

Intention-Behavior Gap among Generation Z Consumers in Using Eco-Packaging on *GrabFood* in Indonesia

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Abstract

This study aims to analyze the intention-behavior gap among Generation Z consumers in using eco-packaging on *GrabFood* services in Indonesia. The research model integrates the Theory of Planned Behavior and Nudge Theory through six constructs: platform policy exposure, environmental awareness, subjective norm, behavioral intention, perceived policy effectiveness, and actual eco-packaging usage behavior. A quantitative approach was employed using a survey of 120 active Generation Z *GrabFood* users selected through purposive sampling. Data were analyzed using Partial Least Squares Structural Equation Modeling with SmartPLS 4.0. The results show that environmental awareness and subjective norm have positive and significant effects on behavioral intention, while platform policy exposure has no significant effect. Behavioral intention positively and significantly affects actual eco-packaging usage behavior. However, perceived policy effectiveness does not significantly moderate the relationship between behavioral intention and actual behavior. Behavioral intention also mediates the effects of environmental awareness and subjective norm on actual eco-packaging usage behavior. The findings confirm an intention-behavior gap, as 55.6% of the variance in actual behavior remains unexplained by the research model.

Keywords: *Eco-Packaging; Generation Z; Intention-Behavior Gap; Nudge Theory; Theory Of Planned Behavior*

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Introduction

The growth of online food delivery services in Indonesia has reached a scale that is difficult to ignore. Platforms such as *GrabFood* are no longer merely an alternative means of consumption but have become part of the everyday lifestyle infrastructure of urban communities. According to Kristia et al. (2023), the Indonesian food delivery market is projected to reach a transaction value of USD 7.9 billion in 2024, with *GrabFood* accounting for approximately 50 percent of the national food delivery market share. Behind the convenience offered, each food delivery transaction generates an average of three to five single-use packaging items, including plastic bags, styrofoam containers, plastic cutlery, and wrapping tissues.

In response to pressure from various stakeholders, *GrabFood* has implemented a series of structured eco-packaging policies. The platform signed the “No Plastic in Nature by 2030” pledge with WWF through the Regional Plastic ACTION Platform (PACT) and launched the Grab Green Programme, which by 2025 had engaged 38,000 merchant partners in Indonesia (Grab Indonesia, 2025). These policies are manifested through the “No Cutlery” feature, which allows consumers to opt out of receiving plastic utensils, environmentally friendly packaging options provided by merchants, and point-based incentive programs for users who choose green options. Internal reports from *GrabFood* even indicate that 77 percent of its consumers are willing to pay more for environmentally friendly products, while 50 percent prefer sustainable food packaging (Grab Indonesia, 2025). Although these figures appear promising, they raise an empirical question that remains unanswered: are the platform's eco-packaging policies truly effective in changing consumers' actual behavior, or are they merely effective in influencing stated intentions?

This question becomes increasingly relevant when considering the characteristics of Generation Z, individuals born between 1997 and 2012 who currently dominate the active user base of *GrabFood* in Indonesia. A survey by Usmi (2022) showed that 67 percent of active food delivery platform users in Indonesia are between 17 and 27 years old. This generation has grown up amid increasing global discourse on climate change and sustainability. The World Economic Forum (2023) reported that 64.5 percent of Generation Z believe that the climate crisis is causing significant environmental damage, while a study conducted by Foopak (2023) involving more than 150 Generation Z respondents found that 94 percent prioritize environmentally friendly packaging and 93 percent are willing to pay more for sustainable options. However, this high level of ecological awareness does not necessarily translate into actual behavior in everyday digital contexts.

Nogueira et al. (2021) demonstrated that, within digital platforms, consumers tend to prioritize service speed, convenience, and price over ecological considerations when making transactions. This discrepancy between intentions and actual actions is known in the literature as the intention-behavior gap (Kollmuss & Agyeman, 2002), which constitutes the central issue motivating this study. Ajzen (1991), through the Theory of Planned Behavior (TPB), explained that individual behavior is not formed directly from awareness but is mediated by attitudes, subjective norms, and perceived behavioral control. Furthermore, Frischmann (2022), through Nudge Theory, argued that strategically designed choice architecture can encourage individuals to make better decisions without restricting their freedom of choice.

Previous studies on pro-environmental behavior in food delivery services have primarily focused on behavioral intention and have generally employed broad consumer samples. Studies specifically examining actual behavior and the intention-behavior gap phenomenon among Generation Z *GrabFood* users remain limited. Moreover, the role of perceived policy effectiveness as a factor influencing the relationship between intention and actual behavior in the context of eco-packaging has received little scholarly attention. Therefore, this study seeks to address these gaps by analyzing actual eco-packaging usage behavior among Generation Z *GrabFood* consumers in Indonesia through the integration of the Theory of Planned Behavior and Nudge Theory.

The novelty of this study lies in its examination of the intention-behavior gap phenomenon among Generation Z *GrabFood* consumers by focusing on actual eco-packaging usage behavior, as well as investigating the moderating role of perceived policy effectiveness in the relationship between behavioral intention and actual behavior. This approach enables the study not only to explain the formation of behavioral intention but also to examine the extent to which such intentions are translated into actual actions within the context of sustainable consumption on digital platforms. This study employs a quantitative approach using a survey method involving active Generation Z *GrabFood* consumers in Indonesia. Hypothesis testing was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0.

Theoritical Framework

Theory of Planned Behavior

Theory of Planned Behavior (TPB) developed by Ajzen (1991) is one of the most widely used frameworks for explaining and predicting individual behavior, including sustainable consumption behavior. TPB proposes that actual behavior is directly influenced by behavioral intention, which is formed by three main determinants: attitude toward the behavior, subjective norm, and perceived behavioral control. Attitude refers to an individual's evaluation of a behavior, subjective norm reflects perceived social pressure, and perceived behavioral control represents an individual's perception of the ease or difficulty of performing the behavior (Ajzen, 1991).

Despite its predictive strength, previous studies have shown that behavioral intention does not always translate into actual behavior, a phenomenon commonly known as the intention-behavior gap. In sustainable consumption contexts, consumers may express positive environmental intentions but fail to implement them because of convenience, habits, and situational factors. This gap remains a major issue in sustainability research and highlights the importance of examining actual behavior in addition to behavioral intention Munro et al. (2023)

In this study, environmental awareness is conceptualized as a representation of attitude toward behavior, while subjective norm corresponds directly to the social influence component of TPB. Both variables are expected to influence behavioral intention, which subsequently affects actual eco-packaging usage behavior. Thus, environmental awareness, subjective norm, behavioral intention, and actual behavior represent the principal components of TPB employed in this study (Randall et al., 2024)

This study does not include perceived behavioral control as a separate construct because eco-packaging choices on *GrabFood*, such as selecting the "No Cutlery" option, do not require substantial resources or technical abilities. Since these features are readily available and easily accessible, eco-packaging behavior is considered to be influenced more by psychological and social factors than by perceived control. Therefore, this study focuses on environmental awareness and subjective norm as the primary determinants of behavioral intention.

Nudge Theory

Nudge Theory, introduced by Richard H. Thaler and Cass R. Sunstein (2008), explains that individual behavior can be influenced through the design of the decision-making environment (choice architecture) without eliminating freedom of choice. Unlike regulatory approaches that rely on sanctions or substantial economic incentives, nudges operate by leveraging human cognitive tendencies to encourage choices that are considered beneficial for both individuals and society. This approach is known as libertarian paternalism, which seeks to steer individuals' behavior while preserving the availability of alternative options.

In the context of pro-environmental behavior, numerous studies have demonstrated that nudge-based interventions are effective in increasing individuals' participation in sustainable practices. The use of default options, simplified information, feedback mechanisms, and environmental message framing has been shown to enhance consumers' propensity to choose environmentally friendly alternatives compared to conventional persuasive approaches. The effectiveness of nudges becomes even more relevant in digital ecosystems, where consumer decisions are often made rapidly and are highly influenced by platform interface design.

In food delivery services, nudges can be implemented through features such as the "No Cutlery" option, recommendations for eco-friendly packaging, and sustainability-based reward points. These features serve as contextual stimuli that facilitate consumers in translating their environmental preferences into actual behavior. Therefore, Nudge Theory provides a conceptual foundation for explaining how platform policies and features implemented by *GrabFood* may

influence consumer behavior beyond the psychological factors described by the Theory of Planned Behavior.

Eco-Packaging and Sustainable Consumption

Eco-packaging refers to packaging solutions designed to minimize environmental impacts throughout their life cycle through the use of recyclable, reusable, biodegradable, or resource-efficient materials. In the food industry, eco-packaging has emerged as an important strategy to reduce plastic waste and support the transition toward a circular economy. Recent studies have emphasized that sustainable packaging not only concerns material substitution but also encompasses waste reduction, reusability, and consumer acceptance of environmentally friendly packaging alternatives (Bócoli et al., 2025).

The concept of eco-packaging is closely associated with sustainable consumption, which refers to consumption patterns that satisfy present needs while minimizing adverse environmental impacts and preserving resources for future generations. Sustainable consumption encourages individuals to incorporate environmental considerations into their purchasing and consumption decisions. Within digital food delivery ecosystems, sustainable consumption can be reflected in consumers' willingness to choose eco-friendly packaging, reduce the use of single-use plastics, and support environmentally responsible practices.

Previous studies have demonstrated that environmental concern and positive attitudes toward sustainable packaging significantly influence consumers' intentions to adopt environmentally friendly alternatives. Among Generation Z consumers, environmental awareness and perceived value of sustainable packaging have been found to positively affect purchase intentions and willingness to pay for eco-friendly products. This indicates that Generation Z represents a consumer segment with considerable potential to support sustainable consumption practices through their purchasing decisions (Lianita et al., 2024).

Despite growing environmental awareness, sustainable intentions do not always translate into actual behavior. In the context of digital food delivery services, consumers often prioritize convenience, speed, and economic considerations over environmental concerns. Recent studies on food delivery users have shown that environmental knowledge and social influences contribute to responsible consumption behavior, while convenience-oriented lifestyles may hinder the realization of sustainable intentions into actual practices. These findings highlight the importance of understanding the intention-behavior gap in digital consumption settings. Therefore, eco-packaging and sustainable consumption provide an important context for understanding consumers' actual

environmental behavior. In this study, the selection of eco-packaging on the *GrabFood* platform represents a form of sustainable consumption behavior through which Generation Z consumers translate their environmental concerns and behavioral intentions into actual actions (Theocharis et al., 2026).

Platform Policy Exposure

Platform policy exposure refers to the extent to which consumers are exposed to and aware of policies, features, and information provided by digital platforms to encourage certain behaviors. In the context of food delivery services, platform policy exposure includes consumers' interactions with environmentally oriented features, such as the "No Cutlery" option, eco-friendly packaging recommendations, and sustainability-related messages displayed within the application. Through repeated exposure to these interventions, digital platforms can influence users' preferences and decision-making processes by shaping the choice environment rather than restricting available options (Jesse et al., 2021).

Recent studies suggest that digital platforms can effectively promote desirable behaviors through digital nudging mechanisms embedded in interface design. Features such as default settings, labels, reminders, and information cues have been shown to encourage more environmentally responsible choices by reducing cognitive effort and simplifying decision-making processes. Moreover, the availability and visibility of environmental information enhance consumers' trust and strengthen their intentions to engage in green consumption behaviors (Fu et al., 2023). These features can therefore make sustainable choices more accessible and easier for consumers to adopt. This is particularly relevant in digital food delivery platforms, where consumers make quick and routine purchasing decisions.

Environmental Awareness

Environmental awareness refers to an individual's level of knowledge, concern, and understanding regarding environmental issues and the consequences of human activities on ecological sustainability. Individuals with higher environmental awareness tend to recognize the importance of environmental protection and are more likely to support environmentally responsible practices. In the context of sustainable consumption, environmental awareness has been identified as an important determinant of green behavioral intentions, as consumers with greater ecological awareness are more inclined to consider the environmental consequences of their consumption decisions (Hussain & Huang, 2022; Shen & Wang, 2022).

Previous studies have consistently demonstrated that environmental awareness positively influences green purchase intentions and environmentally responsible behaviors. Environmental knowledge and ecological concern

contribute to the development of favorable attitudes toward sustainable products, which subsequently increase consumers' willingness to adopt environmentally friendly alternatives. Moreover, environmental awareness indirectly affects actual behavior through the formation of behavioral intentions, highlighting its important role in promoting sustainable consumption (Xu et al., 2022).

In this study, environmental awareness represents consumers' understanding and concern regarding environmental problems caused by excessive packaging waste generated by food delivery services. Consistent with the Theory of Planned Behavior, environmental awareness is regarded as a representation of attitude toward behavior and is expected to positively influence consumers' behavioral intention to adopt eco-packaging alternatives (Hussain & Huang, 2022).

Subjective Norm

Subjective norm refers to the perceived social pressure that encourages individuals to perform or avoid a particular behavior. According to the Theory of Planned Behavior, subjective norm reflects the influence of important reference groups, such as family members, friends, and peers, on individuals' behavioral decisions (Ajzen, 1991). In the context of sustainable consumption, subjective norm represents the extent to which individuals perceive that people around them support environmentally responsible behavior.

Previous studies have shown that social influence plays an important role in shaping consumers' intentions toward green consumption. Individuals are more likely to adopt environmentally friendly behaviors when they perceive that significant others expect or encourage them to do so. The increasing role of social media and peer influence among younger generations has further strengthened the impact of subjective norms on sustainable consumption decisions (Xu et al., 2022). Among Generation Z consumers, subjective norm is particularly relevant because this generation is highly connected through digital platforms and social networks. Recommendations and opinions from peers, influencers, and communities may significantly affect their preferences and consumption patterns.

Behavioral Intention

Behavioral intention refers to an individual's willingness and readiness to perform a particular behavior and is considered the most immediate determinant of actual behavior in the Theory of Planned Behavior (Ajzen, 1991). Behavioral intention represents the extent to which individuals are committed to engaging in specific actions based on their attitudes, subjective norms, and other influencing factors.

In the context of sustainable consumption, behavioral intention reflects consumers' willingness to choose environmentally friendly products and services. Previous studies have consistently demonstrated that stronger behavioral intentions are associated with a greater likelihood of engaging in pro-environmental behaviors. For Generation Z consumers, behavioral intention plays a crucial role in determining the adoption of sustainable practices in digital environments. Although this generation generally demonstrates high environmental awareness, their actual decisions may still be influenced by convenience and platform characteristics. Therefore, behavioral intention serves as a mediating mechanism through which environmental awareness and subjective norm influence actual eco-packaging behavior (Jegorow, 2025).

Actual Eco-Packaging Usage Behavior

Actual behavior refers to the observable actions performed by individuals rather than merely their intentions or attitudes. In the context of this study, actual eco-packaging usage behavior represents consumers' real decisions to choose environmentally friendly packaging options and reduce the use of disposable plastic utensils when using food delivery services. Although consumers may express strong intentions to support sustainable practices, previous studies have shown that actual behavior often differs from stated intentions. This discrepancy is commonly referred to as the intention-behavior gap, where individuals fail to translate their pro-environmental intentions into concrete actions due to factors such as convenience, habits, and perceived costs (ElHaffar et al., 2020). Within digital food delivery environments, actual behavior is particularly influenced by platform characteristics and the ease of implementing environmentally friendly choices. Consumers frequently prioritize convenience and speed, which may weaken the realization of sustainable intentions. Therefore, understanding actual eco-packaging behavior is essential for evaluating the effectiveness of platform-based sustainability initiatives Kim et al. (2025).

Perceived Policy Effectiveness

Perceived policy effectiveness refers to individuals' beliefs regarding the extent to which a policy or intervention is capable of producing meaningful outcomes. In the context of environmental policies, perceived policy effectiveness reflects consumers' confidence that sustainability initiatives implemented by organizations or platforms can contribute to solving environmental problems. When consumers perceive these initiatives as effective, they are more likely to view sustainable choices as meaningful and worthwhile (Huber et al., 2020).

Research has shown that individuals are more likely to support and comply with environmental policies when they believe such policies are effective. Conversely, if consumers perceive that environmental initiatives have little

impact, they may be less motivated to translate their intentions into actual behavior. Therefore, perceived policy effectiveness represents an important factor influencing the success of behavioral interventions (Drews & van den Bergh, 2016).

In digital platforms, consumers' perceptions regarding the effectiveness of sustainability features may determine whether behavioral intentions are ultimately realized. Features such as eco-friendly packaging labels, "No Cutlery" options, and environmental campaigns are more likely to influence behavior when consumers believe that these interventions genuinely contribute to reducing plastic waste. Accordingly, perceived policy effectiveness is expected to strengthen the relationship between behavioral intention and actual eco-packaging usage behavior (Sunstein, 2022). The proposed relationships among the variables are illustrated in Figure 1, which presents the conceptual framework of this study.

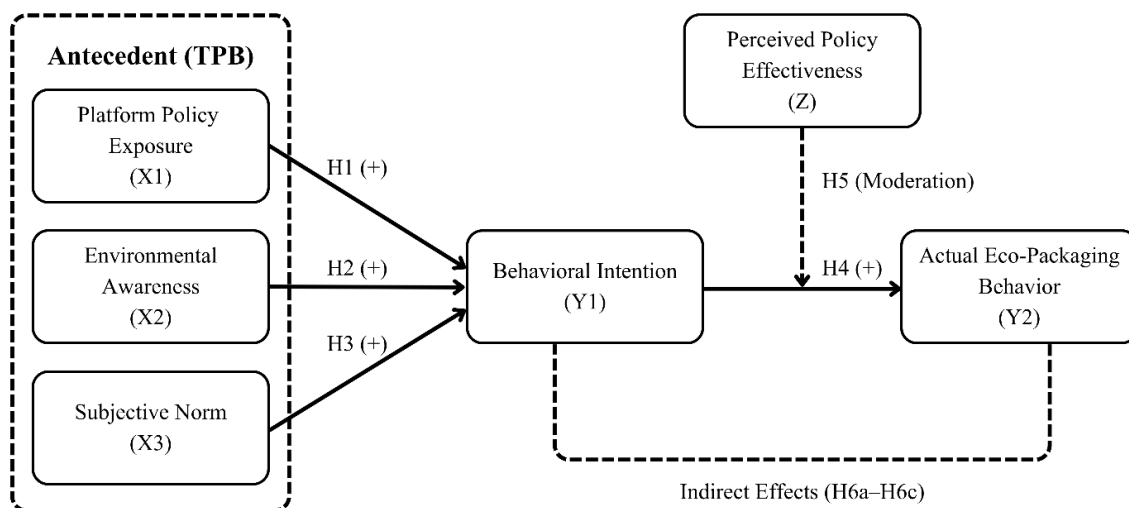


Figure 1 Research Conceptual Framework

- H1. Platform policy exposure positively influences Generation Z consumers' behavioral intention to choose eco-packaging in *GrabFood* services.
- H2. Environmental awareness positively influences Generation Z consumers' behavioral intention to choose eco-packaging in *GrabFood* services.
- H3. Subjective norm positively influences Generation Z consumers' behavioral intention to choose eco-packaging in *GrabFood* services.
- H4. Behavioral intention positively influences actual eco-packaging usage behavior in *GrabFood* services.

- H5. Perceived policy effectiveness strengthens the positive relationship between behavioral intention and actual eco-packaging usage behavior.
- H6. Behavioral intention mediates the positive effect of environmental awareness on actual eco-packaging usage behavior.

Methods

This study employs a quantitative approach with a survey research design to examine causal relationships among variables formulated within the research framework. The quantitative approach was selected because the study focuses on testing a theoretical model integrating the Theory of Planned Behavior (TPB) and Nudge Theory to explain eco-packaging usage behavior on *GrabFood* services in Indonesia. Data were collected through a structured questionnaire distributed online via Google Forms to respondents meeting the predetermined inclusion criteria.

The research population comprised all Generation Z consumers using *GrabFood* services in Indonesia. In this study, Generation Z is defined as individuals born between 1997 and 2008, or at least 17 years old at the time of the study. Purposive sampling was employed with the following criteria:

1. At least 17 years of age and falling within the Generation Z category.
2. Having used *GrabFood* at least once in the past month.
3. Residing in Indonesia.

The sample size was 120 respondents, deemed sufficient for Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis, as it exceeds the recommended 10-times rule minimum and satisfies the suggested sample size for a model of moderate complexity.

The research instrument was developed based on adapted indicators from prior studies relevant to the context of environmentally friendly behavior and digital services. All questionnaire items were measured using a five-point Likert scale, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Prior to full-scale distribution, the instrument was pilot-tested on 30 respondents with characteristics similar to the research population. This trial aimed to ensure clarity of language, response consistency, and initial validity before actual data collection.

This study involves six main constructs consisting of three exogenous variables, one mediating variable, one moderating variable, and one endogenous variable. Each construct and its measurement indicators are described below.

1. Platform Policy Exposure (X_1)

Platform policy exposure is defined as the level of consumer awareness, understanding, and interaction with *GrabFood*'s eco-packaging policy

implemented through the Grab Green program. This construct is measured using four indicators: Awareness of the "No Cutlery" feature available on the *GrabFood* app, Awareness of environmentally friendly packaging options provided by *GrabFood*, Having noticed information related to the Grab Green program while using the app, Frequently encountering environmental sustainability features or information.

2. *Environmental Awareness (X_2)*

Environmental awareness refers to the level of individual understanding and concern regarding the environmental impact of single-use packaging. This construct is measured using four indicators: Understanding the negative impact of plastic waste on the environment, Concern about environmental pollution caused by single-use packaging, Recognizing the importance of reducing single-use plastics in daily life, Feeling a personal responsibility for environmental conservation.

3. *Norma Subjektif (X_3)*

Subjective norms refer to an individual's perception of social expectations regarding eco-packaging use. This construct is measured using four indicators: Close friends support and encourage the use of eco-friendly packaging, Family encourages more sustainable responsible consumption behavior, The broader social environment views eco-packaging usage positively, Influencers or digital communities encourage the use of eco-friendly packaging.

4. *Behavioral Intention (Y_1)*

Behavioral intention refers to an individual's tendency and commitment to choose eco-packaging when using *GrabFood* in the future. This construct is measured using four indicators: Intending to choose eco-packaging on the next *GrabFood* transaction, Willing to reduce the use of single-use plastic cutlery when ordering food, Planning to select more environmentally friendly options when available on the app, Committed to consistently using eco-friendly features in every order.

5. *Perceived Platform Policy Effectiveness (Z)*

Perceived platform policy effectiveness is the consumer's belief that *GrabFood*'s eco-packaging policy can produce a tangible impact on reducing plastic waste and promoting environmental sustainability. This construct is measured using four indicators: *GrabFood*'s eco-packaging policy is considered effective in reducing plastic waste, Users' packaging choices are perceived as producing a real environmental impact, *GrabFood*'s sustainability programs are considered beneficial for environmental preservation, *GrabFood*'s policies are perceived as capable of driving widespread behavioral change among consumers.

6. *Actual Eco-Packaging Usage Behavior (Y_2)*

Actual behavior is defined as the frequency and consistency with which consumers choose eco-packaging options when using *GrabFood*. This construct is measured using four indicators: Routinely selecting the "No Cutlery" option on every *GrabFood* order, Choosing eco-friendly packaging whenever the option is available on the app, Actively reducing single-use packaging when ordering food through the platform, Consistently applying eco-friendly choices on every transaction made through *GrabFood*.

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. PLS-SEM was selected because it is suitable for examining relationships among latent constructs, including mediation and moderation effects, and is appropriate for prediction-oriented research without requiring strict multivariate normality assumptions. The analysis was conducted in two main stages: measurement model evaluation and structural model evaluation. The measurement model was assessed using outer loadings, Average Variance Extracted (AVE), composite reliability, Cronbach's alpha, and the Heterotrait–Monotrait Ratio (HTMT). Convergent validity was established when outer loadings exceeded 0.70 and AVE values were above 0.50, indicating that the indicators adequately represented their respective constructs. Construct reliability was evaluated using composite reliability and Cronbach's alpha, with values above 0.70 considered acceptable. Discriminant validity was assessed using HTMT, with values below 0.90 indicating adequate distinction among the constructs.

The structural model was evaluated using the coefficient of determination (R^2), effect size (f^2), predictive relevance (Q^2), and the significance of the path coefficients. The R^2 values were used to assess the model's explanatory power, while f^2 was examined to determine the relative contribution of each predictor to the endogenous constructs. Predictive relevance was assessed using Q^2 , and the significance of the structural relationships was tested through a bootstrapping procedure with 5,000 subsamples. Hypotheses were considered statistically supported when the t-statistic exceeded 1.96 and the p-value was below 0.05 at the 5% significance level.

The mediating role of Behavioral Intention (Y_1) in the relationships between the exogenous variables and Actual Behavior (Y_2) was assessed through the specific indirect effects generated by the bootstrapping procedure. The moderating role of Perceived Platform Policy Effectiveness (Z) was examined by testing the interaction between Behavioral Intention and Perceived Platform Policy Effectiveness in explaining Actual Eco-Packaging Usage Behavior. All procedures involving respondents were conducted in accordance with research ethics principles. Participants were informed about the purpose of the study, the confidentiality and anonymity of their responses, the voluntary nature of participation, and their right to withdraw at any time without consequence. All

collected data were used solely for academic purposes, and consent was obtained before respondents completed the questionnaire.

Result and Discussion

Overview of Respondents

This study successfully collected data from 120 respondents who are Generation Z consumers actively using *GrabFood* services in Indonesia. All respondents met the predetermined inclusion criteria: aged between 17 and 27 years, having used *GrabFood* at least once in the past month, and residing in Indonesia. Data were collected through an online questionnaire distributed purposively. A sample of 120 respondents was deemed sufficient for PLS-SEM analysis in accordance with the 10-times rule and exceeded the minimum threshold recommended for research models of moderate complexity.

Measurement Model Evaluation (Outer Model)

The measurement model was evaluated to assess the validity and reliability of the constructs in the research model. The assessment covered convergent validity, construct reliability, and discriminant validity to ensure that the indicators adequately represented their respective constructs and consistently measured the intended concepts. These assessments also confirmed that each construct was sufficiently distinct from the others, providing a reliable basis for further analysis of the structural model.

Convergent Validity Test

Convergent validity was assessed based on the outer loading values of each indicator and the Average Variance Extracted (AVE). Outer loading indicates how strongly an indicator represents its respective construct, while AVE reflects the extent to which the construct explains the variance of its indicators. An indicator is considered valid when the outer loading exceeds 0.70 and the AVE is above 0.50, indicating adequate convergent validity. The results are presented in Table 1.

Table 1 Indicator Outer Loading Results

Code	Construct / Indicator	Outer Loading	Remark
A1	Platform Policy Exposure – Awareness of the "No Cutlery" feature	0,700	Valid
A2	Awareness of <i>GrabFood</i> 's eco-friendly packaging options	0,647	Valid*
A3	Noticed information about the Grab Green program	0,594	Valid*
A4	Frequently encountering sustainability features on <i>GrabFood</i>	0,806	Valid

Code	Construct / Indicator	Outer Loading	Remark
B1	Environmental Awareness – Understanding the negative impact of plastic waste	0,803	Valid
B2	Concern about environmental pollution	0,802	Valid
B3	Aware of the importance of reducing single-use plastics	0,737	Valid
B4	Feels personal responsibility for environmental conservation	0,768	Valid
C1	Subjective Norms – Support from close friends	0,703	Valid
C2	Family encouragement for sustainable behavior	0,770	Valid
C3	Social environment views eco-packaging positively	0,794	Valid
C4	Influencers/communities encourage eco-packaging use	0,671	Valid*
D1	Behavioral Intention – Intends to choose eco-packaging on next transaction	0,777	Valid
D2	Willing to reduce use of plastic cutlery	0,889	Valid
D3	Plans to choose eco-friendly options when available	0,884	Valid
D4	Committed to consistently using eco-friendly features	0,874	Valid
E1	Perceived Effectiveness – <i>GrabFood's</i> policy effectively reduces plastic waste	0,743	Valid
E2	Users' packaging choices produce a real impact	0,827	Valid
E3	<i>GrabFood's</i> sustainability programs benefit the environment	0,743	Valid
E4	<i>GrabFood's</i> policies drive widespread behavioral change	0,793	Valid
F1	Actual Behavior – Routinely selects "No Cutlery"	0,689	Valid*

Code	Construct / Indicator	Outer Loading	Remark
F2	Chooses eco-friendly packaging when available	0,910	Valid
F3	Actively reduces single-use packaging when ordering	0,910	Valid
F4	Consistently applies eco-friendly choices on every transaction	0,930	Valid

**Note: Indicators A2, A3, C4, and F1 have outer loadings below 0.70 but were retained because the construct AVE values still meet the > 0.50 threshold and do not compromise overall convergent validity.*

Reliability and AVE Test

Construct reliability was evaluated using Composite Reliability (CR/rho_c), Composite Reliability rho_a, and Cronbach's Alpha. A construct is considered reliable if CR > 0.70 and Cronbach's Alpha > 0.70, indicating adequate internal consistency among the indicators. Results are presented in Table 2.

Table 2 Construct Reliability and Average Variance Extracted

Construct	Cronbach's Alpha	CR (rho_c)	CR (rho_a)	AVE
Platform Policy Exposure	0,701	0,783	0,653	0,478
Environmental Awareness	0,783	0,860	0,791	0,605
Subjective Norms	0,724	0,825	0,741	0,542
Behavioral Intention	0,879	0,917	0,891	0,735
Perceived Policy Effectiveness	0,786	0,859	0,806	0,604
Actual Eco-Packaging Behavior	0,883	0,922	0,903	0,749

Based on Table 2, all constructs meet the reliability criteria, with Cronbach's Alpha ranging from 0.701 to 0.883 and CR (rho_c) ranging from 0.783 to 0.922. AVE values for most constructs exceed 0.50, with the exception of Platform Policy Exposure (AVE = 0.478).

Discriminant Validity Test

Discriminant validity was tested using the Heterotrait-Monotrait (HTMT) ratio to determine whether each construct is sufficiently distinct from the other constructs in the research model. A construct demonstrates good discriminant validity when HTMT < 0.90. Results are presented in Table 3, providing evidence of the distinctiveness among the constructs.

Table 3 Heterotrait-Monotrait Ratio (HTMT)

Construct	PPE	EA	BI	SN	APB	PPPE
Platform Policy Exposure (PPE)	–					
Environmental Awareness (EA)	0,408	–				
Behavioral Intention (BI)	0,357	0,773	–			
Subjective Norms (SN)	0,407	0,544	0,645	–		
Actual Eco-Packaging Behavior (APB)	0,560	0,571	0,738	0,553	–	
Perceived Platform Policy Effectiveness (PPPE)	0,462	0,822	0,701	0,555	0,550	–

Based on Table 3, all HTMT values are below the 0.90 threshold, with the highest value found in the relationship between Environmental Awareness and Perceived Platform Policy Effectiveness (HTMT = 0.822). This value remains below the required threshold, confirming that all constructs in the model demonstrate good discriminant validity and are sufficiently distinct from one another.

Structural Model Evaluation (Inner Model)

Coefficient of Determination (R^2)

The coefficient of determination (R^2) indicates the proportion of variance in the endogenous variable that can be explained by the exogenous variables in the model. Results are presented in Table 4.

Table 4 Coefficient of Determination (R^2)

Endogenous Variable	R^2	R^2 Adjusted
Behavioral Intention (Y_1)	0,518	0,505
Actual Eco-Packaging Usage Behavior (Y_2)	0,444	0,430

Based on Table 4, the R^2 value for Behavioral Intention is 0.518, meaning 51.8% of the variance in behavioral intention can be explained by platform policy exposure, environmental awareness, and subjective norms. The R^2 value for Actual Eco-Packaging Usage Behavior is 0.444, meaning 44.4% of the variance in actual behavior can be explained by behavioral intention, perceived platform policy effectiveness, and the interaction variable. Both R^2 values fall within the moderate to substantial range according to Hair *et al.* (2019) criteria, indicating that the structural model has adequate predictive capability.

Direct Effects, Hypothesis Testing, and Effect Sizes (f^2)

The structural model was assessed by examining the direct effects, hypothesis testing, and effect sizes (f^2) of the proposed relationships. The results are presented in Table 5, including path coefficients (β), t-statistics, p-values, and effect sizes for each hypothesized relationship.

Table 5 Direct Effects, Hypothesis Testing, and Effect Sizes (f^2)

Hypothesis	Relationship	β	t-statistic	p-value	f^2	Decision
H1	PPE $\rightarrow$ BI	0.095	1.364	0.173	0.016	Rejected
H2	EA $\rightarrow$ BI	0.476	5.974	<0.001	0.349	Accepted
H3	SN $\rightarrow$ BI	0.318	3.589	<0.001	0.168	Accepted
H4	BI $\rightarrow$ APB	0.557	4.506	<0.001	0.249	Accepted
H5	PPPE $\times$ BI $\rightarrow$ APB	-0.014	0.158	0.875	0.000	Rejected

The results indicate that environmental awareness and subjective norm significantly influence behavioral intention, while platform policy exposure does not have a significant effect. Behavioral intention also has a significant positive effect on actual eco-packaging usage behavior. Meanwhile, the interaction between perceived policy effectiveness and behavioral intention does not significantly affect actual behavior. In terms of effect size, environmental awareness shows the largest effect on behavioral intention ($f^2 = 0.349$), followed by behavioral intention on actual behavior ($f^2 = 0.249$) and subjective norm on behavioral intention ($f^2 = 0.168$).

Mediation Analysis

Furthermore, mediation analysis was conducted to examine whether behavioral intention mediates the relationships between platform policy exposure, environmental awareness, subjective norm, and actual eco-packaging usage behavior. The mediation effects were evaluated using the path coefficient (β), t-statistic, and p-value to determine the significance and strength of the indirect relationships. This analysis helps assess whether these factors influence actual eco-packaging usage behavior through consumers' behavioral intention. A non-significant indirect effect suggests that behavioral intention does not significantly transmit the influence of the respective factor on actual eco-packaging usage behavior. The results of the mediation analysis are presented in Table 6.

Table 6 Mediation Effect Testing Results (Indirect Effect via Bootstrapping)

H	Mediation Path	β Indir.	t-stat	p-value	Remark
H6a	PPE $\rightarrow$ Behavioral Intention $\rightarrow$ Actual Behavior	0,053	1,292	0,196	Rejected
H6b	EA $\rightarrow$ Behavioral Intention $\rightarrow$ Actual Behavior	0,265	3,534	< 0,001	Accepted
H6c	SN $\rightarrow$ Behavioral Intention $\rightarrow$ Actual Behavior	0,177	2,778	0,005	Accepted

Discussion

Platform Policy Exposure on Behavioral Intention (H1)

The first hypothesis (H1), which states that platform policy exposure positively influences the behavioral intention of Generation Z consumers to choose eco-packaging on *GrabFood*, was rejected. Bootstrapping results show a path coefficient of $\beta = 0.095$ with a t-statistic = 1.364 ($p = 0.173$), which does not meet the significance criteria at the 5% level. This finding indicates that mere exposure to *GrabFood*'s environmentally friendly policies or features does not directly form strong pro-environmental behavioral intentions among Generation Z consumers. This result aligns with the arguments of Nudge Theory (Frischmann, 2021), which emphasizes that choice architecture design must go beyond simple information exposure. Consumers need more than awareness of a policy's existence; they require effective nudges through default option settings, ease of access, and direct feedback in order for behavioral intentions to materialize. This non-significance can also be explained by the green washing awareness literature among Gen Z, where this group tends to be skeptical of brand sustainability claims without clear evidence.

Environmental Awareness on Behavioral Intention (H2)

The second hypothesis (H2), which states that environmental awareness positively influences the behavioral intention of Generation Z consumers, was accepted. Results show a path coefficient of $\beta = 0.476$ with a t-statistic = 5.974 ($p < 0.001$), far exceeding the significance threshold. This effect is the largest among all predictors of behavioral intention in the model, with an effect size of $f^2 = 0.349$, classified as large. This finding is consistent with the Theory of Planned Behavior framework (Ajzen, 1991), in which attitude is the primary determinant of behavioral intention. Generation Z consumers with a deeper understanding of the negative impact of single-use plastic packaging on the environment tend to form stronger intentions to choose eco-friendly alternatives.

Subjective Norms on Behavioral Intention (H3)

The third hypothesis (H3), which states that subjective norms positively influence the behavioral intention of Generation Z consumers, was accepted. The path coefficient is $\beta = 0.318$ with a t-statistic = 3.589 ($p < 0.001$). An effect size of $f^2 = 0.168$ indicates a medium contribution. This finding affirms the relevance of the subjective norm component of TPB for Generation Z consumer behavior. Support and expectations from the social environment have been shown to significantly shape consumers' intentions to choose eco-packaging. This is consistent with Generation Z's characteristics as a group that is highly digitally connected and susceptible to social influence through media platforms (Usmi, 2022). This finding also highlights the potential of community-based and peer

influence communication strategies in promoting the adoption of pro-environmental behavior among young users.

Behavioral Intention on Actual Behavior (H4)

The fourth hypothesis (H4), which states that behavioral intention positively influences actual eco-packaging usage behavior, was accepted. The path coefficient is $\beta = 0.557$ with a t-statistic = 4.506 ($p < 0.001$). An effect size of $f^2 = 0.249$ is classified as medium and represents the strongest predictor of actual behavior in this model. Although a significant relationship exists between intention and actual behavior, there is a notable intention-behavior gap worth examining. Behavioral intention ($R^2 = 0.518$) explains 44.4% of the variance in actual behavior, yet 55.6% of the variance remains unexplained by the model, reflecting the presence of situational factors, contextual barriers, and cognitive load that hinder the conversion of intention into actual action. This phenomenon aligns with Kollmuss & Agyeman (2002) account of moral licensing and cognitive barrier mechanisms consistently found in pro-environmental behavior research. Generation Z consumers appear to hold relatively high intentions, yet the conversion of intention to actual behavior still faces barriers that have not been fully addressed by the current platform design.

The Moderating Role of Perceived Platform Policy Effectiveness (H5)

The fifth hypothesis (H5), which states that perceived platform policy effectiveness strengthens the effect of behavioral intention on actual behavior, was rejected. Results show an interaction path coefficient of $\beta = -0.014$ with a t-statistic = 0.158 ($p = 0.875$), far from the significance threshold. An effect size of $f^2 = 0.000$ confirms that the moderating influence is practically negligible. This finding indicates that consumers' beliefs in the effectiveness of GrabFood's eco-packaging policy do not significantly affect the strength of the relationship between intention and actual behavior. One relevant theoretical explanation is the moral licensing mechanism (Kollmuss & Agyeman, 2002): consumers who perceive platform policies as highly effective may feel that environmental responsibility has already been fulfilled by the platform, and therefore feel no personal need to take concrete action themselves. This condition may also reflect the phenomenon of diffusion of responsibility in a digital context, whereby consumers delegate pro-environmental behavior to the platform rather than internalizing it as personal conduct.

Mediation Effect of Behavioral Intention (H6)

Mediation effect testing results show that behavioral intention significantly mediates the influence of environmental awareness ($\beta = 0.265$, $t = 3.534$, $p < 0.001$) and subjective norms ($\beta = 0.177$, $t = 2.778$, $p = 0.005$) on actual eco-packaging usage behavior (H6 partially accepted). Meanwhile, the mediation effect of platform policy exposure through behavioral intention was not

significant ($\beta = 0.053$, $t = 1.292$, $p = 0.196$). These findings demonstrate that behavioral intention is an effective mediating mechanism for transmitting the influence of environmental awareness and subjective norms on consumers' actual behavior. This reinforces the validity of the TPB model in the context of digital pro-environmental behavior in Indonesia. Environmental awareness does not directly drive actual behavior; rather, it operates through the formation of behavioral intention first. The non-significance of platform policy exposure mediation reaffirms that information exposure alone is insufficient to drive a complete chain of pro-environmental behavior. Overall, the hypothesis testing results confirm that environmental awareness and subjective norms are the most dominant psychological factors in shaping the pro-environmental intentions and behaviors of Generation Z consumers on *GrabFood*. Platform policy exposure alone is insufficient to drive behavioral change, and moderation by perceived policy effectiveness was not found to be meaningful. The intention-behavior gap is confirmed in this study: while behavioral intention is significant, its conversion to actual behavior still faces substantial barriers requiring more strategic, behavioral-nudge-based platform design interventions.

Conclusion and Recommendations

This study aimed to analyze the intention-behavior gap phenomenon among Generation Z consumers in eco-packaging usage on *GrabFood* services in Indonesia by integrating the Theory of Planned Behavior (TPB) and Nudge Theory. Based on PLS-SEM analysis of 120 respondents, the following conclusions were drawn.

1. Environmental awareness and subjective norms were proven to have a positive and significant effect on the behavioral intention of Generation Z consumers to choose eco-packaging on *GrabFood*. Environmental awareness emerged as the most dominant factor in shaping behavioral intention, indicating that the higher consumers' understanding of and concern for environmental issues, the stronger their intention to use more environmentally friendly packaging options.
2. Platform policy exposure did not have a significant effect on consumer behavioral intention. This finding suggests that the availability of features and information related to *GrabFood*'s sustainability programs is insufficient to form pro-environmental behavioral intentions if not accompanied by more effective intervention designs capable of directly engaging users.
3. Behavioral intention had a positive and significant effect on actual eco-packaging usage behavior. This result confirms that intention is an important predictor in explaining consumers' pro-environmental behavior. The higher the intention to use eco-packaging, the greater the likelihood that consumers will realize it in actual behavior.

4. Perceived platform policy effectiveness was not proven to moderate the relationship between behavioral intention and actual behavior. Accordingly, consumers' beliefs in the effectiveness of *GrabFood*'s sustainability policies neither strengthen nor weaken the influence of intention on actual eco-packaging usage behavior.
5. Behavioral intention was proven to mediate the influence of environmental awareness and subjective norms on actual eco-packaging usage behavior. This finding indicates that environmental awareness and social pressure do not directly drive actual behavior; rather, they first form behavioral intention, which is then translated into concrete action.
6. The intention-behavior gap phenomenon was confirmed in this study. Although behavioral intention has a significant effect on actual behavior, the research model was only able to explain 44.4% of the variance in actual behavior. This indicates that numerous other factors outside the model influence the realization of pro-environmental behavior among Generation Z consumers.

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