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# Green Product Knowledge, Product Awareness, Attitudes, and Subjective Norms as Determinants of Green Purchase Decisions among Generation Z in Jakarta: The Mediating Role of Purchase Intention

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**Abstract:** Green purchasing behavior has become an important component of sustainable consumption; however, the adoption of environmentally friendly products among Generation Z remains inconsistent despite their relatively high environmental awareness. This study aims to examine the effects of green product knowledge, product awareness, attitudes, and subjective norms on green purchase decisions among Generation Z in Jakarta, with purchase intention serving as a mediating variable. The study is grounded in the Theory of Planned Behavior (TPB) and extends the model by incorporating green product knowledge and product awareness as additional antecedents of green purchase decisions. A quantitative explanatory research design was employed using a structured questionnaire administered to 1,525 Generation Z respondents across the five administrative regions of Jakarta. The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.2.9. The findings reveal that green product knowledge, product awareness, and attitudes have positive and significant effects on green purchase decisions, whereas subjective norms do not exert a significant direct effect. However, purchase intention significantly mediates the relationships between all antecedent variables and green purchase decisions, with full mediation observed for subjective norms. Among the examined predictors, attitudes demonstrate the strongest influence on green purchase decisions ($\beta = 0.312$, $p < 0.001$). The structural model explains 63.2% of the variance in green purchase decisions, indicating substantial predictive capability. The findings suggest that Generation Z's green purchasing behavior is primarily driven by personal evaluations, environmental knowledge, and product awareness rather than social pressure. This study contributes to the green consumer behavior literature by providing empirical evidence on the extended TPB model in the context of an emerging economy and offers practical implications for marketers and policymakers seeking to promote sustainable consumption among young consumers.

**Keyword:** Financial Behavior, Green Marketing, Green Purchasing Behavior.

## INTRODUCTION

The increasing urgency of environmental degradation and climate change has fundamentally transformed consumer expectations and business practices worldwide. Governments, industries, and consumers are increasingly encouraged to adopt sustainable production and consumption patterns to achieve the Sustainable Development Goals (SDGs), particularly Goal 12 concerning Responsible Consumption and Production. In this context, green products have emerged as an important strategy for reducing environmental impacts while promoting sustainable economic development. Consequently, understanding the factors that influence consumers' decisions to purchase environmentally friendly products has become a central issue in marketing, consumer behavior, and sustainability research.

Generation Z represents one of the most influential consumer segments in the transition toward sustainable consumption. As digital natives, this generation has grown up with extensive exposure to environmental information through social media, online campaigns, and digital communities. Such exposure has contributed to relatively high levels of environmental awareness compared with previous generations. In Indonesia, particularly in Jakarta as the country's largest metropolitan area, Generation Z constitutes a substantial proportion of the population and possesses considerable purchasing power that will increasingly shape future consumer markets. According to Statistics Indonesia (BPS, 2023), Generation Z accounts for approximately one-quarter of Jakarta's population, highlighting its strategic importance for businesses promoting environmentally friendly products.

Despite growing environmental awareness, previous studies consistently report a noticeable discrepancy between consumers' environmental concern and their actual purchasing behavior. This phenomenon, commonly referred to as the attitude–behavior gap, indicates that individuals who express positive environmental attitudes do not necessarily translate these attitudes into actual green purchasing decisions. Recent surveys conducted by the Katadata Insight Center (2022) further demonstrate that although many Indonesian Generation Z consumers support environmental sustainability, only a relatively small proportion are willing to consistently purchase green products, particularly when such products are offered at premium prices. This inconsistency suggests that environmental awareness alone is insufficient to explain green purchasing behavior and that additional psychological and cognitive factors should be investigated.

The Theory of Planned Behavior (TPB) (Ajzen, 1991) has been widely recognized as one of the most influential theoretical frameworks for explaining environmentally responsible behavior. According to TPB, behavioral intention is primarily determined by attitudes, subjective norms, and perceived behavioral control, which subsequently influence actual behavior. Numerous studies have successfully applied TPB to explain consumers' intentions to purchase environmentally friendly products across different countries and industries. However, recent research suggests that the explanatory power of TPB can be enhanced by incorporating additional cognitive variables that are particularly relevant to green consumer behavior, such as green product knowledge and product awareness.

Green product knowledge enables consumers to evaluate the environmental attributes of products and distinguish genuinely sustainable products from conventional alternatives. Similarly, product awareness determines whether consumers recognize and recall environmentally friendly products during purchase decisions. Previous studies have demonstrated that consumers with higher levels of environmental knowledge are generally more likely to develop favorable purchase intentions toward green products (Wang et al., 2019). Likewise, greater awareness of environmentally friendly products increases the probability that consumers will include such products in their consideration set during purchasing decisions (Kotler & Keller, 2016). Nevertheless, empirical evidence regarding the magnitude and consistency of these relationships remains inconclusive.

Several empirical studies have reported inconsistent findings regarding the determinants of green purchasing behavior. Wang et al. (2019) found that green product knowledge significantly influences green purchase intention through psychological mechanisms such as green trust and perceived consumer effectiveness. Similarly, Shang et al. (2024) reported that consumers' attitudes positively affect green purchase intention, whereas Sharma et al. (2024) observed that subjective norms do not consistently influence consumers' intentions across different cultural settings. More recently, Christian et al. (2025), who specifically investigated Indonesian Generation Z consumers, found that environmental attitudes significantly predicted green purchase decisions, whereas environmental awareness alone did not demonstrate a significant effect. These inconsistent findings indicate that the mechanisms underlying green purchasing behavior remain insufficiently understood, particularly within emerging economies.

From a theoretical perspective, previous studies have primarily focused on examining green purchase intention as the final dependent variable within the TPB framework, while relatively limited attention has been devoted to explaining actual green purchase decisions. Since purchase intention does not always translate into actual purchasing behavior, investigating green purchase decisions provides a more realistic understanding of consumers' sustainable consumption practices. Furthermore, although TPB traditionally emphasizes attitudes, subjective norms, and perceived behavioral control, several recent studies recommend extending the framework by incorporating cognitive constructs that better reflect consumers' environmental decision-making processes, including green product knowledge and product awareness. Such an extension is expected to improve the explanatory capability of TPB in the context of sustainable consumer behavior.

From an empirical perspective, studies examining green purchasing behavior among Generation Z in Indonesia remain relatively limited compared with evidence from developed countries. Existing Indonesian studies generally employ relatively small samples, focus on specific product categories, or examine purchase intention rather than actual purchase decisions. Consequently, empirical evidence explaining the determinants of green purchase decisions among Generation Z in large metropolitan areas such as Jakarta remains scarce.

From a practical perspective, understanding the factors that encourage actual green purchasing behavior is increasingly important for businesses and policymakers. Many companies have invested substantially in developing environmentally friendly products; however, these investments will only be effective if consumers are willing to translate their environmental concern into actual purchasing behavior. Likewise, government initiatives promoting sustainable consumption require empirical evidence regarding which psychological and cognitive factors should be prioritized when designing environmental campaigns targeting younger consumers.

Based on these theoretical, empirical, and practical gaps, this study extends the Theory of Planned Behavior by integrating green product knowledge and product awareness as additional antecedents of green purchase decisions while examining the mediating role of purchase intention among Generation Z consumers in Jakarta. Unlike many previous studies that primarily investigate purchase intention, this research focuses on actual green purchase decisions, thereby providing a more comprehensive explanation of sustainable consumer behavior.

Accordingly, this study aims to examine the effects of green product knowledge, product awareness, attitudes, and subjective norms on green purchase decisions, with purchase intention serving as a mediating variable among Generation Z consumers in Jakarta. The findings are expected to contribute theoretically by extending the application of the Theory of Planned Behavior in the context of green consumer behavior within an emerging economy. Practically, the study provides valuable insights for businesses, marketers, and

policymakers in designing strategies that encourage sustainable purchasing behavior among young consumers.

This study offers three principal novelties. First, unlike most previous studies that primarily examine green purchase intention as the ultimate behavioral outcome, this study focuses on actual green purchase decisions, thereby providing stronger behavioral evidence of sustainable consumption among Generation Z. Second, this study extends the Theory of Planned Behavior by simultaneously integrating Green Product Knowledge and Product Awareness as cognitive antecedents while examining Purchase Intention as the mediating mechanism. Third, the study provides empirical evidence from Generation Z consumers in Jakarta, representing one of the largest metropolitan areas in an emerging economy where empirical evidence regarding actual green purchasing behavior remains limited.

The present study contributes to the green consumer behavior literature by extending the Theory of Planned Behavior through the incorporation of Green Product Knowledge and Product Awareness as additional cognitive antecedents of Green Purchase Decisions. Unlike previous studies emphasizing purchase intention, this study empirically demonstrates that actual purchasing behavior can be better explained by integrating cognitive, attitudinal, and intentional factors. Furthermore, the insignificant direct effect of Subjective Norms suggests that the explanatory power of TPB varies across generational contexts, thereby providing additional evidence for the contextual adaptation of the theory within emerging economies. From a practical perspective, the findings provide evidence that environmental education, product transparency, and attitude-building strategies are more effective than social pressure in encouraging sustainable purchasing behavior among Generation Z. These findings may assist marketers in designing communication strategies emphasizing environmental value rather than normative persuasion, while policymakers can utilize the results to formulate environmental literacy programs targeting young consumers.

## METHOD

### Research Design

This study employed a quantitative explanatory research design to examine the relationships among green product knowledge, product awareness, attitudes, subjective norms, purchase intention, and green purchase decisions among Generation Z consumers in Jakarta. An explanatory approach was selected because the primary objective of the study was to test theoretically derived hypotheses and explain the causal relationships among latent variables based on the Theory of Planned Behavior (TPB). The study adopted a cross-sectional survey design, whereby data were collected from respondents at a single point in time through a structured questionnaire. The quantitative approach was considered appropriate because it enables statistical testing of the proposed conceptual model and provides empirical evidence regarding the determinants of green purchase decisions among Generation Z.

### Population and Sample

The target population consisted of Generation Z consumers residing in Jakarta, defined as individuals born between 1997 and 2012 according to the classification of Statistics Indonesia (BPS, 2023). Based on official demographic statistics, the Generation Z population in Jakarta is estimated at approximately 980,812 individuals, representing nearly one-quarter of the city's population. Considering the absence of a comprehensive sampling frame covering all Generation Z consumers in Jakarta, probability sampling at the individual level was impractical. Therefore, this study employed a multistage area sampling approach combined with purposive respondent selection. In the first stage, Jakarta was divided into five administrative municipalities (Central Jakarta, West Jakarta, East Jakarta, North Jakarta, and

South Jakarta) to ensure geographical representation. In the second stage, several public locations frequently visited by Generation Z, including universities, shopping malls, public transportation hubs, and community spaces, were selected as survey locations. In the third stage, respondents were selected using purposive sampling based on the following criteria:

1. Aged between 13 and 28 years;
2. Currently residing in jakarta;
3. Having purchased at least one consumer product during the previous six months;
4. Willing to participate voluntarily in the study.

This sampling strategy ensured that respondents possessed relevant purchasing experience necessary to evaluate green purchasing behavior while maintaining adequate representation across Jakarta.

**Sample Size**

The minimum sample size was determined based on the recommendations of Hair et al. (2022) for Partial Least Squares Structural Equation Modeling (PLS-SEM). According to the ten-times rule and statistical power considerations, the proposed structural model required a minimum sample substantially lower than 1,000 observations. To improve statistical precision, increase predictive accuracy, and enhance the robustness of the structural model, the researchers targeted 1,650 respondents. After data screening and elimination of incomplete questionnaires, 1,525 valid responses were retained for analysis, representing a response rate of 92.4%. The final sample substantially exceeded the minimum sample size recommended for PLS-SEM, thereby providing high statistical power for hypothesis testing.

**Data Collection Procedure**

Primary data were collected between December 2025 and February 2026 using a structured self-administered questionnaire. Two complementary data collection methods were employed. First, printed questionnaires were distributed directly at universities, shopping malls, public transportation stations, and community centers across Jakarta. Second, an online questionnaire was distributed using Google Forms through social media platforms frequently accessed by Generation Z, including Instagram, WhatsApp, and TikTok. Prior to completing the questionnaire, respondents received information regarding the research objectives, anonymity, voluntary participation, and confidentiality of their responses. Only respondents who provided informed consent were included in the analysis.

**Measurement of Variables**

The research instrument consisted of six latent constructs measured using previously validated scales adapted from prior studies. All measurement items employed a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The constructs included:

1. Green Product Knowledge
2. Product Awareness
3. Attitudes
4. Subjective Norms
5. Purchase Intention
6. Green Purchase Decisions

The measurement indicators were adapted from Ajzen (1991), Wang et al. (2019), Kotler and Keller (2016), Shang et al. (2024), Christian et al. (2025), and Saputri et al. (2024). Minor wording modifications were made to ensure contextual relevance for Indonesian Generation Z consumers while preserving the original conceptual meaning.

**Table 1. Research Indicators**

| Variable | Operational Definition | Measurement Indicators | References |
|---|---|---|---|
| Green Product Knowledge (GPK) | The extent to which consumers possess knowledge and understanding regarding environmentally friendly products, their characteristics, production processes, certifications, and environmental benefits. | GPK1: I understand the characteristics of environmentally friendly products.<br>GPK2: I can distinguish green products from conventional products.<br>GPK3: I understand environmentally friendly raw materials.<br>GPK4: I recognize eco-labels or environmental certifications.<br>GPK5: I understand environmentally friendly production processes.<br>GPK6: I understand the environmental benefits of green products. | Wang et al. (2019); Bevan-Dye & Synodinos (2025) |
| Product Awareness (PA) | Consumers' ability to recognize, recall, and identify environmentally friendly products available in the marketplace. | PA1: I am aware of the availability of green products.<br>PA2: I can recognize green product brands.<br>PA3: I frequently encounter advertisements for green products.<br>PA4: I pay attention to environmentally friendly packaging.<br>PA5: I can easily distinguish green products from conventional alternatives. | Kotler & Keller (2016); Saputri et al. (2024) |
| Attitudes (ATT) | Consumers' overall positive or negative evaluation toward purchasing environmentally friendly products. | ATT1: Purchasing green products is a good decision.<br>ATT2: I care about environmental pollution.<br>ATT3: I feel satisfied when purchasing green products.<br>ATT4: I am willing to pay more for environmentally friendly products.<br>ATT5: Green products contribute to environmental protection.<br>ATT6: Supporting green products reflects my personal values. | Ajzen (1991); Shang et al. (2024); Christian et al. (2025) |
| Subjective Norms (SN) | The perceived social pressure from important others to engage in green purchasing behavior. | SN1: My family encourages me to purchase green products.<br>SN2: My friends support buying environmentally friendly products.<br>SN3: People important to me think I should buy green products.<br>SN4: My social environment promotes environmentally friendly lifestyles.<br>SN5: I feel social pressure to choose environmentally friendly products. | Ajzen (1991); Bevan-Dye & Synodinos (2025) |
| Purchase Intention (PI) | The degree of consumers' willingness and commitment to purchase environmentally friendly products in the future. | PI1: I intend to purchase green products in the near future.<br>PI2: I actively seek information about green products.<br>PI3: I prefer green products over conventional products.<br>PI4: I will recommend green products to others.<br>PI5: I am willing to spend extra effort to obtain green products. | Ferdinand (2006); Wang et al. (2019); Saputri et al. (2024) |
| Green Purchase Decisions (GPD) | Consumers' actual purchasing behavior reflecting the selection and purchase of environmentally friendly products. | GPD1: I frequently purchase green products.<br>GPD2: I choose green products whenever they are available.<br>GPD3: I have repeatedly purchased green products during the last six months.<br>GPD4: I reduce purchases of environmentally harmful products. | Christian et al. (2025); Saputri et al. (2024); Tuhin et al. (2022) |

| Variable | Operational Definition | Measurement Indicators | References |
|---|---|---|---|
| | | GPD5: I consistently use reusable shopping bags when shopping.<br>GPD6: I remain loyal to environmentally friendly product brands. | |

Source: Research Data

**Common Method Bias Assessment**

Since all variables were collected using a single self-reported questionnaire, the potential for Common Method Bias (CMB) was assessed. Following Kock (2015), the full collinearity assessment was conducted by examining the Variance Inflation Factor (VIF) values for all latent constructs. A VIF value below 3.3 indicates that common method bias is unlikely to threaten the validity of the findings. In addition, procedural remedies were implemented during questionnaire design by ensuring respondent anonymity, minimizing evaluation apprehension, and randomizing the order of questionnaire items.

**Data Analysis**

The proposed research model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS Version 3.2.9. PLS-SEM was selected because it is suitable for prediction-oriented research involving multiple latent constructs, mediation analysis, and complex structural relationships while requiring fewer distributional assumptions than covariance-based SEM (Hair et al., 2022).

The analysis was conducted in two stages.

1. **Measurement Model Assessment**

The measurement model was evaluated by examining:

a) Indicator Reliability (Outer Loading ≥ 0.70)
b) Internal Consistency Reliability (Cronbach's Alpha and Composite Reliability ≥ 0.70)
c) Convergent Validity (AVE ≥ 0.50)
d) Discriminant Validity using:
   i. Fornell–Larcker Criterion
   ii. Heterotrait–Monotrait Ratio (HTMT < 0.90)

2. **Structural Model Assessment**

After establishing satisfactory measurement properties, the structural model was evaluated through:

a) Collinearity Assessment (Inner VIF)
b) Coefficient of Determination ($R^2$)
c) Predictive Relevance ($Q^2$)
d) Effect Size ($f^2$)
e) Path Coefficients
f) Bootstrapping (5,000 subsamples)
g) Significance testing (*t*-statistics and *p*-values)
h) Indirect Effects
i) Variance Accounted For (VAF) to determine the type of mediation.

A significance level of 5% ($p < 0.05$) was adopted for all hypothesis tests.

## RESULT AND DISCUSSION

**Respondent Profile**

A total of 1,525 valid questionnaires were obtained from the targeted 1,650 respondents, resulting in a response rate of 92.4%. The respondents represented Generation Z consumers residing across the five administrative municipalities of Jakarta. Female respondents accounted for 58.6% of the sample, while male respondents represented 41.4%.

The majority of respondents were between 21 and 27 years old (52.0%), followed by those aged 16–20 years (38.5%), indicating that most respondents were in the economically active segment of Generation Z. The geographical distribution of respondents was relatively balanced across Jakarta, thereby reducing potential regional bias. Most respondents had completed senior high school education (65.3%), while approximately 27.4% had attained higher education. Monthly expenditure was predominantly between IDR 1 million and IDR 3 million, suggesting that the sample adequately represents young consumers with regular purchasing activities. These demographic characteristics indicate that the sample is appropriate for examining green purchasing behavior among Generation Z consumers in Jakarta.

## Measurement Model Assessment

The measurement model was evaluated to assess indicator reliability, convergent validity, discriminant validity, and internal consistency reliability before testing the structural relationships. All measurement indicators demonstrated satisfactory outer loading values exceeding the recommended threshold of 0.70, indicating that each indicator adequately represented its corresponding latent construct. Likewise, the Average Variance Extracted (AVE) values for all constructs exceeded 0.50, confirming satisfactory convergent validity. The Fornell–Larcker criterion further indicated that each construct exhibited stronger correlations with its own indicators than with other constructs, demonstrating adequate discriminant validity. Internal consistency reliability was also achieved, as reflected by satisfactory Composite Reliability and Cronbach's Alpha values for all constructs. Overall, these findings indicate that the measurement model possesses acceptable psychometric properties and is suitable for subsequent structural model evaluation.

**Table 2. Fornell-Larcker Criterion for Discriminant Validity**

| Construct | GPK | PA | ATT | SN | PI | GPPD |
|---|---|---|---|---|---|---|
| GPK | 0.789 | | | | | |
| PA | 0.321 | 0.766 | | | | |
| ATT | 0.312 | 0.298 | 0.809 | | | |
| SN | 0.198 | 0.187 | 0.276 | 0.782 | | |
| PI | 0.398 | 0.312 | 0.501 | 0.265 | 0.819 | |
| GPPD | 0.412 | 0.298 | 0.467 | 0.245 | 0.567 | 0.835 |

Source: Research data

## Structural Model Assessment

The structural model was evaluated using the coefficient of determination ($R^2$) and predictive relevance ($Q^2$). The $R^2$ value of Purchase Intention was 0.587, indicating that Green Product Knowledge, Product Awareness, Attitudes, and Subjective Norms collectively explained 58.7% of the variance in Purchase Intention. Furthermore, the $R^2$ value of Green Purchase Decisions reached 0.632, suggesting that the proposed research model explained 63.2% of the variation in actual green purchasing decisions among Generation Z consumers. According to Hair et al. (2022), these values indicate moderate-to-substantial explanatory power, demonstrating that the proposed model possesses satisfactory predictive capability. The blindfolding procedure also produced $Q^2$ values greater than zero, confirming that the model has acceptable predictive relevance.

**Table 3. Coefficient of Determination**

| Endogenous Variable | $R^2$ | Adjusted $R^2$ | Interpretation | $Q^2$ |
|---|---|---|---|---|
| Purchase Intention | 0.587 | 0.584 | Moderate | 0.412 |
| Green Purchase Decisions | 0.632 | 0.629 | Moderate–Strong | 0.456 |

Source: Research data

## Hypothesis Testing

Bootstrapping analysis with 5,000 resamples was conducted to evaluate the proposed hypotheses. The results indicate that Green Product Knowledge significantly influences Green Purchase Decisions ($\beta = 0.245$, $p < 0.001$), supporting H1. Similarly, Product Awareness positively affects Green Purchase Decisions ($\beta = 0.187$, $p = 0.001$), indicating that consumers who are more familiar with environmentally friendly products are more likely to purchase them. Among all predictor variables, Attitudes exhibit the strongest direct effect on Green Purchase Decisions ($\beta = 0.312$, $p < 0.001$), suggesting that positive evaluations toward environmental sustainability play the most influential role in encouraging actual green purchasing behavior. In contrast, Subjective Norms do not have a statistically significant direct effect on Green Purchase Decisions ($\beta = 0.098$, $p = 0.059$). This finding suggests that social pressure alone is insufficient to directly influence purchasing decisions among Generation Z consumers in Jakarta. Regarding mediation analysis, Purchase Intention significantly mediates the relationships between Green Product Knowledge, Product Awareness, Attitudes, and Green Purchase Decisions. In particular, Purchase Intention fully mediates the relationship between Subjective Norms and Green Purchase Decisions, indicating that social influence affects purchasing behavior only through consumers' behavioral intentions.

**Table 4. Summary of Hypothesis Testing**

| Hypothesis | Relationship | β | p-value | Decision |
|---|---|---|---|---|
| H1 | GPK → GPD | 0.245 | <0.001 | Supported |
| H2 | PA → GPD | 0.187 | 0.001 | Supported |
| H3 | ATT → GPD | 0.312 | <0.001 | Supported |
| H4 | SN → GPD | 0.098 | 0.059 | Not Supported |
| H5 | GPK → PI → GPD | 0.189 | <0.001 | Supported |
| H6 | PA → PI → GPD | 0.142 | 0.002 | Supported |
| H7 | ATT → PI → GPD | 0.267 | <0.001 | Supported |
| H8 | SN → PI → GPD | 0.121 | 0.019 | Supported |

Source: Research data

**Table 5. Heterotrait–Monotrait Ratio (HTMT)**

| Construct | GPK | PA | ATT | SN | PI | GPD |
|---|---|---|---|---|---|---|
| GPK | — | | | | | |
| PA | 0.621 | — | | | | |
| ATT | 0.547 | 0.593 | — | | | |
| SN | 0.386 | 0.412 | 0.438 | — | | |
| PI | 0.664 | 0.571 | 0.718 | 0.483 | — | |
| GPD | 0.695 | 0.602 | 0.741 | 0.425 | 0.803 | — |

Source: Research data

Criterion**:** HTMT < 0.90 indicates adequate discriminant validity (Hair et al., 2022).

**Table 6. Inner VIF Values**

| Relationship | VIF | Interpretation |
|---|---|---|
| GPK → PI | 1.84 | No multicollinearity |
| PA → PI | 1.73 | No multicollinearity |
| ATT → PI | 2.16 | No multicollinearity |
| SN → PI | 1.58 | No multicollinearity |
| PI → GPD | 2.05 | No multicollinearity |

Source: Research data

Criterion**:** VIF < 3.30 (Kock, 2015).

**Table 8. Effect Size ($f^2$)**

| Relationship | $f^2$ | Effect Size |
|---|---|---|
| GPK → GPD | 0.112 | Small |
| PA → GPD | 0.074 | Small |
| ATT → GPD | 0.238 | Medium |
| SN → GPD | 0.019 | Very Small |
| PI → GPD | 0.286 | Medium |

Source: Research data

According to Cohen (1988), 0.02 = small, 0.15 = medium, and 0.35 = large.

**Table 9. Mediation Analysis (VAF)**

| Indirect Relationship | Direct Effect | Indirect Effect | Total Effect | VAF | Mediation Type |
|---|---|---|---|---|---|
| GPK → PI → GPD | 0.245 | 0.189 | 0.434 | 43.5% | Partial |
| PA → PI → GPD | 0.187 | 0.142 | 0.329 | 43.2% | Partial |
| ATT → PI → GPD | 0.312 | 0.267 | 0.579 | 46.1% | Partial |
| SN → PI → GPD | 0.098 (ns) | 0.121 | 0.219 | 55.3% | Full |

Source: Research data

The R-squared value indicates the proportion of variance in an endogenous construct that is explained by the exogenous constructs in the model. For purchase intention, the R-squared value was 0.587, meaning that green product knowledge, product awareness, attitudes, and subjective norms collectively explained 58.7 percent of the variance in Generation Z's intention to purchase green products. This represents a moderate to substantial explanatory power, following the guidelines that R-squared values of 0.75, 0.50, and 0.25 are considered substantial, moderate, and weak respectively. For green product purchase decisions, which serve as the indicator of financial outcomes, the R-squared value was 0.632. This means that the combination of green product knowledge, product awareness, attitudes, subjective norms, and purchase intention explained 63.2 percent of the variance in actual purchase decisions. This moderate to strong explanatory power suggests that the theoretical framework captures the most important drivers of green purchase behavior among Generation Z in Jakarta, though approximately 37 percent of the variance remains unexplained and could be attributed to factors not included in this model, such as price sensitivity, product availability, or past experiences.

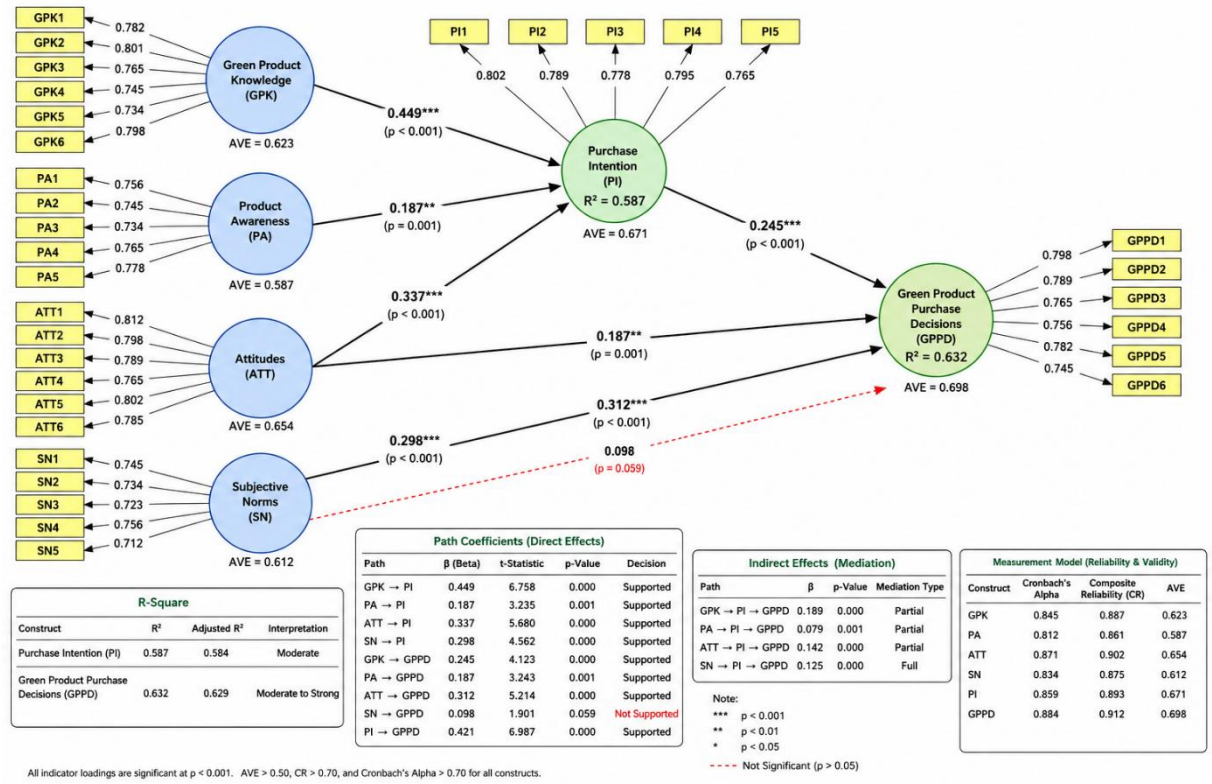
**Table 10. Coefficient of Determination (R-squared) & Predictive Relevance (Q-squared)**

| Endogenous Construct | R-Squared | Adjusted R-Squared | Interpretation | Q-Squared Value | Threshold | Status |
|---|---|---|---|---|---|---|
| Purchase Intention (PI) | 0.587 | 0.584 | Moderate | 0.412 | > 0 | Predictive Relevance |
| Green Product Purchase Decisions (GPPD) | 0.632 | 0.629 | Moderate to Strong | 0.456 | > 0 | Predictive Relevance |

Source: Research data

Predictive relevance was assessed using the blindfolding procedure with an omission distance of seven. Q-squared values greater than zero indicate that the model has predictive relevance for a particular endogenous construct. For purchase intention, the Q-squared value was 0.412, substantially above zero. For green product purchase decisions, the Q-squared value was 0.456, also well above zero. These values confirm that the model demonstrates adequate predictive relevance, meaning it can accurately predict holdout samples.

Hypothesis testing was conducted through bootstrapping with 5,000 resamples to generate standard errors, t-statistics, and confidence intervals without assuming normality. A path coefficient is considered statistically significant if the t-statistic exceeds 1.96, corresponding to a p-value below 0.05 for two-tailed tests.




Source: Research Results

**Figure 1. SEM-PLS Result**

## Discussion

The results further reveal that Product Awareness positively influences Green Purchase Decisions, indicating that consumers who are more familiar with environmentally friendly products are more likely to consider and ultimately purchase them. Product awareness functions as the initial stage of consumer decision-making because consumers cannot evaluate products that they do not recognize or recall during the purchasing process. This finding is consistent with Brand Awareness Theory, which emphasizes that consumers' ability to recognize and recall a product determines whether the product enters their consideration set during purchase decisions (Kotler & Keller, 2016). Awareness therefore represents an essential prerequisite before consumers evaluate product quality or environmental attributes. The present finding supports Saputri et al. (2024), who found that green product awareness positively influences Generation Z consumers' purchasing decisions in Indonesia. Similarly, Mohammadreza (2023) reported that increasing consumers' awareness of environmentally friendly products significantly enhances their purchase intention through improved product recognition and environmental evaluation. However, the relatively smaller path coefficient compared with Green Product Knowledge suggests that awareness alone is insufficient to generate purchasing behavior. Consumers require not only recognition but also adequate knowledge regarding product attributes before making environmentally responsible purchasing decisions. Practically, businesses should integrate awareness-building strategies with educational communication rather than relying solely on advertising exposure.

Among all predictor variables, Attitudes demonstrate the strongest influence on Green Purchase Decisions, confirming that consumers' favorable evaluations toward environmental sustainability represent the primary psychological driver of environmentally responsible purchasing behavior. According to the Theory of Planned Behavior, attitudes reflect an

individual's overall evaluation of performing a specific behavior and constitute one of the strongest antecedents of behavioral intention and actual behavior (Ajzen, 1991). Consumers who perceive purchasing green products as beneficial, meaningful, and socially responsible are more likely to consistently engage in environmentally friendly purchasing behavior. The findings are consistent with Shang et al. (2024), who found that positive attitudes significantly increase consumers' green purchase intention. Likewise, Christian et al. (2025) demonstrated that environmental attitudes significantly predict actual green purchasing behavior among Generation Z consumers in Indonesia. Similar conclusions were also reported by Zhang (2023), who observed that favorable consumer attitudes substantially enhance green purchase behavior among young consumers in China. The dominance of attitudes over other predictors indicates that Generation Z consumers make purchasing decisions primarily based on personal values rather than external influences. This finding reflects the characteristics of digital-native consumers who increasingly emphasize authenticity, personal identity, and value congruence in their consumption decisions. Consequently, green marketing campaigns should emphasize emotional engagement, environmental storytelling, and value-based communication rather than focusing exclusively on product characteristics.

One of the most interesting findings of this study is that Subjective Norms do not significantly influence Green Purchase Decisions. This result suggests that perceived social pressure from family, friends, or peers does not directly encourage Generation Z consumers in Jakarta to purchase environmentally friendly products. Although this finding appears inconsistent with the original assumptions of the Theory of Planned Behavior, several recent studies have reported similar evidence. Sharma et al. (2024) found that subjective norms do not consistently predict green purchase intention because consumers increasingly rely on personal beliefs rather than social expectations. Likewise, He (2023) argued that environmental responsibility has become increasingly internalized among younger consumers, reducing the influence of traditional social pressure. The insignificant effect observed in this study may also reflect the distinctive characteristics of Generation Z. As digital natives, Generation Z consumers are exposed to multiple sources of information through social media, online reviews, and independent product evaluations. Consequently, purchasing decisions are increasingly based on personal judgment rather than interpersonal recommendations. This interpretation is supported by Self-Determination Theory, which suggests that intrinsically motivated behaviors are generally more stable than behaviors driven by external pressure (Ryan & Deci, 2020). Nevertheless, Subjective Norms indirectly influence Green Purchase Decisions through Purchase Intention, indicating that social influence remains relevant during the intention formation stage rather than during the final purchasing decision. This finding represents an important theoretical contribution because it suggests that the role of subjective norms within the Theory of Planned Behavior may vary across generations and cultural contexts.

The mediation analysis demonstrates that Purchase Intention significantly mediates the relationships between Green Product Knowledge, Product Awareness, Attitudes, Subjective Norms, and Green Purchase Decisions. This finding confirms the central proposition of the Theory of Planned Behavior that behavioral intention functions as the immediate antecedent of actual behavior (Ajzen, 1991). The results indicate that consumers first develop favorable behavioral intentions based on their knowledge, awareness, attitudes, and perceived social influences before translating these intentions into actual purchasing behavior. Such findings reinforce previous studies by Wang et al. (2019) and Bevan-Dye and Synodinos (2025), both of which reported that purchase intention serves as a key psychological mechanism linking cognitive and attitudinal factors with green purchasing behavior. Furthermore, the full mediation observed for Subjective Norms indicates that social influence alone is insufficient

to produce actual purchasing behavior unless consumers first develop a genuine intention to purchase environmentally friendly products. This finding strengthens the explanatory power of the extended Theory of Planned Behavior in understanding sustainable consumer behavior among Generation Z. Overall, the study demonstrates that extending TPB by incorporating Green Product Knowledge and Product Awareness provides a more comprehensive explanation of Green Purchase Decisions than relying solely on the original TPB constructs. These findings contribute to the growing literature on sustainable consumer behavior, particularly within the context of emerging economies.

The findings enrich the Theory of Planned Behavior in three important respects. First, Green Product Knowledge significantly enhances the explanatory capability of TPB, indicating that cognitive understanding represents an important antecedent beyond the original TPB constructs. Second, Product Awareness serves as an important cognitive trigger before consumers evaluate environmentally friendly products. Third, the insignificant direct influence of Subjective Norms indicates that Generation Z consumers rely more on intrinsic motivation than external social expectations, suggesting that TPB should be interpreted within specific generational and cultural contexts. Companies should develop evidence-based green marketing strategies emphasizing environmental education, eco-label transparency, digital storytelling, and sustainability certification rather than relying solely on celebrity endorsement or peer influence. Because attitudes represent the strongest determinant of Green Purchase Decisions, marketing communication should strengthen consumers' emotional attachment toward environmental sustainability rather than merely increasing product visibility. The present findings encourage future TPB studies to distinguish between purchase intention and actual purchase behavior because these constructs represent different stages within the consumer decision-making process.

Future research should continue extending the Theory of Planned Behavior by integrating additional constructs that have been widely recognized in the green consumer behavior literature, including green trust, green perceived value, environmental identity, green skepticism, greenwashing perception, environmental concern, and price sensitivity. Incorporating these variables may provide a more comprehensive understanding of the cognitive, emotional, and contextual factors influencing consumers' green purchase decisions. In addition, future studies are encouraged to employ longitudinal or experimental research designs to establish stronger causal relationships among the investigated variables. Comparative analyses across different generations, particularly between Generation Z and Millennials, as well as across different geographical regions and emerging economies, would enhance the external validity and generalizability of the findings. Future research may also benefit from combining self-reported survey responses with objective purchasing data, such as digital transaction records or loyalty card data, to reduce common method bias and provide more accurate evidence of actual green purchasing behavior. Such research directions are expected to strengthen the theoretical development of green consumer behavior while providing more robust managerial implications for sustainable marketing practices.

## CONCLUSIONS AND RECOMMENDATIONS

This study investigated the effects of Green Product Knowledge, Product Awareness, Attitudes, and Subjective Norms on Green Purchase Decisions, with Purchase Intention serving as a mediating variable among Generation Z consumers in Jakarta. Drawing upon the Theory of Planned Behavior (TPB), the study extends the original framework by incorporating cognitive factors, namely Green Product Knowledge and Product Awareness, to provide a more comprehensive explanation of environmentally responsible purchasing behavior.

The empirical findings demonstrate that Green Product Knowledge, Product Awareness, and Attitudes positively and significantly influence Green Purchase Decisions, whereas Subjective Norms do not exhibit a significant direct effect. Among all antecedent variables, Attitudes emerged as the strongest predictor of Green Purchase Decisions, indicating that consumers' personal evaluations and environmental values play a more influential role than external social pressure. Furthermore, Purchase Intention significantly mediates the relationships between all antecedent variables and Green Purchase Decisions, confirming its central role as the immediate determinant of purchasing behavior as proposed by the Theory of Planned Behavior.

These findings contribute to the growing body of literature on sustainable consumer behavior in several important ways. First, the study demonstrates that extending the Theory of Planned Behavior by incorporating Green Product Knowledge and Product Awareness improves the model's explanatory capability in predicting actual Green Purchase Decisions among Generation Z consumers. Second, the insignificant direct effect of Subjective Norms suggests that the influence of social pressure may be diminishing among digitally connected younger consumers who increasingly rely on personal beliefs and independent information sources when making purchasing decisions. This finding enriches the current understanding of consumer behavior by highlighting the importance of generational characteristics in the application of the Theory of Planned Behavior.

From a managerial perspective, the findings provide practical guidance for companies, marketers, and policymakers seeking to encourage sustainable consumption. Businesses should prioritize educational marketing strategies that strengthen consumers' environmental knowledge while simultaneously developing positive attitudes toward green products through transparent communication, credible environmental claims, and authentic sustainability campaigns. Rather than relying primarily on social influence or peer pressure, marketing programs should emphasize environmental value, product quality, and long-term consumer benefits to stimulate stronger purchase intentions and actual purchasing behavior. For policymakers, environmental education programs should move beyond raising awareness by fostering deeper environmental literacy and critical understanding of sustainable consumption practices among younger generations.

Despite its contributions, this study has several limitations. First, the research was conducted exclusively among Generation Z consumers in Jakarta, which may limit the generalizability of the findings to other demographic groups or geographical regions. Second, the cross-sectional research design restricts the ability to establish causal relationships over time. Third, the study relied on self-reported questionnaire data, which may be subject to common method bias and social desirability bias despite the procedural controls implemented during data collection. Finally, although the proposed model explained a substantial proportion of the variance in Green Purchase Decisions ($R^2 = 0.632$), additional determinants such as environmental concern, perceived consumer effectiveness, environmental identity, perceived value, green trust, product availability, and price sensitivity were not included in the present study.

Future research is therefore encouraged to extend the proposed model by incorporating additional psychological, environmental, and contextual variables that may further explain sustainable purchasing behavior. Longitudinal and experimental research designs are also recommended to provide stronger evidence regarding causal relationships among the investigated constructs. Comparative studies across different generations, geographical regions, and developing countries would further enhance the external validity of the findings. In addition, future studies may integrate objective purchasing data or digital transaction records to complement self-reported behavioral measures and provide a more robust understanding of actual green purchasing behavior.

Overall, this study demonstrates that Generation Z's Green Purchase Decisions are primarily driven by environmental knowledge, product awareness, and personal attitudes rather than by direct social pressure. These findings reinforce the importance of strengthening consumers' intrinsic motivation and environmental literacy as fundamental drivers of sustainable consumption and offer valuable insights for academics, practitioners, and policymakers committed to advancing environmentally responsible consumer behavior.The authors gratefully acknowledge Universitas Dian Nusantara for funding this internal research through the Surat Perjanjian Pelaksanaan Penelitian Hibah Internal, No: 11/71/H-SPK/I/2026, which made the execution of this study possible.

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