Development of a Model of Eco-Friendly Product Purchasing Behavior Through Green Brand Awareness Mediation: A Case Study of Generation Z in Indonesia

Abstract. Sustainability issues and environmentally friendly consumption behavior are increasingly relevant amid growing consumer awareness, especially among Generation Z. This study aims to analyze the influence of green advertising (GAD) and green product innovation (GPI) on green purchase behavior (GPB) with green brand awareness (GBA) as a mediating variable, using the Theory of Planned Behavior (TPB) framework. This quantitative study involved 381 Generation Z respondents in Indonesia using purposive sampling. Data were collected through a 5-point Likert questionnaire and analyzed using Structural Equation Modeling (SEM-AMOS 24). The validity and reliability test results showed that all constructs met the criteria (CR > 0.7; AVE > 0.5). Model testing produced good fit indicators (CFI = 0.979; TLI = 0.972; RMSEA = 0.045). All hypotheses were accepted with a high level of significance ($p < 0.01$). In detail, GAD had a positive effect on GBA ($\beta = 0.434$) and GPB ($\beta = 0.370$), GPI had an effect on GBA ($\beta = 0.229$) and GPB ($\beta = 0.330$), while GBA had a strong effect on GPB ($\beta = 0.395$). In addition, GBA was found to mediate the relationship between GAD → GPB ($p = 0.006$) and GPI → GPB ($p = 0.007$). This study expands the TPB model by incorporating the factors of communication and sustainable innovation, while confirming that brand awareness is the main determinant of green consumption behavior. Practically, companies need to strengthen their green advertising strategies, invest in environmentally friendly product innovations, and build credible brand positioning to attract Generation Z. This study contributes to the green marketing literature in the context of developing countries and provides strategic recommendations for businesses in promoting sustainable consumption.

Findings. Green Advertising → GBA and GPB: Estimated coefficients of 0.434 and 0.370, both significant (p < 0.001). Green Product Innovation → GBA and GPB: Estimated coefficients of 0.229 and 0.330, significant (p < 0.001). Green Brand Awareness → GPB: Estimated coefficient 0.395, strongest compared to other variables ($p < 0.001$). GBA mediation: Strengthens the relationship between GAD → GPB ($p = 0.006$) and GPI → GPB ($p = 0.007$). Key implication: The combination of green advertising and sustainable product innovation effectively shapes brand awareness, which is a key factor in Generation Z's environmentally friendly consumption behavior.

Limitations and Research Implications. Limitations: The sample only included Generation Z in Indonesia, so generalization to other generations or different country contexts is still limited. Situational variables such as price, purchasing power, and accessibility have not been analyzed in depth. The research focus is still on general products, not yet exploring specific categories such as fashion, organic food, or electric vehicles. Research Implications: Further research needs to test the model across generations and countries. New variables such as green trust, perceived value, and digital engagement can be integrated to improve TPB predictions. A longitudinal design is recommended to assess the consistency of green consumption behavior over time.

Social Implications. This research has important social contributions because it shows that: Generation Z can be agents of change in sustainable consumption through environmentally

friendly product choices. Increased green brand awareness encourages the creation of a more environmentally conscious lifestyle, which has implications for reducing pollution and resource efficiency. Sustainability-based communication strategies have the potential to strengthen collaboration between companies, consumers, and communities in achieving the Sustainable Development Goals (SDGs), particularly goal 12 (sustainable consumption and production).

Value (Originality/Value). This research is novel in three main aspects: Theoretical: Expanding the TPB by integrating green advertising, green product innovation, and green brand awareness as determinants of green consumption behavior. Empirical: Providing quantitative evidence based on data from 381 Generation Z respondents in Indonesia, who have been relatively under-researched in the green marketing literature in developing countries. Practical: Offering strategic guidance for companies in designing green advertising, developing product innovation, and building credible brand positioning to strengthen young consumer loyalty.

Keywords: Green Advertising; Green Product Innovation; Green Brand Awareness; Purchasing Behavior; Theory of Planned Behavior

1. Introduction

Environmental issues have become a major concern for various stakeholders, including companies, governments, activists, and consumers, thereby driving the need for more extensive information on sustainability issues(1) . In this context, advertising has a strategic role in communicating a pro-environmental image while capitalizing on the growing environmental awareness among consumers and organizations(2) . Green advertising has been shown to influence individuals' mindsets toward advertising, shape positive attitudes, and increase consumers' desire to behave in an environmentally friendly manner(3) .

On the other hand, increasing pressure from stakeholders is encouraging companies to adopt sustainable strategies, particularly through green product innovation, which focuses on improving the performance of environmentally friendly products while reducing negative impacts on nature(4)(5) . Green product innovation is believed to be able to increase business efficiency and competitiveness through the development of environmentally friendly products, process improvements, and increased organizational effectiveness(6)(7)(8) . Its implementation can be carried out through various initiatives, such as the use of renewable energy, more efficient production methods, and the promotion of sustainable goods and services(9)(10)(11)(12)(13)(14)(15)(16)(17)(18) . This innovation not only provides a competitive advantage, but also increases consumer satisfaction, environmental awareness, and the purchasing behavior of environmentally friendly products(19) .

Consumers today are increasingly influenced by green brand awareness(20) . This level of awareness is closely related to attitudes toward change, intentions, and purchasing decisions that are increasingly leaning toward environmentally friendly products(21) . Previous studies confirm that the higher the level of environmental concern, the greater the tendency for individuals to purchase environmentally friendly products(22) . If consumers are motivated to contribute to sustainable development, their daily consumption behavior will become a significant starting point in environmental protection efforts(23) .

The purchase of environmentally friendly products is an important factor in achieving sustainability, especially among younger generations such as Generation Z(24)(25) . This behavior provides broad benefits, ranging from environmental protection, improved public health and welfare, to increased business efficiency and national economic performance(26)(27)(28) . Attitudes toward environmentally friendly purchasing reflect consumers' cognitive evaluation of the value and benefits of such behavior, which is formed through rational assessment of its contribution to environmental sustainability(20)(29)(30)(31) . However, there is still a gap between consumers' positive attitudes and the implementation of actual behavior, so that the success of environmental protection is often not optimal(22) .

Based on these conditions, this study aims to provide a more comprehensive understanding of the purchasing behavior of environmentally friendly products among Generation Z in Indonesia using the Theory of Planned Behavior (TPB) approach. TPB is one of the most widely used models in explaining environmental behavior because it can increase the predictability of intentions towards environmentally friendly products(19) . This study expands the TPB model by including the variables of green advertising, green product innovation, and green brand awareness (3)(4)(5)(6)(7)(8)(9)(10)(11)(12)(13)(14)(15)(16)(17)(18) , in addition to traditional TPB constructs such as attitudes towards behavior and behavioral intentions, to explain the environmentally friendly purchasing behavior of Generation Z in Indonesia.

Theoretically, this study contributes to the development of a more comprehensive purchasing behavior model by considering the social and psychological factors that influence sustainable consumption. The novelty of this research lies in the integration of green advertising and green product innovation as antecedents that shape green brand awareness, which ultimately drives the environmentally friendly purchasing behavior of Generation Z in Indonesia. In addition, the focus on Generation Z provides a new perspective in understanding the dynamics of young consumers' behavior towards environmentally friendly products.

Practically, this research is expected to provide recommendations for practitioners and academics in formulating appropriate marketing strategies for environmentally friendly products, particularly in attracting the interest of Generation Z in Indonesia. The results of this research are expected to increase consumer awareness, strengthen market orientation towards sustainability, and support environmental protection efforts, which are currently important and urgent issues in Indonesia.

2. Literature Review and Hypothesis

2.1. Green Advertising and Eco-Friendly Purchasing Behavior

Green advertising is a marketing communication strategy designed to convey messages related to environmental concerns, whether through symbols, language, or visuals that emphasize sustainability values. Environmentally friendly advertising serves not only as a means of promotion, but also as an educational medium that shapes consumer perceptions about the importance of pro-environmental behavior(32)(33)(34) . By presenting consistent messages about sustainability, companies are able to build positive consumer attitudes that then influence their intentions and purchasing behavior towards environmentally friendly products(35)(36)(37) .

Theoretically, the relationship between green advertising and purchasing behavior can be explained through the Theory of Planned Behavior (TPB)(38) . According to TPB, attitudes, subjective norms, and perceived behavioral control are the main determinants of behavioral intentions. In this context, green advertising plays a role in shaping positive attitudes towards green products by conveying information about environmental benefits, social values, and corporate ethical concerns(2)(39)(40) . These positive attitudes ultimately increase the probability of consumers engaging in environmentally friendly purchasing behavior.

The mechanism of green advertising's influence on purchasing behavior can be described in three main ways. First, green advertising increases consumers' cognitive awareness of environmental issues, making them more critical in assessing the impact of the products they consume(20)(41)(42)(43) . Second, green advertising evokes emotional resonance by presenting visual images or narratives that connect products with sustainability values, which can strengthen consumers' emotional attachment to the brand(21)(42) . Third, green advertising also creates social legitimacy, as consumers tend to view companies that communicate pro-environmentally as ethically responsible entities, thereby increasing trust and purchase preference(22)(34)(41) .

Empirical evidence supports this correlation.(23)(32)(44) shows that environmentally oriented advertising increases the intention to purchase green products through changes in consumer attitudes and beliefs.(24)(44)(45) found that sustainability content on social media has a significant influence in encouraging environmentally friendly behavior among Generation Z. Another study by(19)(32)(46) confirms that advertisements emphasizing sustainability values contribute to positive attitudes and intentions to use environmentally friendly products, especially in the category of energy-efficient household appliances. However, there are several research gaps that need to be considered. First, most studies on green advertising focus more on consumers in developed countries, while the context of developing countries such as Indonesia is still relatively limited. Second, most previous studies only assess the influence of green advertising on attitudes or intentions, with few examining its direct relationship with actual purchasing behavior(22)(47)(48) . Third, most studies focus on traditional media, while the influence of green advertising in the digital era, particularly through social media, still requires further exploration(24)(47)(49)(50) .

Thus, green advertising can be understood as an important factor that shapes environmentally friendly purchasing behavior, especially among younger generations such as Generation Z in Indonesia. Based on a synthesis of the literature and the TPB framework, this study proposes the following hypothesis.

Hypothesis 1 (H1): Green advertising has a positive effect on environmentally friendly purchasing behavior.

2.2. Green Product Innovation and Environmentally Friendly Purchasing Behavior

Green product innovation (GPI) is a form of innovation oriented towards sustainability with the aim of reducing negative impacts on the environment through product design, the use of environmentally friendly raw materials, energy-efficient technology, and pollution-minimizing production processes(4) . This innovation not only focuses on achieving environmental efficiency

but is also an important strategy for companies to create added value that differentiates their products from competitors. In the context of consumer behavior, GPI is believed to be able to strengthen the brand's sustainability image and increase consumer trust, which ultimately influences environmentally friendly purchasing decisions(13) .

Theoretically, the relationship between GPI and environmentally friendly purchasing behavior can be explained by the Theory of Planned Behavior (TPB)(38)(51) . Within the TPB framework, consumers' attitudes toward a behavior are greatly influenced by their beliefs about the consequences of that behavior. When consumers assess that green products provide significant benefits to the environment while supporting their social values, positive attitudes are formed and this has implications for their purchasing intentions and behavior(19)(52)(52)(53) . In other words, GPI increases consumers' cognitive and affective evaluation of green products, encouraging them to choose environmentally friendly products more often.

The mechanism of GPI's influence on purchasing behavior can be explained through three main dimensions. First, GPI increases the functional value of products, for example through energy efficiency or better durability. Consumers tend to choose products that are not only environmentally friendly but also have higher practical benefits than conventional products(6)(54)(55) . Second, GPI strengthens consumers' emotional value, as purchasing environmentally friendly products is often perceived as a tangible contribution to nature conservation. This creates a sense of pride and moral satisfaction that reinforces purchasing intentions(56)(57) . Third, GPI provides social value, where consumers want to be identified as environmentally conscious individuals, so green purchasing behavior also reflects their social identity(36)(55) .

Empirical findings support a positive relationship between GPI and environmentally friendly purchasing behavior. A study(13)(58) in Ecuador's manufacturing sector shows that companies implementing green innovations successfully increased consumer confidence and encouraged repeat purchases.(14) proves that green product innovations in China reduce corporate equity costs while expanding the environmentally conscious consumer base. Research in Zimbabwe also shows that GPI is closely related to positive consumer attitudes toward environmentally friendly products, which in turn increases the probability of actual purchases(19) . In the context of Generation Z, the role of GPI is increasingly important because this consumer group is known to have a high level of environmental awareness, is open to innovation, and actively seeks products that are in line with sustainability values(24) . Generation Z is more likely to choose products with clearly visible green innovations, such as recyclable packaging or eco-friendly labels, over conventional products that are not transparent about their impact on nature(26) . Thus, GPI can be a key strategy to attract the highly potential young market segment in promoting sustainable consumption behavior.

However, there are research gaps that need to be noted. First, most studies highlight the relationship between GPI and organizational performance, but not many have tested its direct impact on individual purchasing behavior. Second, research on GPI generally focuses on large companies, while studies on MSMEs with limited resources are still relatively rare(15) . In fact, MSMEs play an important role in providing environmentally friendly products in the domestic

market. Third, studies in the Indonesian context are still limited, especially regarding how green innovation influences the younger generation in making purchasing decisions. Thus, GPI can be understood as a key variable that mediates between corporate sustainability strategies and consumer purchasing behavior. Green product innovation not only increases the functional and emotional value of products but also strengthens the social identity of consumers as individuals who care about the environment. Based on the conceptual framework and empirical evidence, this study proposes the following hypotheses.

Hypothesis 2 (H2): Green product innovation has a positive effect on environmentally friendly purchasing behavior.

2.3. Green Advertising and Green Brand Awareness

Green advertising is a marketing communication strategy that emphasizes environmental awareness messages with the aim of shaping positive consumer perceptions of a product or brand. Green advertising not only conveys the functional benefits of a product, but also communicates the ethical and sustainability values inherent in the brand(1)(59)(60) . In other words, green advertising serves as an instrument that strengthens the brand image in an environmental context and increases consumer confidence in the company's commitment to sustainability issues(3)(61) .

In marketing literature, green brand awareness (GBA) is defined as the ability of consumers to recognize, remember, and associate a brand with environmentally friendly attributes(20)(62)(63) . Strong brand awareness is an important prerequisite in shaping consumer preferences, because the higher the level of awareness, the greater the chance that consumers will include the brand in their purchase considerations(62)(64) . Therefore, green advertising is believed to have a strategic role in increasing green brand awareness through the delivery of consistent and attractive messages about environmental concerns.

The mechanism of green advertising's influence on GBA can be explained through three main dimensions. First, green advertising strengthens consumers' cognitive awareness by providing factual information about the benefits of green products, such as the use of renewable energy or environmentally friendly raw materials(2) . This information helps consumers recognize the brand as an entity that cares about environmental issues. Second, green advertising builds emotional associations by using narratives or visuals that connect products with sustainability values. These associations foster consumer emotional attachment, which strengthens brand awareness(24) . Third, green advertising creates social legitimacy by showcasing the company's commitment to sustainable practices. This fosters public trust in the brand while expanding brand exposure among pro-environment consumers(22) . Empirical evidence supports the role of green advertising in shaping GBA.(2)(62) found that multinational companies that consistently run green advertising successfully increase brand recognition in the global market. Research(23) shows that advertisements emphasizing environmental friendliness increase brand recall among consumers, especially those who are highly concerned about environmental issues. A recent study by(24)(33)(65) also confirms that sustainability content on social media has a significant impact on building brand awareness among Generation Z. Thus, green advertising has proven to be

effective not only in traditional media but also in the digital context, which is the main channel for young consumers.

Especially for Generation Z, green advertising has greater relevance. This generation is known to be very sensitive to sustainability issues, critical of corporate practices, and actively seeks information through digital media(24)(65) . When they are exposed to advertisements that consistently emphasize environmental commitment, their awareness of the brand increases, which in turn strengthens their purchasing preferences. (26)(65)(33) It should be added that the younger generation considers brand awareness as an indicator of trust in choosing environmentally friendly products, making green advertising a strategic factor in building long-term loyalty. However, there are several research gaps that need to be noted. First, most studies focus on the effectiveness of green advertising in increasing purchase intent, while its role in explicitly shaping GBA is still rarely studied in developing countries. Second, many studies focus more on traditional media, while the influence of green advertising on social media and digital platforms has not been explored in depth(64)(3)(66) . Third, most studies have been conducted on large companies, so the relevance of green advertising strategies for MSMEs in building brand awareness still needs to be further researched.

Thus, green advertising plays a significant role in increasing green brand awareness through cognitive, emotional, and social channels. Consistent, credible, and attractive green advertising not only strengthens the brand's identity as an environmentally friendly entity but also increases consumer trust and preference. Based on a synthesis of the literature, this study proposes the following hypothesis.

Hypothesis 3 (H3): Green advertising has a positive effect on green brand awareness.

2.4. Green Product Innovation and Green Brand Awareness

Green product innovation (GPI) is a form of innovation that focuses on developing environmentally friendly products and production processes, ranging from the use of sustainable raw materials and energy efficiency to waste and pollution reduction(4)(67) . GPI is not only seen as a sustainability strategy but also as an important instrument in building a company's image and brand differentiation in an increasingly competitive market. From a marketing perspective, the implementation of GPI is believed to play a significant role in increasing green brand awareness (GBA), which is the ability of consumers to recognize, remember, and associate a brand with sustainability attributes(13)(68)(69) .

Conceptually, the relationship between GPI and GBA can be explained through the Resource-Based View (RBV) theory, which emphasizes that sustainable competitive advantage is derived from unique and difficult-to-imitate resources, including green innovation capabilities(70) . When companies invest in green product innovation, they build a brand identity that is distinct and difficult for competitors to match. This identity then strengthens consumer awareness of brands associated with sustainability values. Furthermore, within the framework of signaling theory, GPI

can be viewed as a signal of credibility that the company is truly committed to green practices, thereby strengthening brand awareness in the minds of consumers(68)(71) .

The mechanism of GPI's influence on GBA can be described in three main ways. First, GPI strengthens consumers' cognitive associations by highlighting clearly environmentally friendly product features, such as eco-friendly labels or recycled packaging. These associations help consumers more easily recognize brands that offer sustainable innovations(15) . Second, GPI builds emotional value, as consumers feel satisfied and proud when using products that align with their personal values regarding environmental preservation. This strengthens the emotional bond between consumers and brands(10) . Third, GPI creates social legitimacy, as consumers perceive companies that are green innovators as more credible and responsible, thereby increasing brand recall and preference(72)(73) .

Empirical evidence supports this view. A study(13) in Ecuador's manufacturing sector shows that the implementation of green innovation contributes significantly to increased brand awareness through positive consumer perceptions.(14) found that companies in China that implement green product innovation are able to reduce equity costs while enhancing brand reputation among investors and consumers. In Indonesia, research(6) confirms that green innovation in the real estate sector strengthens the brand image as a modern, transparent, and environmentally friendly company. Thus, GPI has been proven to not only impact operational performance but also build brand equity through increased brand awareness. Generation Z, as the main consumers in the digital era, pays great attention to sustainability. They actively seek product information through social media and trust brands that demonstrate a genuine commitment to the environment(24) . Therefore, GPI can be a key differentiating factor in increasing GBA among these young consumers.(26) adds that green innovations that are clearly visible in product attributes, such as the use of renewable energy or environmentally friendly packaging, have a direct impact on brand recall and brand recognition.

However, there are still several research gaps. First, most studies focus more on the relationship between GPI and corporate financial performance, while its impact on green brand awareness is still relatively under-researched, especially in emerging markets. Second, previous studies have mostly been conducted on multinational companies, so the context of MSMEs as important players in green innovation has rarely been explored(15) . Third, there are still limited studies examining how GPI interacts with digital media in strengthening brand awareness, even though digital channels are now the main source of information for the younger generation. Thus, GPI plays a strategic role in increasing green brand awareness through cognitive, emotional, and social channels. Green product innovation integrated with communication strategies can build a credible brand identity and differentiate companies from their competitors. Based on a synthesis of theory and empirical evidence, this study proposes the following hypothesis.

Hypothesis 4 (H4): Green product innovation has a positive effect on green brand awareness.

2.5. Green Brand Awareness and Eco-Friendly Purchasing Behavior

Green brand awareness (GBA) is defined as the ability of consumers to recognize, remember, and associate a brand with sustainability values and environmentally friendly attributes(62)(74) . This

awareness reflects the level of consumer closeness to the brand, both cognitively and affectively, which plays an important role in influencing purchasing decisions. In an era of increasing concern for environmental issues, GBA is seen as a crucial factor that encourages consumers to shift their preferences from conventional products to environmentally friendly products(20)(74)(75) .

Conceptually, the relationship between GBA and environmentally friendly purchasing behavior can be explained through the Theory of Planned Behavior (TPB)(38) . Within the TPB framework, attitudes and subjective norms are formed from consumer knowledge and awareness. The higher the awareness of green brands, the more positive consumers' attitudes toward these brands, thereby increasing their intention and behavior to purchase environmentally friendly products(19) . In addition, brand awareness also reduces consumer uncertainty, strengthens trust, and increases the perception that green products are worth the price(22) .

The mechanism of GBA's influence on purchasing behavior can be explained through three aspects. First, GBA increases cognitive value, because consumers who are aware of a brand's green identity will better understand the positive contribution of these products to the environment. This strengthens consumers' rational evaluation in choosing products(62)(74) . Second, GBA creates emotional value, as consumers feel proud and satisfied when purchasing products that are synonymous with environmental awareness, making green purchasing behavior an expression of personal identity(24) . Third, GBA provides social value, where consumers who are aware of green brands are more likely to exhibit purchasing behavior as a form of social awareness and responsibility, thereby gaining recognition from their community(10) .

Empirical evidence supports this correlation.(23)(76) shows that a high level of green brand awareness increases the likelihood of consumers purchasing environmentally friendly products, especially in the household product category. Research(20)(43) confirms that brand awareness acts as an important mediator between environmental concerns and green purchasing behavior.(24)(34)(76) also found that younger generations, particularly Generation Z, are more responsive to brands with a clear green image, and that awareness drives sustainable consumption intentions and behavior. On the other hand, the study(22)(77)(78) highlights the gap between consumers' positive attitudes and actual behavior, where despite high levels of awareness, factors such as price and product affordability often hinder the implementation of green purchasing behavior.

Generation Z is the most relevant consumer group in relation to GBA. They are highly oriented towards sustainability issues, actively seek information through social media, and are more easily influenced by consistent brand messaging related to the environment(24)(79) . Therefore, increasing GBA in this segment can have a significant impact in encouraging environmentally friendly purchasing behavior.(26)(80) adds that brand awareness is one of the main indicators that determine the loyalty of young consumers, so companies need to ensure that innovation and green messages are truly internalized in their brand identity. Although the literature shows a strong positive relationship, there are still a number of research gaps. First, most studies focus on consumers in developed countries, while research in developing countries, including Indonesia, remains limited. Second, research has examined purchase intentions rather than actual behavior, so further exploration is needed on how GBA actually drives real purchasing decisions(30)(81)(82)

. Third, there are limitations in research assessing the influence of situational factors, such as price, accessibility, and cultural preferences, which can weaken the relationship between GBA and environmentally friendly purchasing behavior.

Thus, GBA plays an important role as a driver of environmentally friendly purchasing behavior by strengthening consumers' cognitive, emotional, and social values. Green brand awareness not only increases the probability of purchasing sustainable products but also strengthens consumer loyalty in the long term. Based on theoretical foundations and empirical evidence, this study proposes the following hypothesis.

Hypothesis 5 (H5): Green brand awareness has a positive effect on environmentally friendly purchasing behavior.

2.6. The Mediating Role of Green Brand Awareness

Green brand awareness (GBA) not only functions as an independent construct that influences environmentally friendly purchasing behavior, but also has a strategic role as a mediating variable in the relationship between sustainability-based marketing strategies and consumer behavior. Conceptually, GBA bridges the influence of green advertising (GA) and green product innovation (GPI) on environmentally friendly purchasing behavior (green purchase behavior/GPB). When consumers are exposed to green advertising messages or observe environmentally friendly product innovations, their awareness of the brand increases. This awareness then strengthens their preferences and encourages actual purchasing behavior(83)(74)(84) .

From the perspective of the Theory of Planned Behavior(38) , consumer intentions and behavior are influenced by attitudes, subjective norms, and perceived control. GBA can be seen as one of the factors that strengthens attitudes and subjective norms through increased knowledge and positive associations with green brands. In other words, advertising or innovation will not optimally influence behavior if consumers do not have strong awareness of the relevant brand(20)(74) . Therefore, GBA functions as a psychological pathway that connects marketing stimuli with environmentally friendly behavior. The GBA mediation mechanism can be explained through three main dimensions. First, GBA increases cognitive value, because green advertising and green product innovations help consumers recognize brands and remember the environmentally friendly attributes that are attached to them. The higher the awareness, the easier it is for consumers to include brands in their purchase considerations(41)(61)(42) . (24)(22)Second, GBA creates emotional value, where green brand awareness triggers positive feelings and pride in consumers, making them more inclined to choose sustainable products. Third, GBA strengthens the social legitimacy of brands, as consumers who are aware of a brand's green identity tend to view the company as credible, ethical, and worthy of support through their purchasing behavior.

Empirical evidence supports this mediating role. Research by(85)(86) shows that brand awareness plays an important role in bridging the influence of environmentally-oriented advertising on consumer purchasing decisions.(2) found that the success of green advertising strategies in increasing environmentally-friendly behavior is highly dependent on the extent to which the advertising builds brand awareness. (24) 's latest study also confirms that sustainability content on

social media increases brand awareness, which ultimately triggers sustainable behavior, especially among Generation Z. In the context of innovation,(13) 's research proves that GPI increases brand awareness, which then strengthens the decision to purchase environmentally friendly products.

Generation Z, as the primary consumer target in the digital age, shows high sensitivity to brand messaging that is consistent with environmental issues. They are more likely to trust and purchase products from brands with a clear green identity(24) . Thus, GBA serves as a crucial mediator in strengthening the effects of GA and GPI on green purchasing behavior in this segment.(26) adds that brand awareness is one of the important determinants of young consumer loyalty, so its role as a mediator not only influences immediate purchasing decisions but also has implications for long-term relationships with brands. Although the literature shows positive results, there are still several research gaps. First, most studies highlight the mediating role of GBA in developed countries, while empirical evidence from developing countries, including Indonesia, is still limited. Second, most studies focus more on traditional media, while the role of GBA in the context of digital media, especially social media which is dominant among the younger generation, has not been explored much(3) . Third, previous studies have emphasized the relationship between GBA and purchase intention, while its influence on actual behavior has rarely been studied. In fact, consumers' actual behavior is often influenced by situational factors such as price, accessibility, and purchasing power(30) .

Thus, GBA plays a strategic role as a mediating variable in the relationship between green advertising and green product innovation with environmentally friendly purchasing behavior. GBA not only strengthens consumers' cognitive perceptions but also builds emotional bonds and social legitimacy that encourage sustainable consumption behavior. Based on theoretical foundations and empirical evidence, this study proposes the following hypothesis.

Hypothesis 6 (H6): Green brand awareness mediates the effect of green advertising on environmentally friendly purchasing behavior.

Hypothesis 7 (H7): Green brand awareness mediates the effect of green product innovation on environmentally friendly purchasing behavior.

3. Research Methodology

This study uses a quantitative approach with a survey method to test the relationship between variables in the conceptual model developed by(87) . The research design refers to the Theory of Planned Behavior (TPB)(38) , which is expanded by adding the variables of green advertising and green product innovation as antecedents, as well as green brand awareness as a mediating variable for environmentally friendly product purchasing behavior. The quantitative approach was chosen because it was considered appropriate for obtaining empirical data, measuring direct and indirect influences between constructs, and testing the suitability of the model with field data.

The research population consists of Generation Z consumers in Indonesia, namely individuals born between 1995 and 2010 who have knowledge and experience related to environmentally friendly products. The sampling technique used purposive sampling with the following criteria: (1)

respondents belong to Generation Z, (2) reside in Indonesia, and (3) have been exposed to information or advertisements about environmentally friendly products. Based on the considerations of the Structural Equation Modeling (SEM) analysis(88)(89) , the sample size was set at 250 respondents, which was considered to meet the minimum requirements for comprehensive structural model testing.

The research instrument was designed in the form of a questionnaire with a five-point Likert scale (1 = strongly disagree, 5 = strongly agree)(90) . The development of the instrument began with a comprehensive literature study and Focus Group Discussion (FGD) to test the content validity and ensure the suitability of the indicators to the research context. The research variables consisted of four main constructs. First, green advertising, which is measured through indicators of message effectiveness, visual appeal, and calls for environmental awareness. Second, green product innovation, which includes the use of environmentally friendly materials, energy efficiency, and manufacturing processes that minimize pollution. Third, green brand awareness, which reflects consumers' ability to recognize and remember environmentally friendly products. Fourth, environmentally friendly purchasing behavior, which is measured through respondents' tendency to buy, compare, and choose products with environmental certification.

The research procedure was carried out in several stages. First, a literature study of reputable databases was used to identify research gaps and strengthen the conceptual framework. Second, FGDs were conducted with experts and consumers to test the clarity and suitability of the research instruments. Third, data collection was carried out through the distribution of online and offline questionnaires. Fourth, the collected data was then analyzed using SEM techniques with the help of AMOS software version 24. This analysis included testing the validity and reliability of the instruments, Confirmatory Factor Analysis (CFA), and structural model testing to assess the causal relationships between variables. The model feasibility assessment was carried out by referring to various goodness of fit measures, including Chi-square, RMSEA, CFI, TLI, and GFI.

The entire research process was carried out in accordance with research ethics principles. Respondents participated voluntarily, with a guarantee of confidentiality regarding their identity and personal information. An explanation of the research objectives and expected benefits was also provided to respondents before they filled out the questionnaire.

4. Results and Discussion

4.1. Respondent Profile

Table 1. Demographic Characteristics of Respondents

No	Characteristics	Category	Number of People	Percentage
1	**Gender**	Male	173	45.4

No	Characteristics	Category	Number of People	Percentage
		Female	208	54.6
		Total	**381**	**100.0**
2	**Age**	19–22 years old	318	83.5
		23–26 years old	63	16.5
		Total	**381**	**100.0**
3	**Level of Education**	High School	42	11
		Bachelor's Degree (S1)	339	89.0
		Total	**381**	**100.0**
4	**Monthly Income**	< Rp. 2,000,000	228	59.8
		IDR 2,000,000 - IDR 4,000,000	87	22.8
		IDR 4,000,100 - IDR 6,000,000	12	3.1
		IDR 6,000,100 - IDR 8,000,000	28	7.3
		> Rp. 8,000,000	26	6.8
		Total	**381**	**100**

This study involved 381 respondents with a relatively balanced gender composition, although there was a predominance of women. A total of 54.6% of respondents were women, while 45.4% were men. This distribution shows good representation of both genders, so that the results of the study can represent consumer views and behavior from both male and female perspectives. The dominance of female respondents also indicates a higher interest among this group in green products and sustainable consumption behavior. In terms of age, the majority of respondents were in the 19–22 age group (83.5%), while the rest were in the 23–26 age range (16.5%). This composition shows that the study was dominated by young people, especially Gen Z, who are known to be adaptive to technological developments, active on social media, and highly concerned

about environmental issues. This makes the respondents highly relevant to the focus of the study, which highlights the purchasing behavior of environmentally friendly products.

Based on educational level, most respondents were Bachelor's degree (S1) graduates (89.0%), while 11.0% were high school graduates. These findings indicate that respondents have a relatively high level of formal education, so it can be assumed that they have a better understanding of the concepts of sustainability and environmental awareness. This high educational background also supports the respondents' ability to understand green campaign messages and critically assess environmentally friendly product innovations. In terms of monthly income, the majority of respondents (59.8%) were in the category of < Rp2,000,000, followed by 22.8% with an income of Rp2,000,000–Rp4,000,000. Furthermore, 7.3% of respondents had an income of Rp6,000,100–Rp8,000,000, 6.8% had an income of > Rp8,000,000, and 3.1% had an income of Rp4,000,100–Rp6,000,000. This distribution shows that most respondents are still in the low to middle income category, which is important to consider in analyzing purchasing power and consumer preferences for green products. However, the existence of a group with upper-middle income provides a rich variety of perspectives on the consumption of environmentally friendly products.

4.2. Instrument Quality Test

Table 2. CONFIRMATORY FACTOR ANALYSIS (CFA) RESULTS

Variable	Item	Calculation Results				
		Loading	Error	Construct Reliability (CR)	AVE	Description
Green Advertising	GAD1	0.819	0.329			Valid
	GAD2	0.910	0.172			Valid
	GAD3	0.628	0.606			Valid
	Total	**2,357**	**1,107**	**0.834**	**0.631**	**Reliable**
Green Product Innovation	GPI1	0.677	0.542			Valid
	GPI2	0.782	0.388			Valid
	GPI3	0.662	0.562			Valid
	GPI4	0.697	0.514			Valid
	GPI5	0.752	0.434			Valid
	Total	**3,570**	**2,441**	**0.839**	**0.512**	**Reliable**
Green Brand Awareness	GBA1	0.817	0.333			Valid
	GBA2	0.801	0.358			Valid
	GBA3	0.864	0.254			Valid
	GBA4	0.832	0.308			Valid
	Total	3,314	1,252	**0.898**	**0.687**	**Reliable**
Green Purchase Behavior	GPB1	0.790	0.376			Valid
	GPB2	0.879	0.227			Valid

	GPB3	0.736	0.458			Valid
	Total	**2,405**	**1,062**	**0.845**	**0.646**	**Reliable**

Validity Test:

Based on the results of the calculations provided, all items tested showed loading values higher than 0.5, indicating that each item has a significant relationship with the construct being measured. For example, for the Green Advertising variable, items GAD1 (0.819), GAD2 (0.910), and GAD3 (0.628) have valid loading values, so it can be concluded that all items in the four variables (Green Advertising, Green Product Innovation, Green Brand Awareness, Green Purchase Behavior) are proven to be valid, with significant loading values. These calculation results indicate that all indicators can be relied upon to measure the intended construct, as the loading values show a strong relationship between the items and the construct.

Reliability Test:

The reliability test measures the internal consistency of a construct. Based on the results of the Construct Reliability (CR) and Average Variance Extracted (AVE) calculations, all variables show a CR value higher than 0.7 and an AVE higher than 0.5, which means that the measured construct has a good level of internal consistency. For example, Green Advertising has a CR of 0.834 and an AVE of 0.631, which indicates high reliability. Similarly, Green Product Innovation (CR = 0.839, AVE = 0.512), Green Brand Awareness (CR = 0.898, AVE = 0.687), and Green Purchase Behavior (CR = 0.845, AVE = 0.646) all show solid reliability, which means that the measurement instruments used can provide consistent and reliable results in measuring the intended constructs.

4.3. Goodness of Fit Test Results

Figure 1. Full model (Goodness of Fit Test Results)

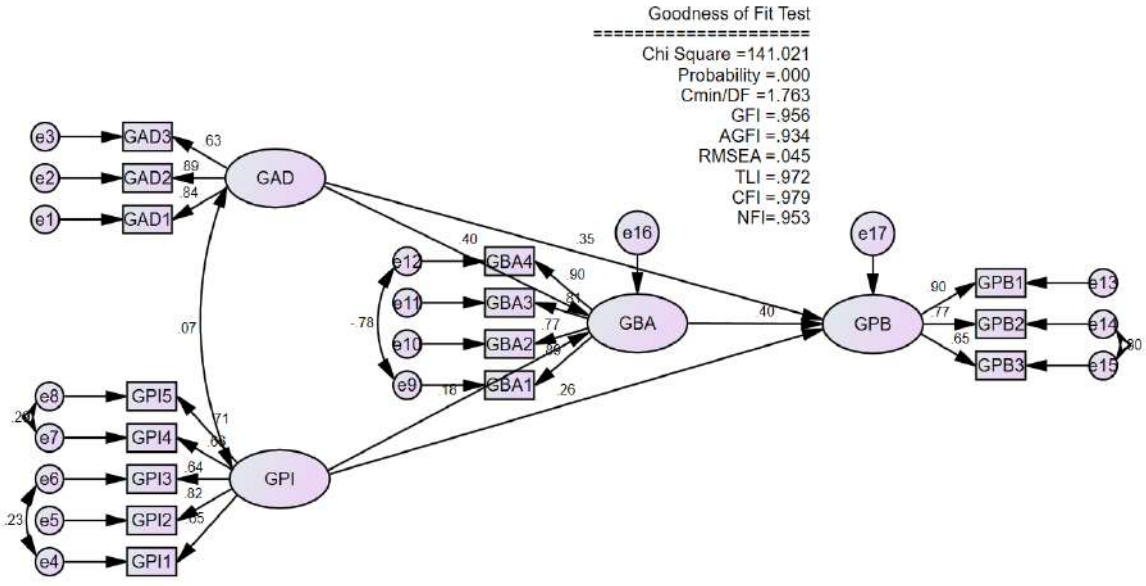

Table 3. Goodness of Fit Test Results

No.	Parameter	Expected Value	Test Results	Description
1	CMIN (Chi-Square)	P < 0.05	141.021, p = 0.000	Model does not fit (p-value < 0.05)
2	CMIN/DF	≤ 3	1,763	Okay, the model fits the data
3	RMR (Root Mean Square Residual)	≤ 0.05	0.023	Good, the model has small residuals
4	GFI (Goodness of Fit Index)	≥ 0.90	0.956	Good, the model has a high fit index
5	AGFI (Adjusted Goodness of Fit Index)	≥ 0.90	0.934	Good, the model has an adjusted fit
6	PGFI (Parsimony Goodness of Fit Index)	≥ 0.50	0.637	Good, the model has an appropriate index
7	NFI (Normed Fit Index)	≥ 0.90	0.953	Good, the model has a high fit index
8	RFI (Relative Fit Index)	≥ 0.90	0.938	Good, the model has a high relative index
9	IFI (Incremental Fit Index)	≥ 0.90	0.979	Good, the model has a high incremental index
10	TLI (Tucker-Lewis Index)	≥ 0.90	0.972	Good, the model has a high TLI index
11	CFI (Comparative Fit Index)	≥ 0.90	0.979	Good, the model has a high comparative index
12	RMSEA (Root Mean Square Error of Approximation)	≤ 0.08	0.045	Good, the model has a low approximation error

. Chi-Square (CMIN)

Chi-Square (CMIN) is one of the important parameters in the Goodness of Fit test used to evaluate the extent to which the tested model fits the actual data. A lower Chi-Square value indicates that the model is more consistent with the data, while a higher value indicates that the model is inconsistent with the data. In this study, the Chi-Square (CMIN) result is 141.021 with a p-value of 0.000, which means that the model does not fully fit because the p-value is less than 0.05. However, for models with many parameters, the CMIN/DF test (Chi-Square value divided by degrees of freedom) is often used as an additional indicator, where a CMIN/DF value of less than 3 indicates a better model, and in this case, the result of 1.763 indicates a relatively good model fit.

CMIN/DF (Chi-Square/df). CMIN/DF is the ratio between chi-square and degrees of freedom (df). The expected value for this parameter is ≤ 3. In this model, the CMIN/DF value is 1.763, which indicates that this model fits the data very well. The lower this value, the better the model represents the data. With a value of 1.763, the model shows that the relationship between the modeled variables is very consistent with the existing data, indicating that this model is quite representative and reliable. Description: Good, the model fits the data. RMR (Root Mean Square Residual). RMR measures the average residual or the difference between the value predicted by

the model and the observed value. The expected value for RMR is ≤ 0.05. In this test, the RMR value is 0.023, which means the model has very small residuals and is better at reducing prediction errors. The smaller the RMR value, the better the model is at predicting the observed values. A value of 0.023 indicates that this model has excellent accuracy in estimating the observed data. Description: Good, the model has small residuals.

GFI (Goodness of Fit Index). GFI is an index that measures how well the model can explain the variance and covariance in the data. The expected value for GFI is ≥ 0.90. In this case, the GFI value is 0.956, which indicates that this model is very good at describing the relationship between variables in the data. GFI is close to 1, which means that this model can explain almost all of the variation in the data used. Description: Good, the model has a high fit index. AGFI (Adjusted Goodness of Fit Index). AGFI is an adjusted version of GFI, which takes into account the complexity of the model. The expected value for AGFI is ≥ 0.90. In this model, the AGFI value is 0.934, which indicates that the model is very good at adjusting the fit of the data while considering the number of parameters in the model. The higher the AGFI value, the better the model balances fit and complexity. With a value of 0.934, this model meets the adjusted fit criteria. Description: Good, the model has an adjusted fit.

PGFI (Parsimony Goodness of Fit Index). PGFI measures the quality of the model by taking into account the number of parameters in the model. The expected value for PGFI is ≥ 0.50. In this test, the PGFI value is 0.637, which indicates that the model has a good level of simplicity and is quite optimal. The higher the PGFI value, the more efficient the model is in using parameters to explain the data. With a value of 0.637, this model is quite good at achieving a balance between simplicity and model suitability. Note: Good, the model has a suitable index. NFI (Normed Fit Index). NFI is a measure that measures the extent to which the model can reduce mismatches compared to independent models. The expected value for NFI is ≥ 0.90. In this test, the NFI value is 0.953, which indicates that this model has an excellent ability to reduce mismatches compared to independent models. With this value, the model shows that the variables in the model have significant and relevant relationships. Description: Good, the model has a high fit index.

RFI (Relative Fit Index). RFI is an index that compares the tested model with an independent model. The expected value for RFI is ≥ 0.90. The test results show an RFI value of 0.938, which indicates that this model is very good at describing the relationship between variables, better than the independent model. This value confirms that the model has an excellent ability to adjust the existing data. Description: Good, the model has a high relative index. IFI (Incremental Fit Index). IFI measures how much the tested model can improve the fit compared to the independent model. The expected value for IFI is ≥ 0.90. The IFI value in this model is 0.979, which indicates that the model has an excellent ability to improve data suitability compared to the independent model. With this value, the model is proven to be very effective in improving data modeling quality. Note: Good, the model has a high additional index.

TLI (Tucker-Lewis Index). TLI, also known as the non-normed fit index, measures how well the model explains the data while considering the complexity of the model. The expected value for TLI is ≥ 0.90. In this test, the TLI value is 0.972, which indicates that this model is very good at describing the data, with a high level of accuracy. This model indicates that the relationship

between the variables in the model is very good. Note: Good, the model has a high TLI index. CFI (Comparative Fit Index)
CFI measures the comparison between the tested model and the independent model, taking into account the number of parameters. The expected value for CFI is ≥ 0.90. The CFI value in this model is 0.979, which indicates that this model is very good at comparing its fit with the independent model. The closer the number is to 1, the better the model is. This value indicates that the model has a very high fit capability. Note: Good, the model has a high comparative index.

RMSEA (Root Mean Square Error of Approximation). RMSEA measures how well the model approximates the data in terms of the difference between the predicted model and the observed data. The expected value for RMSEA is ≤ 0.08. In this test, the RMSEA is 0.045, which indicates that this model has a low approximation error and can be considered a very good model. The lower the RMSEA value, the better the model is at estimating the actual data. Description: Good, the model has a low approximation error.

4.4. Hypothesis Test

Table 4. Hypothesis test results

No.	Variable Relationship	Estimated Coefficient	P-Value	Description
1	GAD → GBA	0.434	0.000	H1 accepted
2	GPI → GBA	0.229	0.000	H2 accepted
3	GAD → GPB	0.370	0	H3 accepted
4	GPI → GPB	0.330	0.000	H4 accepted
5	GBA → GPB	0.395	0.000	H5 accepted
6	GAD → GPB → GBA (mediated)	0.000	0.006	H6 accepted
7	GPI → GPB → GBA (mediated)	0.072	0.007	H7 accepted

Hypothesis H1: Green Advertising (GAD) has a positive effect on Green Brand Awareness (GBA) The test results show that the relationship between Green Advertising (GAD) and Green Brand Awareness (GBA) has an estimated coefficient of 0.434 with a highly significant p-value (0.000). This indicates that green advertising plays an important role in increasing green brand awareness among consumers. The more intensively a brand advertises its green products, the higher the level of consumer awareness of the brand. Therefore, this hypothesis is accepted and shows that green advertising has a strong positive impact on green brand awareness. H1 is accepted.

Hypothesis H2: Green Product Innovation (GPI) has a positive effect on Green Brand Awareness (GBA)
The test of the influence between Green Product Innovation (GPI) and Green Brand Awareness (GBA) shows an estimated coefficient of 0.229 with a p-value of 0.000, which is highly significant. This means that green product innovation contributes to increasing green brand awareness. Consumers tend to be more familiar with brands that offer innovative products, especially in the category of environmentally friendly products. Therefore, this hypothesis is also accepted, indicating that innovation in green products strengthens consumer awareness of the brand. H2 is accepted.

Hypothesis H3: Green Advertising (GAD) has a positive effect on Green Purchase Behavior (GPB)
The estimated coefficient for the relationship between Green Advertising (GAD) and Green Purchase Behavior (GPB) is 0.370 with a p-value of 0.000, indicating a significant positive effect of green advertising on green purchasing behavior. This means that advertisements that emphasize green values and sustainability can encourage consumers to buy green products. These results confirm that advertising strategies that highlight the green aspects of products not only increase awareness but also motivate consumers to make purchases. H3 is accepted.

Hypothesis H4: Green Product Innovation (GPI) has a positive effect on Green Purchase Behavior (GPB)
Testing the relationship between Green Product Innovation (GPI) and Green Purchase Behavior (GPB) shows an estimated coefficient of 0.330 with a highly significant p-value (0.000). This indicates that the more innovations applied to green products, the more likely consumers are to purchase them. Green product innovations, such as the development of environmentally friendly technologies or greener raw materials, are very attractive to consumers who care about sustainability. Therefore, this hypothesis is accepted. H4 is accepted.

Hypothesis H5: Green Brand Awareness (GBA) has a positive effect on Green Purchase Behavior (GPB)
The test results for the relationship between Green Brand Awareness (GBA) and Green Purchase Behavior (GPB) show an estimated coefficient of 0.395 with a p-value of 0.000, which is highly significant. This indicates that green brand awareness has a strong positive influence on green purchasing behavior. Consumers who are more aware of green brands are more likely to choose those products when making purchases, reflecting the influence of brand awareness in encouraging environmentally friendly purchasing decisions. Therefore, this hypothesis is accepted. H5 is accepted.

Hypothesis H6: Green Advertising (GAD) has a positive effect on Green Purchase Behavior (GPB) mediated by Green Brand Awareness (GBA)
The mediation test for this relationship shows a significant indirect effect with an estimated coefficient of 0.000 and a p-value of 0.006, which means that the influence of Green Advertising on Green Purchase Behavior is partially mediated by Green Brand Awareness. In this case, green advertising not only influences purchasing behavior directly, but also through increased green brand awareness among consumers. This brand awareness, in turn, reinforces green purchasing behavior. Therefore, this hypothesis is accepted. H6 is accepted.

Hypothesis H7: Green Product Innovation (GPI) has a positive effect on Green Purchase Behavior (GPB) mediated by Green Brand Awareness (GBA)
For this hypothesis, the test shows an indirect effect with an estimated coefficient of 0.072 and a p-value of 0.007, which is also significant. This indicates that although green product innovation plays a direct role in influencing green purchasing behavior, this influence is even stronger when mediated by green brand awareness. This means that successful green product innovation increases brand awareness, which ultimately influences consumers' decisions to make green purchases. Therefore, this hypothesis is also accepted. H7 is accepted.

4.5. Discussion

The results of this study indicate that all hypotheses (H1–H7) are accepted, confirming the important role of green advertising (GAD), green product innovation (GPI), and green brand awareness (GBA) in encouraging green purchase behavior (GPB) among Generation Z in Indonesia. Green Advertising and Green Purchase Behavior. The estimated coefficient between GAD and GPB of 0.370 ($p < 0.001$) indicates that environmentally friendly advertising is effective in increasing green purchasing behavior. These results are consistent with the findings of(35) and(39) , which emphasize that the quality of the message and the emotional appeal of green advertising can increase consumer intent and actual behavior. This means that sustainability-based communication strategies not only raise awareness but also trigger pro-environmental consumption actions. Green Product Innovation and Green Purchase Behavior. The effect of GPI on GPB is also significant with a coefficient of 0.330 ($p < 0.001$). This confirms that sustainable product innovations, such as the use of environmentally friendly materials or recyclable packaging, can increase consumer trust and preference. These findings reinforce the results of the study "(13) " in Ecuador and "(14) " in China, which emphasize the importance of green innovation as a competitive differentiator and a driver of purchasing decisions.

Green Brand Awareness as the Main Determinant. The estimated coefficient between GBA and GPB was 0.395 (p < 0.001), making it the variable with the strongest direct influence on purchasing behavior. This shows that Gen Z consumers who have high green brand awareness tend to be more consistent in purchasing environmentally friendly products. These results are in line with(66) and(74) , which emphasize the importance of brand equity in driving green consumption. The Mediating Role of Green Brand Awareness. Mediation analysis shows that GBA strengthens the relationship between GAD → GPB ($p = 0.006$) and GPI → GPB ($p = 0.007$). This means that although advertising and product innovation have a direct effect, the effect becomes stronger when consumers have a high level of green brand awareness. These results are consistent with the findings of(85) and(74) , which confirm the role of brand awareness and brand image as a bridge between marketing stimuli and sustainable consumption behavior.

Theoretical and Practical Implications. Theoretically, this study expands the Theory of Planned Behavior(38) by integrating the variables GAD, GPI, and GBA. The results show that TPB can be more predictive when modern socio-psychological factors, such as brand awareness, are included. Practically, these results confirm that companies targeting Generation Z need to focus on consistent green communication, sustainable innovation, and branding strategies that emphasize environmental credibility. Contextual Findings. Demographically, the majority of respondents (83.5%) were aged 19–22 with a bachelor's degree (89%), indicating that highly educated young

consumers tend to be more responsive to green messages. However, income limitations (59.8% < IDR 2,000,000) are an important factor that can influence the gap between positive attitudes and the implementation of real behavior, as also highlighted by (22)

5. Conclusion

This study successfully tested and proved the influence of green advertising (GAD), green product innovation (GPI), and green brand awareness (GBA) on green purchase behavior (GPB) among Generation Z in Indonesia. All hypotheses (H1–H7) were accepted with significant estimation coefficient values ($p < 0.01$). Specifically: GAD has a positive effect on GBA ($\beta = 0.434$; $p < 0.001$) and GPB ($\beta = 0.370$; $p < 0.001$). GPI has a positive effect on GBA ($\beta = 0.229$; p < 0.001) and GPB ($\beta = 0.330$; p < 0.001). GBA has a positive effect on GPB ($\beta = 0.395$; $p < 0.001$) and plays a significant role as a mediator in the relationship between GAD → GPB ($p = 0.006$) and GPI → GPB ($p = 0.007$). These findings confirm that GBA is the strongest determinant bridging sustainability-based marketing strategies with green consumption behavior among Generation Z.

6. Limitations and Recommendations

Although this study makes a significant contribution, there are several limitations: The research sample was limited to Generation Z in Indonesia, so generalizations to other age groups or different countries should be made with caution. Situational variables such as price, accessibility, and purchasing power have not been deeply integrated, even though these factors can influence the gap between intention and purchasing behavior(22) . This study still focuses on general products, so further exploration is needed on specific product categories, such as fashion, organic food, or electric vehicles.

To enrich our understanding of environmentally friendly purchasing behavior, further research is recommended to: Test the model across generations (millennials, Gen X) or across countries to see cultural differences in responses to green advertising and innovation. Integrate variables such as green trust, perceived value, or digital engagement as new moderators/mediators in the TPB framework. Use a longitudinal approach to test the consistency of green consumption behavior over time.

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