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## Preference for Green Packaging in Consumer Product Choices: Empirical Evidence from Gen Z Consumers in Vietnam

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### Abstract

Recently, the call for better accountability and social responsibility from corporations has been regularly voiced, both in the academic literature and in public discussions. This poses a challenge to the existing literature in understanding consumption behaviors to direct them toward sustainable development. This study investigates the purchase intention of Gen Z consumers in Vietnam with green packaging products. Data were collected from 914 respondents by online questionnaire and then analyzed using OLS. The results suggest the significant influence of customers' income and packaging in driving customers' intention to use environmentally-friendly products. Specifically, consumers in a higher income class participate more actively in green purchases. However, problems associated with inadequate packaging are also illustrated, resulting in the poor perception of green messages and poor practice of ecological actions. Besides, subjective norms and green trust are found to be adversely related to green consumer intention. In addition, gender disparity in green behavior is reported, where female consumers show a higher tendency to ecological consumption than their male counterparts. Other demographic factors are also included in the model as control variables, which are age, education, price, environmental literacy, environmental concern, and psychological awareness, but they do not have a significant impact on green purchase intention.

**Keywords:** Vietnam, Green Purchase Intention, Green Packaging, Gen Z Consumers

**JEL Classification Code:** M30, M31, M37

### 1. Introduction

Calls for a greater sense of sustainability from companies have echoed recently. The notion of sustainability was first introduced in Brundland (1987) as a centre focus of organizations to fulfill current needs without compromising future resources. The currently disclosed concept implies the

bounded restriction of capital and the responsibilities of the present generation in deriving the benefits from the available reserves, not at the cost of trespassing later generations' sakes in terms of these all-generation natural assets. However, this "weak form of sustainability" leads to many concerns about ecological degradation, justice, and effectiveness, as eco-efficiency does not necessarily mean sustainability. Many studies found evidence of the causal relationship between economic activities and environmental quality deterioration (Wu et al., 2020).

In response to this criticism, many companies are engaging in fierce competition in the green movement, initiating certain adjustments in corporate management strategies in various areas, including marketing (Sriram & Forman, 1993). The shift in marketing strategies has paved the way for the milestone of the new term - "green marketing," which could be traced back to as early as the 1980s, with the involvement of businesses in shaping and enhancing their green image (Peattie & Crane, 2005). Peattie and Ratnayaka (1992) reported that companies have been orienting at nurturing their ecological image and convincing about the environmentally friendly functionality of their

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products and services as a competitive weapon over the other offerings (Peattie & Ratnayaka, 1992). Some brands, for example, Nike, Xerox, and PB have progressed further by reinforcing their environmental attitudes and modifying their production process to be recognized as “green brands” (Trandafilovic et al., 2017).

Paradoxical as it might sound, a discrepancy in terms of green perceptions and practices geographically has been witnessed in practice (Eze & Ndubisi, 2013). Green packaging has long been a public interest among developed nations such as the United States, the United Kingdom, and Australia. It is depicted by the active participation of related organizations such as the Sustainable Packaging Alliance (Australia), Sustainable Packaging Coalition (the United States) and the effective operations of such environmental programs as the Wates & Resources Action Programme (the United Kingdom) (Martinho et al., 2015). By contrast, the awareness and understanding of this issue in developing and underdeveloped nations remain doubtful (Eze & Ndubisi, 2013; Martinho et al., 2015; Nguyen et al., 2021; Scott & Vigar-Ellis, 2014).

If continued, the humble level of ecological absorption in less developed nations may hinder the global effort to pursue sustainable development for the following reasons. Firstly, most of the world’s residents populate in underdeveloped and developing nations. Thus, ensuring sustainable development on a global scale requires priorities in promoting environmental literacy among this majority (Scott & Vigar-Ellis, 2014). Secondly, developing countries face two co-existing problems simultaneously. The first problem is underdevelopment (lack of amenities for sustainable development), and the other is a deep-seated view of prioritizing economic development over environmental quality improvement (Bowonder, 1987; Nguyen et al., 2021, 2019; Wang et al., 2019). These issues have exacerbated the already vulnerable problem of ecological degradation in lower-income countries. In that event, determining factors affecting consumer exposure to green purchases merits thorough attention to balance the contradicting benefits of economic growth and environmental preservation in developing and underdeveloped nations.

As a developing country with impressive achievements in economic growth, Vietnam is burdening the pressure of environmental degradation, rooted by a massive load of economic activities and an excessive strain on infrastructure. Meanwhile, a report on Vietnam Waste Management Market reveals that Vietnam is ranked among the top 5 countries globally that are all-together accountable for 60% of the ocean’s plastic pollution and fail to meet the general sanitary requirements (Mordor Intelligence, n.d.). What has added more fuel to the severity of the environmental problems in Vietnam is that some organizations, the National Council on Sustainable Development, appear to play a limited role

in safeguarding sustainable development (GNNCSDS, n.d.). In that context, the government of Vietnam clarifies its viewpoint that none other than human beings are “the center of sustainable development” (The Socialist Republic of Viet Nam, 2016). Hence, determining the factors affecting the psychology of Vietnamese customers’ green behavior is highly valued.

For all the illustrated points, our research aims to divulge the factors associated with the green consumption of Vietnamese Gen Z, which constitutes 25% of the overall Vietnamese workforce (Nguyen et al., 2021). The contributions of this study in bridging the literature gap within the framework of sustainable development and green issues are twofold. On the one hand, the present research reveals the factors driving green purchase behaviors of young Vietnamese people, while on the other hand, demonstrating the state of green affairs with regard to the perspectives of three agents, namely businesses, young consumers and the education system. Accordingly, the following conclusions are drawn. Firstly, a group of factors, including age, education, price, environmental literacy, environmental concern and psychological factors, seems by no means statistically related to the green practices of Vietnamese Gen Z, which communicates an ill-fated attempt at the educational network in fostering consumers’ exposure to green consumption. Secondly, to our amazement, green packaging can adversely affect green purchase behaviors, implying green packages’ feeble role in conveying environmental messages. Thirdly, the green purchase customs of Gen Z in Vietnam are not affected by the behaviors of the majority but are rather an independent effort. Finally, several brands in Vietnam resort to greenwashing to manipulate the public’s misleading opinions about their ecological images, eroding consumers’ trust in the responsible fashion of brands.

## 2. Literature Review

### 2.1. Green Consumer Behavior and Green Consumer Intention

Green consumption has minimal adverse environmental consequences in all stages of consumers’ product acquisition, use and disposal (Kim et al., 2012). It may include multiple practices (for example, buying and post-buying behaviors), among which green purchase behavior is one of the most important (Nguyen 2019). Green purchase behavior is socially responsible and vital in sustainable development as it balances the supply demand in the economic cycle and considers environmental and societal welfare (Jaiswal & Singh, 2018a). Generally, green purchase behavior indicates the purchase of green products, which are defined as ones made from ecologically safe resources, have a low environmental impact, are partly or fully recyclable and

decomposable, and use less packaging or packaging that is not harmful to the environment (Chen & Chai, 2010; Do Paco & Raposo, 2009; Durif et al., 2010).

The fast-growing fashion of green marketing demonstrates the importance of understanding and navigating customers' green behaviors. Some previous studies record that most consumers have only a modest level of green-packaging knowledge, with the figure of those not absorbing the dangers underlying the overuse of traditional packaging accounting for 63.8% (Hao 2019). In a more detailed manner, Scott and Vigar-Ellis (2014) stated that without environment-informative features, such as eco-label, customers could hardly have any perceptions of the good benefits that ecologically packaged products may offer. In some cases, even with an eco-label, the green message is hardly conveyed or is vague (Scott & Vigar-Ellis, 2014). Nonetheless, lately, there has been a gradual improvement in consumers' environmental literacy. To illustrate, Holdway et al. (2002) and Scott and Vigar-Ellis's research work review that customers are "increasingly hostile toward wasteful, misleading, and hard-to-use packaging and more aware of the complex ecological and social effects of the products they use." Simultaneously, Hao (2019) add that customers have endorsed a proposal for higher requirements for eco-friendly packaging and have developed a sense of optimism over the beneficial impact of green packaging on the surrounding nature. In addition to that, costly as green packaging may seem owing to its various functional roles (Holdway et al., 2002; Scott & Vigar-Ellis, 2014; Walker & Hilton, 2002), the survey of Hao (2019) discloses a statistical figure of 78.4% of respondents willing to pay for the additional costs as they are in favor of socially responsible corporations, or "green brands." In a nutshell, the increase in customers' demand for green purchases has made it in vogue. To cater to customers' needs and alleviate their concerns about environmental issues, businesses must implement green marketing as a strategic technique to highlight their green features and defend their market status (Van Nguyen, 2022).

According to previous studies, green consumer behavior could be deduced by green consumer intention - the possibility and desire of a consumer to select a more environmentally friendly product as opposed to conventional ones (Chen & Chang, 2012; Puspitasari et al., 2018). Green consumer intention is an important and reliable predictor of purchase decisions towards green products at present and in the future (Nguyen et al., 2020; Zhuang et al., 2021). In this context, intention can capture the motivational variables which impact environmentally friendly buying decisions (Ramayah et al., 2010). Given the importance of green purchase intention, it is recommended that further studies of this area should be prioritized, especially in developing economies.

Research on antecedents of green purchase intention and behavior is often based on the theory of reasoned action

(TRA) and the theory of planned behavior (TPB) (Arvola et al., 2008; Gupta & Ogden, 2009; Tanner & Kast, 2003; Nguyen, 2019). In the context of green consumption, TRA argues that attitude and subjective norms towards environmental issues determine green consumer intentions, thus leading to purchase behavior (Fishbein & Ajzen, 1975). Meanwhile, TPB adds perceived behavioral control to the model of TRA, forming a behavioral intention that ultimately influences behavior. Various extended models of TRA and TPB are applied in studies about purchase decisions of eco-friendly hotels (Han et al., 2010), organic food (Dean et al., 2008; Tarkiainen & Sundqvist, 2005), green energy (Al Sadat et al., 2020) and so on.

In addition to variables in TRA, many other factors influencing green purchase decisions have been explored, e.g. (Sun & Wang, 2019; Wang et al., 2020), Zhang and Dong (2020) believed that most indicators could be classified into three groups: (1) individual factors including awareness of the environment, environmental literacy, environmental concern, and socio-demographics, (2) product attributes and marketing such as packaging, eco-label, price and (3) social factors such as subjective norm or peer influence. Some prominent factors, such as environmental knowledge and concern, significantly impact green purchase intention (Aman et al., 2012) and the subjective norm and green trust (Ko & Jin, 2017; Konuk et al., 2015). However, it is noteworthy that results are conflicting among different studies. Despite conventional thought, there is evidence that environmental knowledge and concern do not affect green consumer intention (Indriani et al., 2019; Jaiswal & Kant, 2018b), and consumer attitudes do not promote green purchase decisions (Xu et al., 2020). This inconsistency in findings demands further investigation to address effectively, and the variables will be discussed more thoroughly in establishing hypotheses.

## 2.2. Green Packaging

Packaging is one of the key elements in the production and consumption of products. It contains, protects, stores, identifies and promotes products (Rettie & Brewer, 2000; Wikström et al., 2014). In addition, packaging plays an important role in companies' communication with their consumers and can capture consumers' attention (Draskovic et al., 2009; Paine, 2002; Prendergast & Pitt, 1996; Silayoi & Speece, 2007), as well as significantly impact buying decisions (Murray & Delahunty, 2000; Prendergast & Pitt, 1996).

However, as most packaging is single-use and has a short life span, it is causing detrimental environmental problems (Zhang & Zhao, 2012). Packaging production consumes many resources, and packaging waste is one of the biggest sources of pollution worldwide, including in Vietnam (Nguyen et al., 2021). This is unarguably a global

issue, especially in emerging countries where economic development attracts more attention than environmental protection. This motivates consumers to pay greater attention to their packaging choices in the pursuit of sustainable development (Quach & Milne, 2019), leading to the introduction of innovative types of packaging known as “green packaging,” “sustainable packaging,” or “environmental-friendly packaging.” Although referred to by different names, the fundamental concept of green packaging is the same: to retain the functions of traditional packaging while adding an environmental value (Boks & Stevels, 2007). This added green value of packaging might become the determinant of product choice when consumers consider products of the same performance (Ottman, 1998).

Green packaging has different definitions in the literature. Zhao (2021) refer to green packaging as packaging that does not harm human health and the environment, is recyclable and reusable, and encourages sustainable development. Simply put, green packaging promotes the reuse and reduction of waste throughout all phases of the packaging life cycle (Dominic et al., 2015). From consumers’ perspective, it is reported that many of them judge the eco-friendliness of packaging by waste treatment, represented by recyclability (Van, 1996). Besides, Thøgersen (1999) reports that consumers feel responsible for protecting the environment by avoiding excessive shopping packaging. In the case of fresh food, consumers are willing to purchase products without packages as they deem it a good sustainable choice (Bovensiepen, 2018). On the contrary, there is evidence that consumers’ packaging evaluation is mainly emotional instead of rational, and their knowledge of environmental factors in packaging is limited (Otto et al., 2021).

It is noticeable that eco-friendly packaging is of growing interest to consumers. Wanninayake and Randiwela (2008) revealed that most Sri Lankan respondents considered packaging the most important element in green FMCG product choices. Similarly, around one-third of Swedish respondents (Rokka & Uusitalo, 2008) mentioned green packaging as the first criterion when purchasing beverages. Furthermore, concerns about environmental packaging also impact consumers’ purchase intention (Koenig-Lewis et al., 2014). These results show that more consumers are considering environmentally friendly packaging aspects when purchasing besides traditional characteristics. This may require more research to understand the relationship between green packaging and buying intention, thus facilitating the expansion of green consumption.

The research literature presents the drawbacks of previous papers on this topic in several ways. Firstly, the sample size selected for testing in former studies is relatively small, with the number of observations varying in the range of 200–400, which is often considered not highly representative of an entire region or a country, following the scope of research

(Eze & Ndubisi, 2013; Martinho et al., 2015; Nguyen et al., 2021). Secondly, some studies focus on investigating psychological and behavioral factors in compliance with the Theory of Planned Behavior, developed by Ajzen (1985), while ignoring the effect generated by demographic factors (Eze & Ndubisi, 2013; Nguyen et al., 2021), albeit the other research papers advocate demographic profiles as one of the indicators explaining customers’ green behavior (Martinho et al., 2015; Potluri & Potluri). Thirdly, while previous studies show that ecological packaging positively contributes to customers’ green purchase behavior, many consumers attain limited knowledge about the ecological contribution of green-packaged products (Hao et al., 2019). This poses a question about whether or not the effect of green packaging is weighty enough to drive green consumption, as claimed in various research articles earlier. To the best of our abilities, this study hopes to address the shortcomings regarding sample size and research model, targeting to obtain more reliable results to provide consulting materials for the government, corporations, and stakeholders to impose proper policies, putting a step forward towards sustainable development. Besides, this research can also set a representative research example for other developing countries, aiming to accelerate economic growth at minimized environmental costs.

### 2.3. Hypotheses

Green packaging and eco-label are the most direct tools to display the environment-friendliness of green products (Zhang & Dong, 2020) and motivate buying (Young et al., 2010). The environmental aspects of green packaging could be expressed through its minimization, reusability, recyclability, and biodegradability (Barber, 2010). Rokka and Uusitalo (2008) concluded that a significant number of consumers favor green packaging (especially eco-friendly labeled packaging) and regard it as an important product attribute. In addition, eco-label issued by authoritative agencies are believed to be powerful in enhancing credibility in the eyes of consumers (Parguel et al., 2011). However, inconsistencies exist due to a lack of consumers’ knowledge and trust in the labeling schemes (Nittala, 2014), meaning consumers are unaware of the complicated green labels or do not believe in them.

**H1:** *Green packaging positively influences consumers’ intention to buy green products.*

Environmental literacy refers to knowledge regarding environmental issues (Chan & Lau, 2002). Consumers who are more ecologically literate are assumed to be more likely to practice green purchases (Bartkus et al., 1999; Mostafa, 2007; Peattie, 2010;) and willing to pay more for green products (Wei et al., 2018; Mostafa, 2009). Chan and Lau

(2002) believed ecological literacy is an antecedent of green purchase intention among Chinese consumers. However, some studies report a weak or inconsistent relationship between environmental knowledge and green purchase behavior (Bartiaux, 2008; Pedersen & Neergaard, 2006; Wolsink, 2007); therefore, this relationship needs to be further examined. It is also found that consumers' lack of knowledge and understanding about the impact of their purchase would lead to more difficulties in choosing products (Connell, 2010) and hinder the conversion from attitude to the purchase of green products (Vermeir & Verbeke, 2008).

**H2:** *Environmental literacy positively influences consumers' intention to buy green products.*

Environmental concern is comprehended as people's level of awareness about environmental issues and the willingness to solve them (Dunlap & Jones, 2002; Lounsbury & Tornatzky, 1977). The alarming ecological degradation around the world has triggered many people's awareness of environmental problems and the need for environmental protection, thus leading them towards engagement in eco-friendly behavior and preference for green products (Garvey & Bolton, 2017). Over the past years, environmental concern has been of interest to many researchers' interests as they believe that consumers having high levels of concern towards the environment would be more likely to perform pro-environmental behavior (Albayrak et al., 2013; Czap & Czap, 2010) and green purchase in particular (Chan, 1996; Schwepker & Cornwell, 1991). Environmental concern is the strongest driver of consumers' acceptance of green products (Moon et al., 2016) and is one of the important factors in green purchase intention (Panda et al., 2020; Xu et al., 2020). Furthermore, a study by Nekmahmud and Fekete-Karkas (2020) demonstrated that environmental concern has a significant relationship with young consumers' intention toward green food purchase decisions in Bangladesh.

**H3:** *Environmental concern is positively associated with consumers' intention to buy green products.*

Generally, green products are more expensive as they often take higher costs to produce than conventional ones (Ling, 2013). Thus, price is acknowledged as an important obstacle when practicing green purchases (Ghosh et al., 2016; Henryks et al., 2014), especially in developing countries where consumers' financial constraints are significant. Connell (2010) and Vermeir and Verbeke (2006) concluded that high prices may be put before ethical considerations when purchasing green products. Similarly, D'Souza et al. (2006) researched results to demonstrate that consumers are less likely to buy green products when prices are higher.

Therefore, it is proposed that price hurts consumers' green product purchase behavior.

**H4:** *Price is negatively associated with consumers' intention to buy green products.*

Chen (2010) defined green trust as "the willingness to depend on a product, service, or brand based on the belief or expectation resulting from its credibility, benevolence, and ability about its environmental performance." The scope of green trust in this context is not only about products but also about firms, which means consumers consider brands' commitment to environmental performance. In previous literature, green trust is found to develop purchase intention (Chen & Chang, 2013; Kang & Hur, 2012; Konuk et al., 2015; Tarabieh, 2021). However, in recent years, many firms have used false claims - or "greenwash" their brand - to exploit green consumers and enhance their image, thus resulting in the increasing skepticism of consumers towards green products. Studies by Gupta and Ogden (2009) and Vermeir and Verbeke (2008) illustrated that the lack of trust in claims and the eco-friendliness of products is a significant barrier to consumers' green purchase decisions. Besides, a company's positive image contributes to consumer trust and encourages purchasing (Joshi & Rahman, 2015).

**H5:** *Green trust is positively associated with consumers' intention to buy green products.*

Subjective norm is a person's social pressure about whether to carry out a certain behavior (Ajzen, 1991). When making decisions, individuals are usually influenced by the opinions of surrounding people. In this regard, green consumer behavior also expresses social meaning as a person perceives the pressure to follow the behaviors of green consumption of their social groups (Tsarenko et al., 2013) to get social acceptance.

There is evidence that subjective norm positively influences an individual's green purchase intention (Ko & Jin, 2017; Teng et al., 2015; Öhman, 2011). A study by Kim and Chung (2011) on the intention to purchase organic cosmetics products highlighted the opinions of consumers' "important others." On the other hand, while findings show that bridging capital (reference groups with a close relationship to a person such as family or friends) has a significant impact on their green purchase decisions (Tsarenko et al., 2013), bonding capital (reference groups with mutual interests but are not close-knit such as opinion leaders or mass media) is proven to be of growing importance due to the strong development of social media (Kim et al., 2020; Zhang & Dong, 2020).

**H6:** *Subjective norm is positively associated with consumers' intention to buy green products.*

The impact of psychological factors on purchase behavior is also taken into consideration. First, attitude toward the purchase of green products is a widely examined factor, defined as consumers' cognitive evaluation of sustainable purchasing behavior (Joshi & Rahman, 2016). Many studies suggest that people with favorable attitudes would have a more positive intention toward green product purchases (Wang et al., 2016; Zhuang et al., 2021); however, there are contradictory results - for example, Tracy and Oskamp (1984), thus this study tries to explore this relationship better. Second, it is pointed out that when people are aware of the detrimental effect of environmental degradation, they are likely to feel responsible for protecting the environment (Gadenne et al., 2011), so they tend to make efforts in environmental-friendly practices such as avoid doing ecologically harmful behavior (Joshi & Rahman, 2019) and purchase green products (Kaiser & Shimoda, 1999).

*H7: Psychological factors positively affect consumers' intention to buy green products.*

### 3. Data and Methodology

#### 3.1. Sample and Data Collection

This study used qualitative and quantitative research methods based on a meta-analysis of available information from various sources and interviews through questionnaires for young consumers in Vietnam. According to previous literature, Gen Z generally refers to people born in the late 1990s and early 2000s (Seemiller & Grace, 2016; Turner, 2015). In Vietnam, Gen Z already makes up 20 percent of the country's population (GSO, 2021). Nonetheless, Gen Z is getting and will significantly impact all aspects of the nation's economy, from consumption to amusement. As global interconnectedness grows, generational change may play a greater role in establishing behavior than socioeconomic differences. Youths have had a major influence on people of all ages, socioeconomic statuses, and purchasing behaviors. They are deemed suitable for purposive sampling to improve the generalizability of the findings as a realistic description of Vietnamese consumers. For most studies, sample sizes greater than 30 but less than 500 appear appropriate (Roscoe, 1975; Serakan, 2003). Hence, the validated sample size obtained in this study is an influential deputation.

Young people (Gen Z) were invited to respond to questions regarding their awareness of and preferences for green packaging. Generation Z (or Gen Z) refers to people born between 1996 and 2010 (Freestone & Mitchell, 2004). Currently, they constitute around 33% of the world's population and 21% of Vietnam's population (Nguyen et al., 2021). Gen Z is viewed as the "next consumer powerhouse" (Le et al., 2020) as they enter the workforce. Do and Do

(2020) notice that their spending power has become increasingly significant.

Furthermore, they are proven to have a considerable influence on their parents' spending (Weinswig, 2016). Despite their young age, Gen Z seems highly conscious about the environment (Nguyen 2019). Gen Z is born in an era of rapid economic development, and with severe ecological complications, Gen Z shows a high level of attention to social issues such as social responsibility and environmental protection (Adnan et al., 2017; Lee, 2010). They are also more receptive to new ideas and initiatives, making adopting green practices and products quicker than their previous generations (Francis & Hoefel, 2018; Joshi & Rahman, 2016). Moreover, they influence people around them to actively engage in green practices (Nguyen 2019). Thus Gen Z cohort is regarded as the ideal driving force for changes in sustainability issues.

Considering the above-mentioned reasons, Gen Z's intention and behavior toward green consumption are worth investigating. However, as they are relatively young, there is a lack of research targeting this generation, especially in developing countries (Adnan et al., 2017). Besides, existing literature on this topic shows contradictory results: in several studies, young adults are pointed out to have a concern about the environment and therefore show favorable attitudes towards green products (e.g., Dabija, 2018; Su et al., 2020; Starks, 2009). On the other hand, there is evidence that young consumers pay less attention to the eco-label and that consumers of young age in Vietnam have lower intentions of green product purchase due to financial limits and lack of opportunity. This study will attempt to address this inconsistency by examining the factors influencing the green purchase intention of Gen Z in Vietnam.

This study used non-probability convenient sampling. This approach is based on the characteristics and properties of the survey sample to infer the characteristics and properties of the whole population. This technique assists the researcher in choosing respondents based on their availability and accessibility with no obstacles and getting the necessary information from many respondents quickly and efficiently, saving time, costs, and human resources. Data was collected online using online forms, and the link to the survey was shared via social media. Data collection was conducted between August 2021 and September 2021. All measurement items were adopted from related studies, which were previously validated. Data were then analyzed using the Statistical Package for Social Science software version 22.0.

#### 3.2. Research Design and Analysis

The study uses basic quantitative analysis methods such as Cronbach's alpha coefficient, factor analysis, and

regression analysis. Cronbach’s alpha coefficient method is used to evaluate the scale’s reliability. The scale has acceptable reliability when this coefficient ranges from 0.6 to 0.8.

The factor analysis technique evaluates the scale’s validity, adjusting the research model and hypothesis. According to Hair et al. (1998), the scale ensures its validity when the factor loading coefficient must be approximately equal to or greater than 0.5. Simultaneously, the KMO coefficient (Kaiser-Meyer-Olkin) used to determine the parameters of factor loadings must be in the range [0.5–1], and the Bartlett test probes the statistical significance (Sig. < 0.05).

The multivariate regression analysis was applied to test the study hypotheses. This predictive algorithm investigates the relationship between one variable (the dependent) and one or more other variables (called the independent variable). Regression analysis estimates the dependent variable’s value based on the independent variables’ values and examines research hypotheses.

Of the 914 responses, 68.93% were women, and 31.07% were men in the present study. Regarding education, 72.65% graduated from university or college, 9.3% not graduated from high school, 8.97% not graduated from university/college, 4.81% were studying master’s degree or higher, and 4.27% graduated from high school but did not go to university. In terms of income, 38.62% earn from 7 to under 10 mils per month, 32.60% earn from 10 to under 15 mils per month, 20.57% earn from 3 to under 7 mils per month, 4.16% and 4.05% earn equal or greater than 15 mils and under 3 mils respectively.

### 3.3. Empirical Model

The authors will conduct a quantitative approach to linear regression in this study. The independent variables are Green Packaging, Subjective Norm, Price, Environmental Literacy, Environmental Concern, Green Trust, and Psychological Factors. In contrast, Purchase Intention is the dependent variable, and Gender, Age, Education, and Income are the control variables, with SPSS 22.0. The following equation illustrates our research model (Table 1):

$$\begin{aligned}
 PB = & \alpha + \beta_1 * GP + \beta_2 * SN + \beta_3 * PR \\
 & + \beta_4 * EL + \beta_5 * EC + \beta_6 * GT \\
 & + \beta_7 * PF + \beta_8 * AGE + \beta_9 * GENDER \\
 & + \beta_{10} * EDU + \mu \quad (1)
 \end{aligned}$$

Where:  $\alpha$  are correlation coefficients,  $\mu$  is an error.

The following table shows the interpretations and roles of selected variables.

## 4. Results

### 4.1. Descriptive Statistics

Table 2 illustrates the descriptive statistics of the dependent variable (GI – Green purchase intention) and seven independent variables (GP, SN, PR, EL, EC, GT, PF). The results are calculated from a population of 914 respondents, showing the mean, median, minimum and maximum values. Overall, the mean of green purchase intention is 3.36, indicating that young Vietnamese people generally tend to purchase green products, albeit not greatly. Regarding the independent variables, it is visible that the subjective norm has the highest mean (3.4986), while the figure for psychological factors is the lowest (2.2779). This result points out that the opinion and perception about green product purchase of relevant people is the most favorable choice, as opposed to factors related to psychology such as attitude and preference for green products and responsibility for the environment. In addition, respondents show a little positivity toward green packaging, expressed through a mean of 3.2985.

Figure 1 demonstrates the different indicators of green purchase behavior regarding gender. It could be seen that male respondents come second to female ones in most factors, except for green packaging and subjective norm. Specifically, men’s points in green packaging and subjective norm are 3.36 and 3.56, about 0.1 points higher than women’s (3.27 and 3.47, respectively). By contrast, findings show that females are marginally more literate about the environment than males by 0.1 points (3.31 and 3.21, respectively). The differences between the two genders in connection with other factors, on the other hand, are not significant.

Regarding income (Figure 2), the green packaging and price charts are the most notable. Among the five studied income ranges, the mean of green packaging in the 3–7 million group has the smallest point of 2.61, which is 0.14 points lower than under 3 million. Starting from 7–10 million, the mean has a surge and reaches the highest with the group above 15 million (4.11). Considering the price, the income groups above 15 and under three score the lowest, while other groups share the same position with a slight difference in groups 10–15 (lower by 0.06 points).

Regarding green purchase intention, female youngsters have a point of 3.39, which is 0.1 points higher than male fellows. This would mean female respondents give more positive answers than negative ones about their intent to buy green products than men. When income is considered, the intention to purchase green products increases along with the increase in earnings. Specifically, people whose income is under 3 million VND show the lowest intention

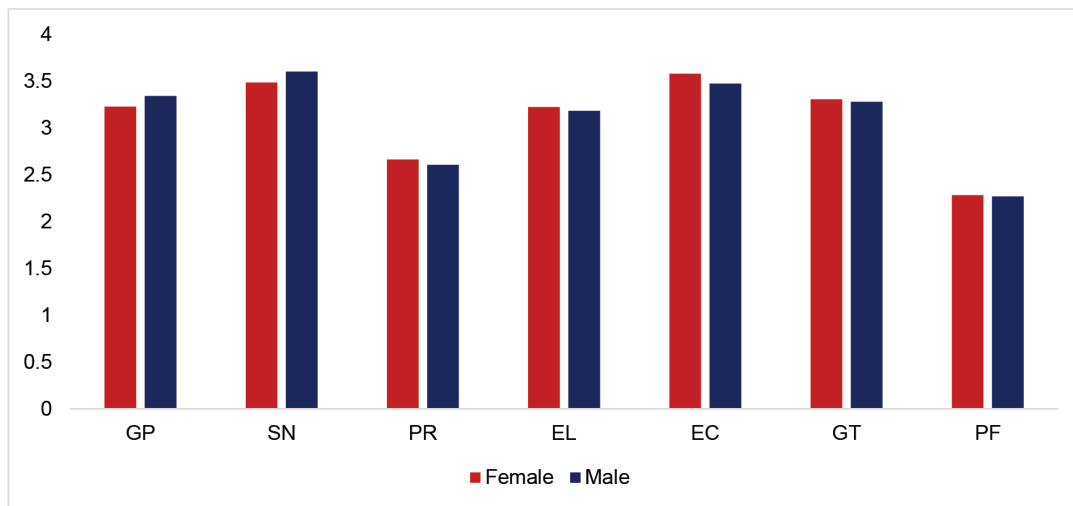
**Table 1:** Variables Index

Variables	Items	Variable Name	Role
Green packaging	Minimal packaging	GP1	Independent variable
	Reusability	GP2	
	Recycling	GP3	
	Biodegradability	GP4	
	Eco-label	GP5	
	Protective capability	GP6	
Subjective norm	Friends	SN1	Independent variable
	Family	SN2	
	KOLs	SN3	
	Crowd effects	SN4	
Price	Price	PR1	Independent variable
Environmental literacy	Environmental protection	EL1	Independent variable
	Health-related benefits	EL2	
	Climate change prevention	EL3	
	Ease of disposal	EL4	
Environmental concern	Awareness of water pollution	EC1	Independent variable
	Awareness of soil pollution	EC2	
	Awareness of air pollution	EC3	
	Awareness of the dangers to the ecosystem	EC4	
Green trust	Promises/Commitments of firms	GT1	Independent variable
	Green claims	GT2	
	Environmental product performance	GT3	
	Brand image	GT4	
Psychological factors	Preference for green purchases	PF1	Independent variable
	Attitude toward green purchases	PF2	
	Responsibilities	PF3	
Gender	Male	GENDER	Control variable
	Female		
Age	Age (16–25)	AGE	Control variable
Education	High schoolers	EDU	Control variable
	Associate's Degree		
	Undergraduate		
	Bachelor's Degree		
	Master's degree and higher		
Income (million VND)	Under 3	INCOME	Control variable
	From 3 to under 7		
	From 7 to under 10		
	From 10 to 15		
	Equal to or greater than 15		
Green purchase behavior	Green purchase intention	PB.	Dependent variable



**Table 2:** Descriptive Statistics

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
Green purchase intention	914	1	5	3.36	0.885
Green package	914	1.17	5.00	3.2985	0.59154
Subjective norm	914	1.00	5.00	3.4986	0.83696
Price	914	1.00	5.00	2.6444	1.19667
Environmental literacy	914	1.00	5.00	3.2782	0.74535
Environmental concern	914	1.00	5.00	3.3162	0.78935
Green trust	914	1.00	5.00	3.2590	0.79290
Psychological factors	914	1.00	4.67	2.2779	0.81744
Valid N (listwise)	914				



**Figure 1:** Indicators of Green Purchase Behavior and Gender

to buy green (equal to 3.08). The mean of intention is the largest, 3.71, with the group above 15 million. The variance between under 3 million and the next four ranges are 0.11, 0.28, 0.37 and 0.63 more points of under 3 million, which is comparatively remarkable.

## 4.2. Regression Analysis

### 4.2.1. Cronbach's Alpha

The study was carried out by testing the scale with Cronbach's alpha reliability coefficient contributed to the measurement of the factorial concept. To test this scale, it is necessary to eliminate the observed variables with a small total correlation coefficient (less than 0.3), the criterion for selecting the scale if the alpha reliability is greater than 0.6 (Hair et al., 2006). The higher the alpha, the greater the intrinsically consistent reliability (Nunnally & Bernstein, 1994).

Based on the above theory, the authors found that some observed variables must be excluded because the total correlation coefficient  $< 0.3$ . Considering the scale of GP, the variables GP5 and GP6 should be removed because when these two variables are removed from the model, Cronbach's Alpha reliability coefficient of the GP variable will increase. Therefore, we need to remove the GP5 and GP6 variables from the GP variable to increase the scale's reliability. Continue to test the reliability of variables GP1, GP2, GP3, and GP4 using Cronbach's Alpha scale, showing that all the remaining GP variables have appropriate correlation coefficients ( $\geq 0.3$ ). Cronbach's Alpha coefficient = 0.668  $\geq 0.6$ , so the variables GP1, GP2, GP3, and GP4 are good measurement scales for GP. Similarly, for GT, EL and EC, variables GT1, EL1 and EC1 are dropped, respectively.

For the SN variable, the test results (Table 3) show that the observed SN variables have a suitable total correlation coefficient ( $> 0.3$ ). Cronbach's Alpha coefficient = 0.774

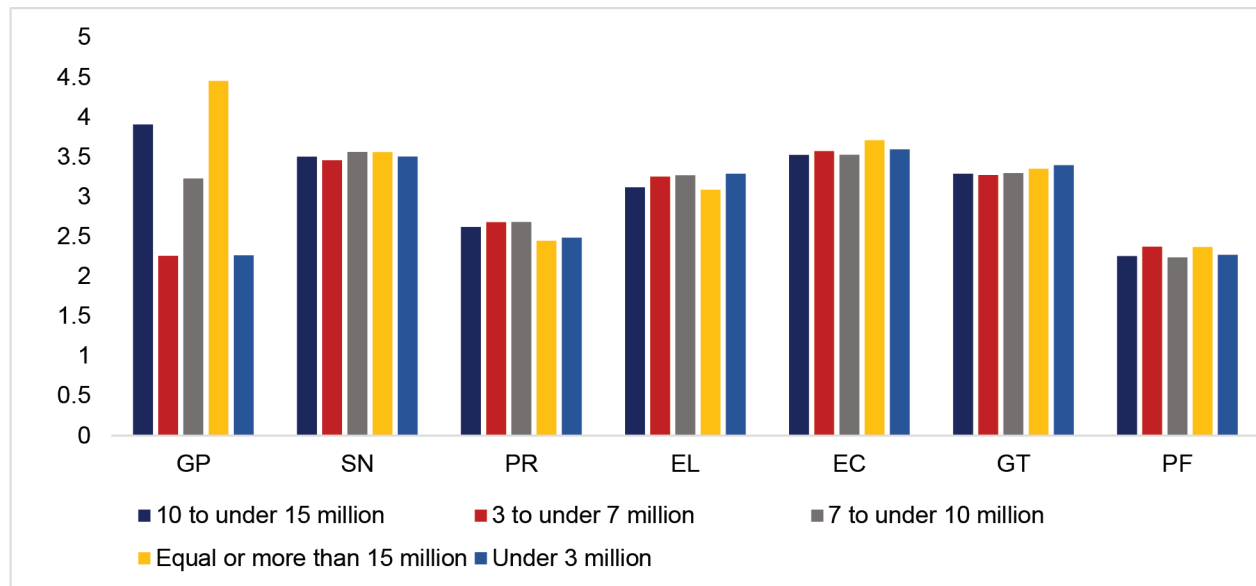


Figure 2: Indicators of Green Purchase Behavior and Income

Table 3: Summary of Cronbach's Alpha Results

Variables	Scale Mean If Item Deleted	Scale Variance If Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
<b>GP</b>				
GP1	16.668	8.763	0.549	0.575
GP2	16.316	8.260	0.583	0.556
GP3	16.696	8.278	0.651	0.537
GP4	16.435	9.037	0.527	0.585
<b>Cronbach's Alpha GP = 0.668</b>				
<b>SN</b>				
SN1	10.186	6.717	0.568	0.724
SN2	10.560	6.326	0.604	0.706
SN3	10.561	7.147	0.572	0.723
SN4	10.676	6.929	0.567	0.725
<b>Cronbach's Alpha SN = 0.774</b>				
<b>EL</b>				
EL1	9.629	7.344	0.015	0.840
EL2	9.961	5.179	0.598	0.434
EL3	9.745	5.156	0.581	0.442
EL4	10.003	4.774	0.610	0.407

Cronbach's alpha EL = 0.632.

> 0.6, so the variables SN1, SN2, SN3, and SN4 meet the reliability requirements and are a very good scale representing the SN variable. The test results for the variable GT show that the observed variables GT have a suitable total correlation coefficient (> 0.3). Cronbach's Alpha coefficient = 0.794 ≥ 0.6, so the variables GT1, GT2, GT3, and GT4 meet the reliability requirements and are a very good scale representing the GT variable. For the variable PF, the test results show that the observed variables STR have a suitable total correlation coefficient (> 0.3). Cronbach's Alpha coefficient = 0.702 ≥ 0.6, so the variables PF1, PF2, and PF3 meet the reliability requirements and are of the great scale representing the variable PF.

**4.2.2. EFA**

The EFA detection factor analysis shows that the data results (Table 4) meet the criteria for factor coefficients greater than

0.5, KMO coefficients (0.688 > 0.5); Bartlett's test (Sig value is 0, less than 0.05); Percentage of cumulative variance (68.972% > 50%) and initial eigenvalues (1.711 > 1). Therefore, the factor analysis is consistent with the research dataset.

Mayers et al. (2000) stated that the principal component extraction method and the varimax rotation are the most commonly used in factor analysis. The principle of selecting a variable belonging to a factor implies that the variable must have a factor loading of more than 0.5 in this factor and no factor loading coefficient of more than 0.35 in other factors (Igarria et al., 1995) or the distance between two load weights of the same variable in two factors must be greater than 0.3. However, based on the rotation matrix that the authors have performed, they found two observed variables that, according to the theory, are unsuitable (GT2, SN2), so they have been removed to avoid autocorrelation. Finally, the authors found that two observed variables were extracted for the scale to meet the convergence and discriminant criteria.

**Table 4:** Summary of EFA Results

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of variance	Cumulative %
1	2.925	13.929	13.929	2.925	13.929	13.929	2.859	13.612	13.612
2	2.733	13.014	26.943	2.733	13.014	26.943	2.507	11.937	25.549
3	2.549	12.140	39.083	2.549	12.140	39.083	2.501	11.912	37.461
4	2.444	11.636	50.719	2.444	11.636	50.719	2.402	11.439	48.900
5	2.122	10.107	60.826	2.122	10.107	60.826	2.296	10.933	59.832
6	1.711	8.146	68.972	1.711	8.146	68.972	1.919	9.140	68.972
7	0.829	3.948	72.920						
8	0.751	3.574	76.495						
9	0.607	2.890	79.385						
10	0.540	2.573	81.957						
11	0.526	2.504	84.461						
12	0.497	2.365	86.826						
13	0.453	2.156	88.982						
14	0.397	1.892	90.874						
15	0.365	1.738	92.612						
16	0.355	1.689	94.301						
17	0.306	1.458	95.759						
18	0.291	1.385	97.144						
19	0.262	1.247	98.391						
20	0.253	1.207	99.598						
21	0.084	0.402	100.000						

Extraction Method: Principal Component Analysis.

**Table 5:** Pearson's Correlation Results

		GP	SN.	PR	EL.	EC	GT	PF.
GP	Pearson Correlation	1	0.022	-0.005	-0.042	0.004	-0.006	-0.038
	Sig. (2-tailed)		0.500	0.886	0.203	0.906	0.848	0.254
	N	914	914	914	914	914	914	914
SN	Pearson Correlation	0.022	1	0.063	0.006	-0.043	-0.046	-0.140**
	Sig. (2-tailed)	0.500		0.057	0.858	0.196	0.163	0.000
	N	914	914	914	914	914	914	914
PR	Pearson Correlation	-0.005	0.063	1	0.035	-0.092**	-0.016	-0.117**
	Sig. (2-tailed)	0.886	0.057		0.291	0.005	0.638	0.000
	N	914	914	914	914	914	914	914
EL	Pearson Correlation	-0.042	0.006	0.035	1	0.120**	-0.045	0.043
	Sig. (2-tailed)	0.203	0.858	0.291		0.000	0.179	0.196
	N	914	914	914	914	914	914	914
EC	Pearson Correlation	0.004	-0.043	-0.092**	0.120**	1	-0.015	-0.056
	Sig. (2-tailed)	0.906	0.196	0.005	0.000		0.644	0.089
	N	914	914	914	914	914	914	914
GT	Pearson Correlation	-0.006	-0.046	-0.016	-0.045	-0.015	1	-0.011
	Sig. (2-tailed)	0.848	0.163	0.638	0.179	0.644		0.743
	N	914	914	914	914	914	914	914
PF	Pearson Correlation	-0.038	-0.140**	-0.117**	0.043	-0.056	-0.011	1
	Sig. (2-tailed)	0.254	0.000	0.000	0.196	0.089	0.743	
	N	914	914	914	914	914	914	914

\*\*Correlation is significant at the 0.01 level (2-tailed).

#### 4.2.3. Pearson – Correlation

Table 5 indicates the correlation between independent variables based on the results of the SPSS version 22. From the given table, it can be seen that SN and PF, PR and EC, and PR and PF have a negative correlation, apart from EL and EC with 0.120. This would mean that the multicollinear phenomenon will likely occur between independent variables. In the following steps, the study will clarify whether or not to have this phenomenon. Additionally, there is no linear relationship between other groups since the correlation coefficient between these variables is not statistically significant ( $Sig < 0.05$ ).

#### 4.2.4. Regression

The value of  $R$ -squared is equal to 0.045, suggesting that the variation in green purchase intention can be explained by 4.5% of the changes in the independent variables in the research model, including a group of demographic factors (gender, age, education, income), green packaging, subjective

norms, price, environmental literacy, environmental concern, green trust and psychological factors. Durbin-Watson statistic is equal to 1.614871, which falls into the interval of 1.5 and 2.5, implying an absence of first-order series autocorrelation. The prob ( $F$ -statistic) value is 0.000017, less than 0.05, showing that the dataset is acceptable for use in the multiple linear regression model (Table 6).

The following conclusions are drawn by analyzing the significance values of all the variables in the table above (Table 6). Firstly, the significance values of some variables, including age, education, price, environmental literacy, environmental concerns and psychological factors, are 0.5349, 0.7814, 0.3543, 0.4734, 0.4614, 0.4482, all greater than 0.05, indicating that these variables are not statistically significant to explain the variation of the dependent variable. Thus, there is sufficient evidence to reject the effects of these variables on the purchase intention of Vietnamese Gen Z. Secondly, on the contrary, the significance values of some other variables such as income, green packaging, and subjective norms are only 0.0000, 0.0267, 0.0029 respectively, all less than 0.05, suggesting a certain level of

**Table 6:** Coefficients

Variables	Coefficient	Std. Error	t-statistic	Prob.
C	3.613944	0.315442	11.45676	0.0000
GENDER	-0.100904	0.064489	-1.564668	0.1180
AGE	-0.025284	0.040726	-0.620835	0.5349
EDUCATION	-0.008407	0.030281	-0.277640	0.7814
INCOME	0.244350	0.055827	4.376911	0.0000
GP	-0.144835	0.065273	-2.218910	0.0267
SN	-0.104611	0.034987	-2.989989	0.0029
PR	0.022669	0.024461	0.926735	0.3543
EL	-0.023185	0.032326	-0.717223	0.4734
EC	0.023832	0.032339	0.736937	0.4614
GT	-0.059467	0.035826	-1.659907	0.0973
PF	0.027418	0.036133	0.758796	0.4482
R-squared	0.045158	Mean dependent var		3.355580
Adjusted R-squared	0.033514	SD dependent var		0.885218
SE of regression	0.870258	Akaike info criterion		2.572988
Sum squared resid	683.1286	Schwarz criterion		2.636242
Log-likelihood	-1163.855	F-statistic		3.878113
Durbin-Watson stat	1.614875	Prob(F-statistic)		0.000017

impact on green purchase behavior, with a confidence level of 95%. Thirdly, the remaining factors, namely gender and green trust, the significance values of which range from 0.09 to 0.11, can be considered statistically significant to shape the magnitude of green purchases of Vietnamese youngsters, although with a confidence level of only 80%.

Simultaneously, by analyzing the coefficient values of the statistically significant variables, it is clear that each of the model's independent variables determines a different relation with green purchase intention considering the level and direction of impact. In terms of impact direction, to our amazement, almost all variables have a negative relationship with the green purchase intention of Vietnamese Gen Z. The only exception is income, whose coefficient is exceptionally positive. Regarding impact level, income is the most dominating factor defining the purchase behavior of youngsters in Vietnam. Its coefficient value is equal to 0.244350, suggesting that the practice of green purchases will be enhanced by 0.243500% given a 1% improvement in financial resources. With the absolute coefficient value of 0.144835, green packaging ranks second regarding the impact level on our interested variable, but in a reverse direction. In a more detailed manner, a 1% increase in green packaging will result in a 0.144835% decrease in green purchase intention. Gender and subjective norms will exert

almost the same impact level, as the coefficients' absolute values are just over 0.1. To interpret, women's purchase behaviors reflect better "green" characteristics than men's, and over 0.1% improvement in the green tendency of purchase behavior if the number of men is less than 1%.

Similarly, a 1% increase in subjective norms will degenerate green purchase performance by 0.1%. Lastly, green trust is statistically proven to impact green behavior adversely. Specifically, a 0.059467% decrease in green purchase behavior may be explained by a 1% boost in green trust. All in all, the relationship between dependent and independent variables is constructed as follows:

$$PB = 3.613944 + 0.244350 * INCOME - 0.144835 * GP - 0.104611 * SN - 0.100904 * GENDER - 0.059467 * GT + \mu$$

## 5. Conclusion

Currently, ecological issues have been considered one of the flip sides of fast-paced economic development, especially in such emerging economies as Vietnam, where environmental problems are often neglected to prioritize economic benefits. In the context of the global shift towards sustainable development, countries must pursue their

economic targets on the one hand and, in parallel, defend environmental respect on the other. This study, therefore, sticks to the aim of determining the driving factors of green purchase behavior among Vietnamese youngsters. On that grounds, practical measures will be proposed to determine how to achieve sustainable economic growth. To fulfill the research's aims, the OLS method is selected to analyze a primary dataset collected from a survey of 914 young Vietnamese aged between 16 and 25. Analytical tasks are handled with the assistance of some applications such as SPSS and Eview for significance purposes.

The analysis results illustrate that several different factors with various levels and directions of impact foster Vietnamese youngsters' green purchase intention. To begin with, the study shows adequate evidence to dismiss the causal relationship between age, education, price, environmental literacy, environmental concern, psychological factors and our concerned variable - green purchase behavior, which, however, contradicts most of the existing literature (Eze & Ndubisi, 2013; Magnier & Crié, 2015; Martinho et al., 2015; Nguyen et al., 2021; Noor 2012; Rahman et al., 2019; Rokka & Uusitalo, 2008; Tanner & Kast, 2003). The inconsistency may be rooted in geographical distributions of environmental perceptions and the dissimilarities in the scope of this study in comparison with that of others. In Vietnam specifically, the education system lacks effectiveness in communicating environmental messages, which seems to leave a gap between theoretical environmental literacy and practical environmental behavior. Knowledge of ecological issues is insufficient to foster a shift in environmental concerns and psychological behaviors.

Furthermore, the study reveals evidence to suggest that income appears to be the most prevailing factor facilitating consumers' green behavior of Vietnamese Gen Z. Young people, who maintain good financial resources, have various choices when considering a particular product and often have additional requirements for it. Accordingly, they tend to weigh environmental values apart from the other criteria. The second dominating factor in determining the custom of green behavior is green packaging, although it seems poorly performed, explained by the negative relationship between the two variables. The interpretation, although, may seem to argue against previous studies on the related issues (Loureiro & Lotade, 2005; Magnier & Crié, 2015; Rahbar & Wahid, 2011; Rashid, 2009; Rokka & Uusitalo, 2008; Scott & Vigar-Ellis, 2014; Silayoi & Speece, 2007; Zhang & Zhao, 2012; Le, 2021), turns out consistent with the raising skepticism over consumers' perceptions of green packaging, found in the study of Hao, et al. (2019).

To clarify, in Vietnam, young consumers reveal a particular interest in packaging perspectives; however, they either question the environmental benefits conveyed on the packaging or have vague ideas about their effects, thus exerting an adverse impact on green purchase behavior. In addition, green purchase intention is also regulated by

gender and subjective norms. The disparity by gender in terms of practicing green purchases is also reported, in which female consumers are more inclined to ecological consumption than males. The revealed negative effect of subjective norms indicates that green behaviors and the grasp of environmental consciousness are generally not monitored by positive behaviors conducted by other people. Green trust is the last influencing agent on green buying, although at a modest level and in a negative direction. The reason underlying the trend is that green claims about businesses' active engagement in social and ecological issues cover their concealed profits-related desires; consequently, customers raise skepticism and are cautious towards firms' green reports. In Vietnam, the phenomenon of greenwashing has been reported in several studies, for instance, the study of Nguyen (2019) in which the violation of green morality of some food companies in bustling cities, including Hanoi and Ho Chi Minh City, is enlightened.

These findings suggest that a comprehensive coordination of all community members, especially between businesses and the government, should be implemented to make the economy more sustainable. First of all, policymakers must enhance the role of education in conveying environmental values to the general public. The educational contents should be attached with practical actions to promote environmental literacy, encourage individual concerns, and arouse individual contribution to the community. Secondly, firms should neither tailor their corporate strategies in harmony with the proliferation of green trends solely for profit-seeking interests nor perceive CSR as a do-gooding sideshow. Alternatively, firms are encouraged to view CSR through the lenses of financial benefits and attempts at sustainable development so that consumers' green trust in the brand image would not erode. Concurrently, firms should not neglect the display and design of green contents on a product's packaging, as lack of effectiveness would result in the poor interpretation of green messages among customers, thus propagating a profound adverse impact on green purchase intention. Lastly, on a global scale, environmental accounting metrics should be thoroughly developed to quantify the environment-related performances of all firms to accelerate transparency in their green contributions and to hinder the window-dressing of CSR by firms' involvement in greenwashing.

The study meets the aims of determining the impacting factors on green purchase behavior of young consumers in Vietnam; however, it bears several shortcomings as well, making the findings rather inconsistent with previous literature. The major drawback is connected with sample size, in which the number of survey participants is not large enough to be representative of the whole population. Nonetheless, as the study's scale is constrained to only young people aged 16–25, our dataset is relatively reliable for interpreting Vietnamese Gen Z's behavior. In this regard, further research recommendations on the related topic include considering a wider range

of ages and backgrounds and appealing to the participation of more observations to obtain more complete results.

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