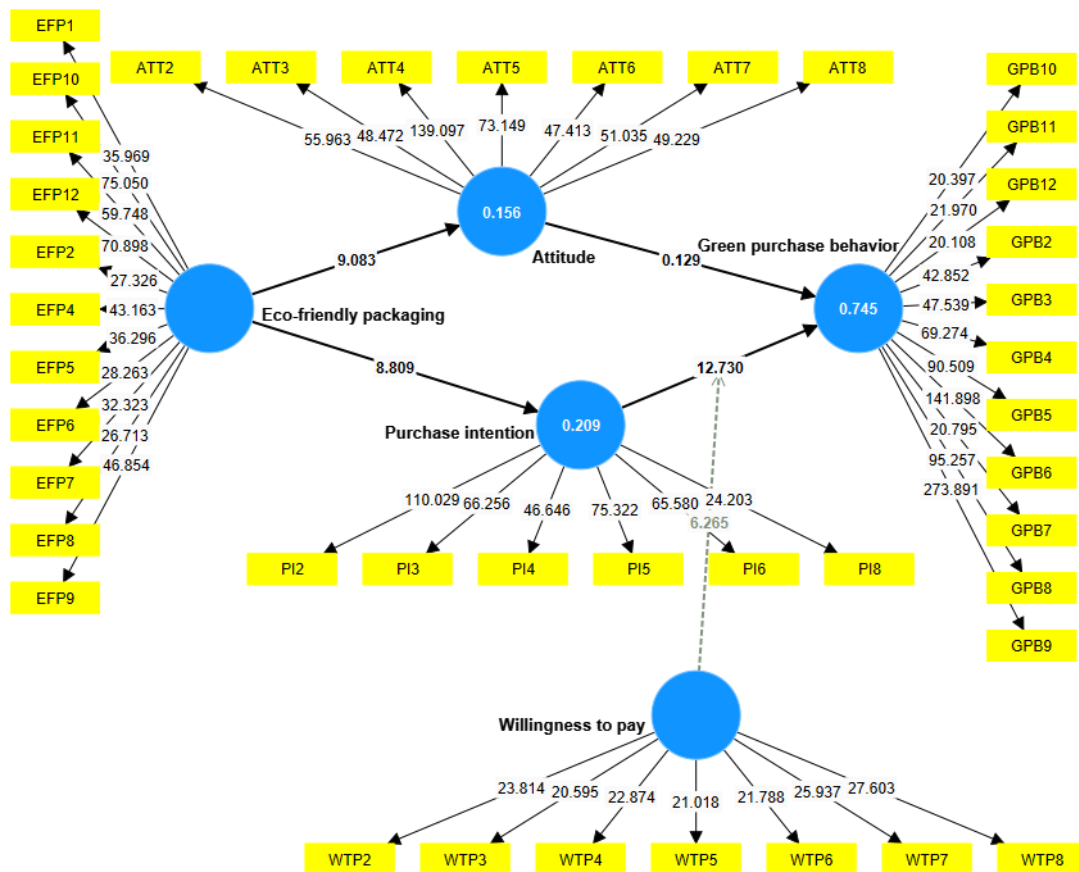
Table 7. Effect size (f^2) values of structural relationships.

Relationship	f^2
Eco-friendly packaging $\rightarrow$ Attitude	0.185
Eco-friendly packaging $\rightarrow$ Purchase intention	0.264
Attitude $\rightarrow$ Green purchase behavior	0.000
Purchase intention $\rightarrow$ Green purchase behavior	0.820
Willingness to pay $\rightarrow$ Green purchase behavior	0.561
Moderating effect ($WTP \times PI \rightarrow GPB$)	0.127

Purchase intention demonstrates the most significant influence on the green purchase behavior ($f^2 = 0.820$), then there is the willingness to pay ($f^2 = 0.561$). Eco-friendly packages have a moderate impact on attitude and purchase intention, whereas attitude does not have a significant impact on green purchase behavior.

4.5. Direct Effects and Moderation Analysis

The bootstrapping results showing the significance of structural relationships in the inner model are presented in Figure 3.

**Figure 3.** T-values of structural relationships in the inner model.

The results of the direct effects and moderation analyses are presented in Table 8.

Table 8. Structural path coefficients (direct effects).

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Attitude -> Green purchase behavior	0.005	0.004	0.039	0.129	0.898
Eco-friendly packaging -> Attitude	0.395	0.397	0.044	9.083	0.000
Eco-friendly packaging -> Purchase intention	0.457	0.457	0.052	8.809	0.000
Purchase intention -> Green purchase behavior	0.597	0.593	0.047	12.730	0.000
Willingness to pay -> Green purchase behavior	0.467	0.472	0.043	10.777	0.000
Willingness to pay x Purchase intention -> Green purchase behavior	0.182	0.180	0.029	6.265	0.000

Moreover, the intention to purchase demonstrates a positive and significant impact on green purchase behavior ($O = 0.597$; $T = 12.730$; $P < 0.001$), which means that a stronger purchase intention has a significant influence on the actual green purchase behavior. The direct impact of willingness to pay is also positive and significant ($O = 0.467$; $T = 10.777$; $P < 0.001$), where it is observed that willingness to pay more makes consumers more likely to engage in green purchasing behavior.

Moreover, the relationship between purchase intention and the green purchase behavior has a positive but significant moderating effect of willingness to pay ($O = 0.182$; $T = 6.265$; $P < 0.001$), meaning that willingness to pay reinforces the effect of purchase intention on green purchase behavior.

The direct influence of attitude on the green purchase behavior is, however, not significant ($O = 0.005$; $T = 0.129$; $P = 0.898$), and thus the influence of attitude alone is not directly translated to the actual green purchase behavior in the current study.

4.6. Mediation Effects

The indirect effects analysis results are presented in Table 9.

Table 9. Indirect effects and mediation analysis.

Indirect path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Eco-friendly packaging -> Attitude -> Green purchase behavior	0.002	0.002	0.016	0.127	0.899
Eco-friendly packaging -> Purchase intention -> Green purchase behavior	0.273	0.271	0.037	7.309	0.000

The attitude-based mediation result is non-significant ($O = 0.002$; $T = 0.127$; $P = 0.899$), meaning that there is no mediation between the green purchase behavior and eco-friendly packaging in terms of attitude. This observation implies that despite the significant role played by eco-friendly packaging in attitude, attitude in this study may not play a direct role in green purchase behavior.

Nevertheless, purchase intention also has an important mediating effect on the relationship between eco-friendly packaging and green purchase behavior ($O = 0.273$; $T = 7.309$; $P < 0.001$). This result indicates that the effect of the use of eco-friendly packaging on green purchase behavior is primarily spread throughout the formation of purchase intention.

5. DISCUSSION

The findings indicate that environmentally friendly packaging is still a key aspect that influences the green buying behavior of Generation Z in Padang City, especially in the consumption of takeaway fast food. Its strong impact on attitude and purchase intention is that the sustainability-related packaging attributes reinforce the environmental evaluation and at the same time promote the purchase intention itself. This trend aligns with previous results (Hermanto et al., 2024; Krissanya et al., 2023), and it is stated that the association between environmentally oriented product attributes, cognitive reaction, and behavioral intention is correlated, and subsequently, they are translated into real purchasing behavior. The sustainability cues, which are visible, like packaging, seem to be particularly pertinent in takeaway fast-food contexts since they enable consumers to make immediate judgments about the environment when they need to make fast purchases.

The mediation analysis shows that purchase intention is the primary mediating variable between eco-friendly packaging and green purchase behavior, whereas the mediating role of attitude cannot be empirically proved. This implies that such positive environmental attitudes cannot be translated into actual green purchasing behavior unless they are supported with a clear purchase intention. The same trends were observed in prior research (Dong et al., 2022; Tawde et al., 2023) in which behavioral intention was more consistently a predictor of pro-environmental acts. The insignificant influence of attitude also demonstrates a value/action disjunction, i.e., that positive environmental evaluation does not necessarily result in purchasing action. Generation Z customers in the context of takeaway fast-food consumption seem to regard practical factors like price, convenience, and developed consumption patterns as more influential factors than attitude in making buying decisions.

The notable direct impact of willingness to pay proves that economic factors cannot be ignored when it comes to translating green purchase intention into actual purchasing behavior in Generation Z consumers. This finding aligns with the findings of other researchers (Kaur & Siddhey, 2025; Van Hoang & Le Thanh, 2024) who assert the relevance of willingness to pay and price sensitivity in reducing the gap between intention and behavior. Environmental preferences are more easily translated into actual purchases, especially when the environmentally friendly takeaway services require extra charges, by consumers willing to pay more.

The moderating role of willingness to pay additional supports the relationship between purchase intention and green purchase behavior, showing that economic readiness enhances the likelihood of purchase intention transforming into a real sustainable purchase decision. Although intention is high, the buying behavior is still contingent on the perception consumers have about whether the product is economically viable.

Conceptually, the research contributes to the use of the Theory of Planned Behavior because it demonstrates that purchase intention is the key behavioral construct in the case of consumption of takeaway fast-food, as attitude does not directly influence the actual behavior. By aligning psychological with economic variables in a single model of analysis, the green purchasing behavior of Generation Z can be explained in a more comprehensive way.

In a practical sense, the results imply that eco-friendly packaging should be adopted by fast-food practitioners in Padang City as a symbolic sustainability factor, as well as a strategic tool for enhancing purchase intention and willingness to pay. This should be backed by pricing strategies that do not exceed the economic capability of the consumers to enable environmental preferences to be converted into actual buying behavior. These results are also aligned with prior evidence that environmentally oriented practices lead to better environmental performance via behavioral processes and organizational strategies (Gusti, Satrianto, Candrianto, Juniardi, & Prima, 2025). In a broader sense, the findings can be used to promote responsible consumption behaviors in accordance with the United Nations SDG 12.

6. CONCLUSION

The main conclusions of this study can be summarized as follows:

1. Eco-friendly packaging also acts as a preliminary trigger in the formation of the psychological reactions of Generation Z users, in particular, by reinforcing positive assessments of eco-friendly features and stimulating a willingness to buy takeaway fast-food products with environmentally friendly packaging.
2. When it comes to the consumption of takeaway fast food, purchase intention seems to be the most important connection between environmental preferences and actual purchasing decisions, which means that green purchasing behavior is motivated by both willingness to act and attitude.
3. The direct impact of attitude on green purchase behavior is not statistically significant, indicating that positive environmental assessments alone do not have a direct impact on producing actual green purchasing behavior among Generation Z consumers.
4. The attitude-mediating pathway is also not empirically supported, which suggests that green purchases behaviour is influenced more by purchase intent as compared to the evaluation of environmental attitude.
5. Conversely, purchase intention is the major mediating variable whereby eco-friendly packaging is converted to green purchase behavior.
6. Willingness to pay is also a significant economic status that quantifies the ability of environmental preferences to be translated into purchase choices, as well as enhances the correlation between purchase intention and green purchase behaviors when backed up by the economic preparedness of consumers.
7. On the whole, the choice of green purchase behaviour of Generation Z in the consumption of takeaway fast foods in Padang City can be characterized by the interplay between the psychological intention and economic aspects, implying that the willingness to pay can enhance the degree of sustainable purchasing behaviour when the preference towards the environment is present.

6.1. Implications

Several practical implications can be drawn for practitioners and policymakers.

1. The practitioners in the fast-food industry in Padang City ought to come up with environmentally friendly packaging that can not only work technically but also be used as a sustainability signal that can reinforce purchase intention amidst the takeaway fast-food purchasing behavior amongst the Generation Z cohort.
2. Takeaway fast-food products with green packaging should be priced based on the willingness of the consumers, as the economic willingness matters greatly in the conversion of purchase intention to actual green buying behavior.
3. As part of the implementation of United Nations SDG 12, policymakers can promote the use of environmentally friendly packaging in the takeaway fast-food industry by educating consumers, providing incentives, and conducting sustainability campaigns.
4. Since the explanatory power of the attitude and purchase intention is relatively low, other supporting factors like environmental literacy, social influence, and purchasing convenience should also be considered to enhance sustainable consumer behavior.

6.2. Research Limitations

These findings have several limitations to be taken into account during interpretation. To begin with, the study was carried out in Padang City, Indonesia, which might not be representative of other areas that have varying socio-cultural and economic backgrounds. Second, the study targets consumers belonging to the Generation Z generation who have experience with buying takeaway fast-food products, which might not be entirely relevant to the behavior of other age groups. Third, the variables tested by this study are confined to green packaging, attitude, purchase intention, willingness to pay, and green purchase behavior. The comparatively low explanatory power of attitude and purchase intention reveals that other possible variables, including environmental knowledge, social influence,

subjective norms, lifestyle, and purchasing convenience, were not considered in the model, and they could also determine the green purchase behavior of consumers.

6.3. Suggestions

Several suggestions may be considered for future research.

1. It is suggested that future studies should include other contextual factors, including social norms, peer pressure, environmental awareness, lifestyle, and convenience of purchasing, to expand the knowledge on green purchase behavior.
2. Future research can enlarge the scope of the research beyond Padang City to give more comprehensive information on green purchase behavior in different regional settings.
3. It is also recommended to conduct further research to compare various age groups of consumers to determine whether the patterns of behavior shown by Generation Z are similar across the generations.
4. Subsequent research can involve the use of both quantitative and qualitative methods to get a more in-depth explanation of why the attitude that is developed towards the environment is not always translated into real purchasing behavior.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

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