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Understanding Green Self-identity: Does It Affect Green Buying Behavior?

Yunita Budi Rahayu Silintowe

Universitas Diponegoro, Department of Management, Semarang, Indonesia

I Made Sukresna

Universitas Diponegoro, Department of Management, Semarang, Indonesia

Abstract

Green buying behavior needs attention because of the environmental damage that occurs. Purchasing green products can reduce the negative environmental impacts and ensure environmental sustainability. This study investigates the effects of green knowledge, green self-identity, and green attitudes on green buying behavior. This study also examines the role of green self-identity in mediating the relationship between green knowledge and green buying behavior, as well as green attitudes as a mediating variable of the effect of green self-identity on green buying behavior. This study was analyzed using partial least squares structural equation modeling, involving the selection of 762 respondents in Indonesia using a purposive sampling technique. The results document positive associations between green knowledge and green self-identity, green self-identity and green attitudes, and green self-identity and green attitudes with green buying behavior. Moreover, green self-identity mediates the relationship between green knowledge and green buying behavior, and green attitudes mediate the relationship between green self-identity and green buying behavior. Lastly, green knowledge and green self-identity are crucial in influencing consumers' buying behavior. Individuals with a more comprehensive understanding of the environment will develop a more positive self-perception of the environment. This study contributes to the social identity theory by highlighting the impact of customers' green self-identities on their green purchasing decisions. A practical implication of this research is that companies that produce environmentally friendly products are expected to be increasingly involved in the activities of certain social groups or communities in order to form an eco-friendly consumer self-identity.

Keywords

Green buying behavior, Green self-identity, Social identity theory, Green knowledge, Green attitudes, Environment, Structural equation modeling

JEL Classification

F64, M30, M31, Q50

Introduction

Studies on environmental concerns have been developed considering the increased focus on deteriorating environmental conditions (Wang, Wang, Xue, Wang, & Li, 2018). According to an article in the Harvard Business Review, 95% of the biggest companies in the world regularly disclose their environmental performance to demonstrate their commitments to sustainability to reduce risks, increase efficiency, encourage innovation, and create value from intangible assets (Esty & Charnovitz, 2012). Businesses can be a powerful force for good, especially if they focus on global issues (Davenport, 2021). A healthy and clean environment can be considered a source of joy for society. However, according to a recent poll of over 150,000 people in 142 countries conducted by the Institute for Economics and Peace, countries with the highest carbon dioxide emissions are those with the least concern about climate change, including several of the world's most populous nations (IEP, 2021). One of the world's most populous countries is Indonesia which currently ranks 164th on the 2022 Environmental Performance Index (Wolf & Wendling, 2022).

Some of the most serious environmental problems facing Indonesia today include climate change and global warming, water pollution, air pollution, solid waste management, and deforestation (Edubirdie, 2022; Robinson, 2023). The causes of climate change and global warming are the burning of fossil fuels, emissions from cars, industrial exhaust gases, and the use of chlorofluorocarbons which increase greenhouse gases in the atmosphere. Water pollution is caused by the disposal of garbage, factory waste, organic compounds [pesticides, detergents, waste oil], and inorganic compounds [metals] into rivers, oceans, lakes, and ponds, which change the physical,

Corresponding author:
Yunita Budi Rahayu Silintowe, Universitas Diponegoro, Department of Management, Erlangga Tengah 17, 50241 Semarang, Indonesia
Email: yunitasilintowe@students.undip.ac.id; yunita.silintowe@uksw.edu

chemical, or biological conditions of water. The causes of air pollution are the result of emissions from industries, cars, and the increasing use of fossil fuels. Next, deforestation is caused by the increasing number of logging industries and the expansion of infrastructure such as road construction and urbanization.

As a result, many businesspeople are currently trying to produce environmentally friendly products and services (Ch, Awan, Malik, & Fatima, 2021; Wang et al., 2018). In this context, green products are environmentally friendly, non-hazardous to the environment, recyclable, and long-lasting (Singh & Gupta, 2020). As of October 2022, the global directory of eco-labels listed 456 ecolabels from 199 countries and 25 industry sectors (https://www.ecolabelindex.com/, 2022). As a result, the general product approach is limited to meeting the needs of consumers, whereas green products also promote environmental concerns. Furthermore, green product consumers want to protect the environment from the negative effects of irresponsible consumption in addition to focusing on their own needs. A perilous global situation necessitates the use of green products to facilitate more environmentally friendly and sustainable business strategies. This research will focus on environmentally friendly household products in general [i.e. cooking utensils safe for the health, reusable straws, LED lights, organic vegetables and fruits, energy-efficient utensils, etc.] which are of better quality in an effort to protect the environment.

The concept of green consumption was initially introduced in the 1990s (Peattie, 2010), and consumer concerns for the environment have grown dramatically over time. Positive individual consciousness and virtuous social, economic, and environmental attitudes are critical in this regard for implementing green consumption practices (Siddique, Saha, & Kasem, 2020). Thus, consumers' purchases of green products are primarily motivated by positive factors. Consumers need to be aware of the social impacts and negative impacts on the environment with their daily consumption behavior, so that consumers are expected to be more motivated to buy environmentally friendly products. As stated in Fortune Magazine, in consumption activities, individuals not only seek to support themselves but it is also a way to symbolically signal a certain type of identity (Lindeman, 2021). This issue relates to the social identity theory, which explains how individuals create and determine their social positions (Harwood, 2020).

Several studies have attempted to explain the buying behavior in certain countries, such as Poland (Witek & Kuźniar, 2021), South Africa (Visser & Dlamini, 2021), Bangladesh (Siddique et al., 2020; Taufique & Islam, 2021), China (Sun, Li, & Wang, 2021; Yue, Sheng, She, & Xu, 2020), India (Sadiq, Bharti, Adil, & Singh, 2021; Sharma, Saha, Sreedharan, & Paul, 2020; Singh & Gupta, 2020; Sreen, Yadav, Kumar, & Gleim, 2020), Pakistan (Ch et al., 2021), Peru (Carrión Bósquez & Arias-Bolzmann, 2021), Malaysia (Ali, 2021; Jaini, Quoquab, Mohammad, & Hussin, 2020), Algeria (Troudi & Bouyoucef, 2020), Vietnam (Nguyen & Nguyen, 2020), Thailand (Apipuchayakul & Vassanadumrongdee, 2020), and Indonesia (Suhartanto et al., 2021).

Studies of consumption behavior of green products in Poland (Witek & Kuźniar, 2021), Bangladesh (Siddique et al., 2020; Taufique & Islam, 2021), China (Sun et al., 2021; Yue et al., 2020), India (Sharma et al., 2020; Sreen et al., 2020), Pakistan (Ch et al., 2021), Peru (Carrión Bósquez & Arias-Bolzmann, 2021), Malaysia (Ali, 2021), Vietnam (Nguyen & Nguyen, 2020) focused on eco-friendly products in general. Green knowledge has no effect on buying behavior for environmentally friendly products (Ali, 2021; Siddique et al., 2020). However, in another study, knowledge of environmentally friendly products positively influenced perceived expected outcomes, which then influenced the purchase intention of environmentally friendly products (Sreen et al., 2020). Environmental attitudes do not have a direct effect on the self-reported attitudes of green consumers' behavior (Taufique & Islam, 2021), while other studies of attitude toward green products have an effect on the purchase intention of green products (Carrión Bósquez & Arias-Bolzmann, 2021; Nguyen & Nguyen, 2020) and an effect on the buying behavior of green products (Ch et al., 2021). Environmental concern has a significant positive effect on green purchase intention (Sun et al., 2021), in line with the results of research by Yue et al. (2020) who stated that environmental concern has a significant effect on green consumption behavior. Green self-identity has a significant influence on green purchasing intentions (Sharma et al., 2020). From another point of view, research by Witek and Kuźniar (2021) revealed that female consumers have a more positive attitude towards purchasing environmentally friendly products than male consumers.

A study by Visser and Dlamini (2021) examined environmentally friendly purchasing behavior among coffee consumers towards compostable coffee pods in South Africa, revealing that environmental attitudes have a significant positive effect on green purchasing behavior. Meanwhile, a study by Sadiq et al. (2021) focused on buying green apparel products in India, which found that environmental orientation has a positive effect on green apparel buying behavior. Research by Singh and Gupta (2020) identified twenty relevant factors that influence the purchase of green products from an extensive review of literature and expert opinions. Another study examined the buying behavior of green cosmetics products in Malaysia (Jaini et al., 2020), which demonstrated that pro-environmental beliefs influence personal norms which then affect green purchase behavior. Troudi and Bouyoucef (2020) conducted a study on the buying behavior of green food products in Algeria and discovered that having a positive attitude towards green food has a significant positive effect on the intention to buy green food. The buying behavior of energy-efficient lighting products in Thailand (Apipuchayakul & Vassanadumrongdee, 2020) shows that attitude has the greatest direct influence, while subjective norms are the weakest predictor of purchase intention

for light-emitting diode [LED] products. A study by Suhartanto et al. (2021) focused more on the green repurchase intention of green plastic products with the finding that green trust increases the predictive power of the green purchase intention model of green plastic products. However, the purchase of green products in Indonesia remains understudied.

Various theoretical approaches are used in green product buying behavior studies, such as the theory of planned behavior (Amoako, Dzogbenuku, & Abubakari, 2020; Carrión Bósquez & Arias-Bolzmann, 2021; Ch et al., 2021; Li, Siddik, Masukujjaman, & Wei, 2021; Nguyen & Nguyen, 2020; Siddique et al., 2020; Taufique & Islam, 2021), the social dilemma theory and the psychological egoism theory (Sun et al., 2021), the social role theory (Suhartanto et al., 2021), the theory of reasoned action (Salam, Smith, & Mehboob, 2021; Siddique et al., 2020; Troudi & Bouyoucef, 2020), the social practice theory (Ali, 2021), and the institutional theory (Sreen et al., 2020). This present study uses the social identity theory which has received little attention in the context of green marketing.

This research focuses on the buying behavior of environmentally friendly products. One of the marketing activities' primary goals is to persuade customers to purchase products or use services (Naz, Oláh, Vasile, & Magda, 2020; Siddique et al., 2020). Prior studies demonstrate that consumers' green knowledge affects their green product buying behavior (Amoako et al., 2020; Hariharan & Shamini, 2019). However, other studies have observed inconclusive results, indicating that customers' green knowledge does not affect their purchases of green products (Ali, 2021; Siddique et al., 2020). The inconsistent findings of prior research on the association between green knowledge and green product buying behavior motivate us to include green self-identity as an intervening variable, considering that green purchases are also largely motivated by the consumers' positive self-interests, as they perceive themselves as green consumers (Sharma et al., 2020; Sun et al., 2021). Furthermore, the green self-identity is likely to influence the consumers' purchasing behavior for environmentally friendly products, but this construct is still in its infancy. The existing research focuses primarily on the buying intention of green products (Patel, Trivedi, & Yagnik, 2020; Sun et al., 2021; Tung, Koenig, & Chen, 2017), ecological care and moral obligation (Barbarossa, De Pelsmacker, & Moons, 2017), positive environmental behaviors (Hansmann & Binder, 2020), and still focus less on actual purchases of green products (Confente, Scarpi, & Russo, 2020; Khare, 2015). Therefore, this topic warrants further investigation and development. This present study predicts that consumers with a stronger green self-identity will engage in more green purchasing.

In addition, it is necessary to construct green attitudes in supporting the buying behavior of environmentally friendly products. Previous studies explain the role of green attitudes in encouraging shopping behavior in retailers implementing sustainable food packaging (Su, Duong, Thanh Tran Dinh, Nguyen-Phuoc, & Johnson, 2021), the intention to use environmentally friendly electric aircraft (Han, Lee, Radic, Ngah, & Kim, 2021), the interest in staying at green hotels (Fatoki, 2020), and the interest in buying environmentally friendly products (Barbarossa, Beckmann, De Pelsmacker, Moons, & Gwozdz, 2015; Higueras-Castillo, Liébana-Cabanillas, Muñoz-Leiva, & García-Maroto, 2019; Patel et al., 2020). In order to fill the gaps, this study integrates green knowledge, green self-identity, green attitudes, and green buying behavior. This study is motivated by several factors. First, most of the literature on green self-identity is still limited to the intention to buy green products; therefore, this study concentrates on the actual purchases of green products. Second, this study incorporates the mediation effect of green self-identity from the perspective of the social identity theory, as everyone arguably expects to become a member of a social groups that cares about the environment in response to the demands of environmental sustainability. Third, this study expands the scant literature on green purchasing behavior in Indonesia. The subsequent section of this research is divided into five sections covering the literature review, methods, results, discussions, and conclusion.

Literature Review

Green Marketing

The term "green marketing" first appeared in the late 1980s as a continuation of what the American Marketing Association proposed in 1975 as "ecological marketing" (Polonsky, 1994). "Green marketing" is used interchangeably with "ecological marketing" (Fisk, 1974), "environmental marketing" (Coddington, 1993), and "sustainable marketing" (Fuller, 1999). Polonsky (1994) defines green marketing or environmental marketing as all activities intended to generate and facilitate any exchange that satisfies human needs or desires with minimal negative environmental impacts. Environmentally friendly marketing-mix strategies enable firms to develop new markets or access new market segments for environmentally conscious customers. Firms can adopt green marketing-mix strategies due to rising consumer demands for environmentally friendly products and services.

One of the primary objectives of marketing activities is to influence consumers' purchasing and usage decisions (P. Govender & L. Govender, 2016). Firms can implement green marketing strategies to increase their competitive advantages and attract environmentally conscious consumers by communicating their environmental efforts (Szabo & Webster, 2020). Green marketing research is crucial for promoting sustainable consumerism in both developing and developed countries (Saleem, Khattak, Ur Rehman, & Ashiq, 2021). According to Shabbir, Sulaiman, Al-Kumaim, Mahmood, and Abbas (2020), various green marketing approaches positively affect consumers' environmental behavior. It is crucial to inform the public about the significance of environmental

education and propose measures to improve the status of green behavior and promote green marketing (Ogiemwonyi & Harun, 2020). Table 1 summarizes several prior studies.

Table 1. Summary of previous studies.

Researcher	Focus	Results
Amoako et al. (2020)	The importance of green knowledge and attitudes in purchasing behavior	Green knowledge and green attitudes positively affect purchasing behavior.
Sharma et al. (2020)	Understanding the role of green self-concept and green self-identity in predicting green purchasing intentions among consumers	The green purchasing intention is significantly associated with the green self-concept, product self-concept, and green self-identity.
Confente et al. (2020)	What drives consumers' intentions to switch to and purchase products obtained from organic waste	Green self-identity positively affects perceived value, leading to higher behavioral intention.
Ch et al. (2021)	An empirical assessment of the buying behavior of green products	Attitudes, eco-labels, and green advertising significantly affect the decisions to purchase green products.
Taufique and Islam (2021)	Antecedents of green consumer behavior among young urban consumers	Marketers can motivate young urban to adopt green consumer behavior by using self-directed appeal.
Su et al. (2021)	An integrated behavioral model for shopping at retailers who use sustainable grocery packaging [SGP].	Environmental knowledge and green self-identity are two personal factors influencing the behavior indirectly through the attitude toward shopping at SGP-practicing retailers.
Sun et al. (2021)	The integration of negative [ego-centric] and positive [altruistic and ego-centric] green purchasing drivers	Green purchasing intention is positively associated with moral obligations, green self-identity, environmental concern, and social pressure.

Green Buying Behavior

The literature on green product purchases demonstrates the influences of psychographic factors, past beliefs, social norms, and environmental awareness on green purchasing behavior (Khare, 2015). Regarding green products and services, consumers primarily focus on buying products that have been produced with environmentally friendly materials and processes that minimize the negative impacts of consumption on the environment (Siddique et al., 2020). Consumers frequently feel compelled to purchase and use green products in response to various stimuli and factors (Singh & Gupta, 2020). This condition is typically associated with principled, responsible, sustainable, and environmentally conscious purchasing practices (Do Paco, Shiel, & Alves, 2019). Green buying behaviors include buying energy-efficient products, avoiding over-packaging, displaying a preference for biodegradable and recyclable items, and reducing pollution (Do Paco et al., 2019). Using environmentally friendly products is expected to have a lower negative impact on the environment (Dangelico, 2016). Environmentally friendly products are products that meet environmental protection requirements, are harmless to the environment, are safe for human health, and use less energy (Kuang, Li, & Bi, 2021). Another definition explains that environmentally friendly products are products that can be recycled, consumed sustainably, and decomposed (Singh & Gupta, 2020). Thus, eco-friendly products show strong pro-social and pro-environmental characteristics.

Several studies have made significant contributions to the green marketing literature by identifying various factors that influence the purchase of environmentally friendly products, such as green knowledge (Amoako et al., 2020), green self-identity (Confente et al., 2020), and green attitudes (Amoako et al., 2020; Riskos, Dekoulou, Mylonas, & Tsourvakas, 2021; Su et al., 2021). Green knowledge also indicates the extent to which consumers are informed about environmental issues (Mohd Suki, 2016). Green attitudes focus on individuals' environmental attitudes that contribute to protecting natural resources and conserving the environment (Casalo & Escario, 2018). Green self-identity combines self-evaluation with social norms and is influenced by others and values (Khare & Pandey, 2017).

Green Self-identity in the Social Identity Theory Perspective

The social identity theory was introduced in the 1970s as a form of intergroup relations (Tajfel & Turner, 1979). This theory is a theoretical framework that explores how unique and distinct individuals adopt the interests of social groups with which they identify [e.g., racial/ethnic groups, liberals, environmentalists] as their own (Tajfel & Turner, 1986). The social identity theory is a socio-psychological theory that examines the relationship between personal and social identities (Hogg, 2016). It seeks to determine and predict the conditions under which individuals perceive themselves as individuals or group members (Hogg, 2016). In response to the demand for environmental sustainability, everyone arguably expects to belong to social groups concerned about the environment.

The social identity theory was developed to explain how individuals construct and establish their positions in society (Harwood, 2020). Individuals' characteristics and motivation [interpersonal behavior], as well as group

memberships [i.e., intergroup behavior] determine their social behaviors (Harwood, 2020). Consumers prefer to be linked with ethical businesses to strengthen their self-identities (Jha, 2021). Identifying themselves as ones who care about the environment will enhance individuals' self-worth as persons with certain values. Conceptually speaking, "green self-identity" refers to a particular label used to identify oneself (Cook, Kerr, & Moore, 2002). When a person considers themselves to be a member of a particular group, they are more likely to exhibit certain behaviors that are consistent with those displayed by members of that group (Ellemers, Spears, & Doosje, 2002).

In general, self-identity refers to the attributes that individuals employ to explain themselves (Hansmann, Laurenti, Mehdi, & Binder, 2020). Green self-identity is a crucial factor influencing consumers' green buying decisions. Green self-identity is categorized as a benefit that reflects individuals' perceptions of themselves related to environmental consciousness, ecological behavior, and environmental commitment (Khare, 2015). Individuals' perceptions of themselves in light of their potential to engage in eco-friendly behaviors, such as buying green products, constitute green self-identity (Patel et al., 2020). A consumer's concern for the environment might be seen as a personality attribute. Consumers who believe a green identity is consistent with their own identity are more likely to engage in green consumption in their daily lives (Sharma et al., 2020).

Green Knowledge

Green knowledge refers to an individual's understanding of issues on the environment and sustainability (Naz et al., 2020). The consumers' knowledge is associated with factors influencing decision-making at all levels of purchasing behavior. Thus, knowledge is an important construct as a process by which the consumers collect and organize evidence, which is then used by them to make decisions (Moser, 2016). Individuals with specific ecological knowledge tend to have favorable attitudes toward ecological behavior and be highly prepared to act (Li et al., 2021). Knowledge of green products, for instance, refers to consumers' awareness and capacity to assess and apply the attributes of green products (Amoako et al., 2020), which will encourage consumers to buy green products.

Several prior studies observed that green knowledge positively affects the purchase of green products in the Batticaloa district (Hariharan & Shamini, 2019), in Accra (Amoako et al., 2020), and Malaysia (Noor, Jumain, Yusof, Ahmat, & Kamaruzaman, 2017). Understanding environmental issues and their causes motivate individuals to act responsibly for the environment (Amoako et al., 2020). However, other research indicates that in developing nations such as Malaysia, consumers have environmental knowledge but do not base their decisions to buy green products solely on this knowledge (Ali, 2021). As Yiridoe, Bonti, and Martin (2005) explained, a lack of knowledge is regarded as the primary obstacle to buying organic products due to a lack of information preventing consumers from distinguishing between organic and conventional product attributes, and discouraging them from buying organic products.

In the context of the environment, consumers who consider themselves greener and more environmentally conscious satisfy their own needs (Patel et al., 2020). Concerning green self-identity, individuals with a thorough understanding of the environment will have a more positive self-image about the environment. Individuals with stronger environmental personalities report engaging in more environmentally friendly behaviors, feeling more united with nature, and demonstrating increased environmental concerns (Davis, Le, & Coy, 2011). An environmental self-identity motivates shopping behavior among retailers who implement sustainable food packaging (Su et al., 2021), purchase eco-friendly apparel products (Tung et al., 2017), and buy environmentally friendly products (Sharma et al., 2020). The preceding discussions lead to the following hypotheses:

H1. Green knowledge positively impacts green self-identity.

H2. Green self-identity positively impacts green buying behavior.

H3. Green self-identity mediates the positive impacts of green knowledge on green buying behavior.

Green Attitudes

Numerous studies have relied on the theory of planned behavior (Ajzen, 1985), which defines attitudes as one's innate, positive or negative evaluation of a particular behavior. Schultz and Zeleny (2000) contended that an "environmentally conscious attitude is rooted in individuals' self-concepts and the extent to which they view themselves as an integral part of the environment." Individuals with favorable attitudes toward green products are more likely to adopt green attitudes. Nevertheless, negative attitudes will arguably prevent the adoption of green products. Green attitudes focus on individuals' environmental attitudes that contribute to protecting natural resources and conserving the environment (Casalo & Escario, 2018). Green attitudes can predict buying behavior for environmentally friendly products among young consumers (Amoako et al., 2020), and consumers with favorable attitudes toward environmentally friendly packaged products are willing to purchase these products (Prakash & Pathak, 2017).

A person's attitude in an effort to preserve the environment is important, as study results found that attitudes have the greatest direct influence rather than subjective norms which are the weakest predictor of consumption behavior of environmentally friendly products (Apipuchayakul & Vassanadumrongdee, 2020). Thus, consumers who prefer environmentally friendly products over conventional products, consumers who care about environmental protection

efforts, and consumers who have an attitude of promoting environmentally friendly life in society do not really consider price in purchasing behavior for environmentally friendly products. In addition, research by Dangelico, Nonino, and Pompei (2021) explained that the higher the value-for-money for environmentally friendly products, the higher the willingness to pay a premium price for environmentally friendly products; and the higher the value-for-money of green products, the higher the frequency of purchasing green products. Consequently, the price of environmentally friendly products is not an obstacle for someone to buy environmentally friendly products because they already have an attitude of caring for the environment.

Regarding green self-identity, one previous study clarified that consumers who self-identify as green customers exhibit more positive attitudes toward adopting environmentally-friendly behavior (Han et al., 2021). A multi-group comparison study by Barbarossa et al. (2015) documented that green self-identity, concern for cars' environmental consequences, and green moral obligation play distinct roles in determining consumer attitudes and intentions regarding electric car adoption in three countries. Individuals with greater green self-identities are more concerned with the environment, view themselves as ecological, and are consequently more willing to commit to the environment despite no external incentives (Higueras-Castillo et al., 2019). Based on the discussion, it is hypothesized that:

H4. Green self-identity positively impacts green attitudes.

H5. Green attitudes positively impact green buying behavior.

H6. Green attitudes mediate the positive impact of green self-identity and green buying behavior.

Methods

Measurement Development

This study empirically examined the hypotheses using a positivist and explanatory method (Hair, Black, Babin, & Anderson, 2019; Malhotra, 2010). Our quantitative study employed an online survey to gather data and operationalize green knowledge, green self-identity, green attitudes, and green buying behavior among environmentally friendly product consumers in Indonesia. Each concept was measured using metrics derived from numerous prior studies. Five items from Ali (2021) and Riva, Magrizos, and Rubel (2021) were used to measure an individual's green knowledge. Green self-identity was operationalized by a five-item scale developed by Confente et al. (2020) and Khare and Pandey (2017). Next, we employed a six-item scale developed by Carrión Bósquez and Arias-Bolzmann (2021) and Taufique and Islam (2021) to measure green attitudes. Lastly, this study used six items modified from Taufique and Islam (2021) and Ali (2021) to measure green buying behavior. All variables were assessed using a five-point Likert scale, ranging from [1] "strongly disagree" to [5] "strongly agree."

Sampling and Data Collection

Indonesia is an archipelago consisting of five large islands: Java, Kalimantan, Papua, Sulawesi, and Sumatera, as well as many smaller islands in the vicinity. The technique of purposive sampling was used to gather the data. This study included all consumers of environmentally friendly products in Indonesia who were at least 17 years old as the population. This study selected Indonesian residents who have purchased environmentally friendly products and were at least 17 years old as the research sample because they were considered to have a propensity for green products, be sufficiently literate to read about green product-related news, and appreciate the effects of these products on the environment and their health (Amoako, Doe, & Dzogbenuku, 2021). Thus, the respondents were arguably suitable for this study and capable of responding to the survey. The questionnaire was created online using a Google Form and distributed to respondents via communication channels, virtual groups on Telegram and WhatsApp, and the social media platform Instagram. In the questionnaire, there were some filter questions to ensure that the respondents have purchased environmentally friendly products. Filter questions allow researchers to filter out respondents who do not fit the respondent criteria (Malhotra, 2010). These questions included: 1) Have you ever purchased environmentally friendly products? 2) Mention environmentally friendly products that you have purchased/used/consumed? The sample was collected in five months, resulting in 782 questionnaires. The continuous follow-up in the data collection process collected 782 completed questionnaires, with 762 usable for further analysis. Twenty questionnaires were not used in the subsequent analysis process because the respondents were under 17 years of age and had never purchased environmentally friendly products. Thus, the final sample in this study consisted of 762 respondents who were at least 17 years old and had represented all islands in Indonesia.

Data Analysis

This study employed partial least squares SEM [PLS-SEM] because it simplifies the estimation of cause-effect relationship models with latent variables. The PLS-SEM analysis was carried out using IBM SPSS ver. 25 and SmartPLS ver. 3.2.9. This method effectively predicts and examines the dependent variables to account for as much variance as possible (Benitez, Henseler, Castillo, & Schuberth, 2020). It can also simultaneously handle measurement and structural models (Anning-Dorson & Nyamekye, 2020). PLS-SEM explains causal relationships with a causal predictive method that emphasizes statistical predictions (Ravand & Baghaei, 2016). The analysis was carried out using a two-stage protocol commonly used in SEM analysis (Hair et al., 2019). Initially, the outer

model was evaluated to assess the construct reliability and validity. The inner model evaluation was then followed by hypothesis testing.

Results

Respondent Profiles

According to the sample criteria, there was a total of 762 valid questionnaires. Table 2 presents the respondent profiles. Most of the respondents were female [506 respondents or 66.4%]. The number of samples was dominated by women because purchasing decisions related to household product needs are often determined by women, especially in a family (Junaedi, 2007; Suprapto & Wijaya, 2012).The respondents are evenly distributed in age groups; the largest age group is 35-43 years old [226 respondents or 29.7%], followed by the 26–34-year-old group [221 respondents or 29%], the 17–25-year-old group [184 respondents or 24.1%], the 44–52-year-old group [91 respondents or 11.9%], and the 53–63-year-old group [40 respondents or 5.3%]. In terms of income, the sample is also evenly distributed, with 174 respondents [22.8%] earning between IDR 5.1 million and IDR 7 million; 161 respondents [21.1%] earning less than IDR 1 million, and 157 respondents [20.6%] earning between IDR 3.1 million and IDR 5 million. Furthermore, most respondents had a 4-year diploma or a bachelor's degree [282 respondents or 37%], followed by 215 respondents with a master's degree [28.2%]. Even though the questionnaires were distributed throughout Indonesia, the data distribution was still unbalanced because 376 respondents [49.3%] live on Java Island.

Table 2. Respondents' demographic profiles.

	Frequency	%		Frequency	%
Gender			Education		
Male	256	33.6	High school	143	18.8
Female	506	66.4	Diploma [D1-D3]	75	9.8
Age			4-year Diploma/ Bachelor's degree	282	37
17 – 25	184	24.1	Master's degree	215	28.2
26 – 34	221	29	Doctorate degree	47	6.2
35 – 43	226	29.7	Origin Island		
44 – 52	91	11.9	Java	376	49.3
53 – 63	40	5.3	Kalimantan	49	6.4
Income			Papua	37	4.9
< IDR 1 million	161	21.1	Sulawesi	65	8.5
1.1 – 3 million	91	12	Sumatera	146	19.2
3.1 – 5 million	157	20.6	Maluku	18	2.4
5.1 – 7 million	174	22.8	West Nusa Tenggara	5	0.7
7.1 – 9 million	115	15.1	East Nusa Tenggara	56	7.3
> 9 million	64	8.4	Bali	10	1.3

Source: Authors.

Model Reliability and Validity

The convergent validity results indicated average variance extracted [AVE] values below 0.5. Furthermore, the outer loading values for indicators GK1 [0.582], GBB2 [0.463], and GBB3 [0.467] were below 0.6. These three indicators were eliminated, and we reran the reliability and validity tests. Table 3 displays the factor loadings, Cronbach's alpha, composite reliability [CR] and average variance extracted [AVE] values. For construct reliability, the Cronbach's alpha and composite reliability values for all constructs were greater than 0.70, implying that the construct reliability has been established. The average variance extracted [AVE] values based on factor loadings are used to test convergent validity for construct validity (Hair et al., 2019). Convergent validity determines whether two constructs are actually related. All constructs had AVE values greater than the threshold of 0.5, indicating convergent validity. In addition, the NFI value is 0.075, which is close to 1, suggesting that the model qualifies for the research objectives (Hair et al., 2019). The SRMR value of 0.08 also indicates that the model is accurate, with a rule of thumb stating that an SRMR greater than 0.1 implies that there is a problem with the model fit (Hair et al., 2019).

Table 3. Factor loadings, CR, and AVE.

Items	Mean	Std. dev.	Loadings	Cronbach's α	rho_A	CR	AVE
GK2	3.412	0.972	0.737	0.782	0.787	0.860	0.605
GK3	3.325	1.054	0.771				
GK4	3.677	1.059	0.819				
GK5	3.890	0.891	0.781				
GSI1	4.297	0.716	0.804	0.857	0.862	0.898	0.638
GSI2	4.051	0.793	0.839				
GSI3	4.276	0.770	0.826				
GSI4	4.373	0.741	0.811				
GSI5	4.492	0.688	0.705				
GA1	4.558	0.678	0.689	0.806	0.816	0.859	0.503
GA2	4.545	0.677	0.767				
GA3	4.808	0.478	0.709				
GA4	4.849	0.396	0.708				
GA5	4.824	0.438	0.709				
GA6	4.829	0.406	0.672				
GBB1	3.820	1.025	0.755	0.782	0.783	0.859	0.605
GBB4	4.075	0.864	0.771				
GBB5	4.037	0.966	0.807				
GBB6	4.333	0.780	0.776				

Structural Model Assessment

A structural model assessment was another crucial aspect of the validation procedure. Figure 1 depicts the results of the standard SEM measurements obtained using Smart PLS 3.2.9. In general, the outer loadings of all the items were greater than anticipated, and thus, all variables had excellent direction coefficients.

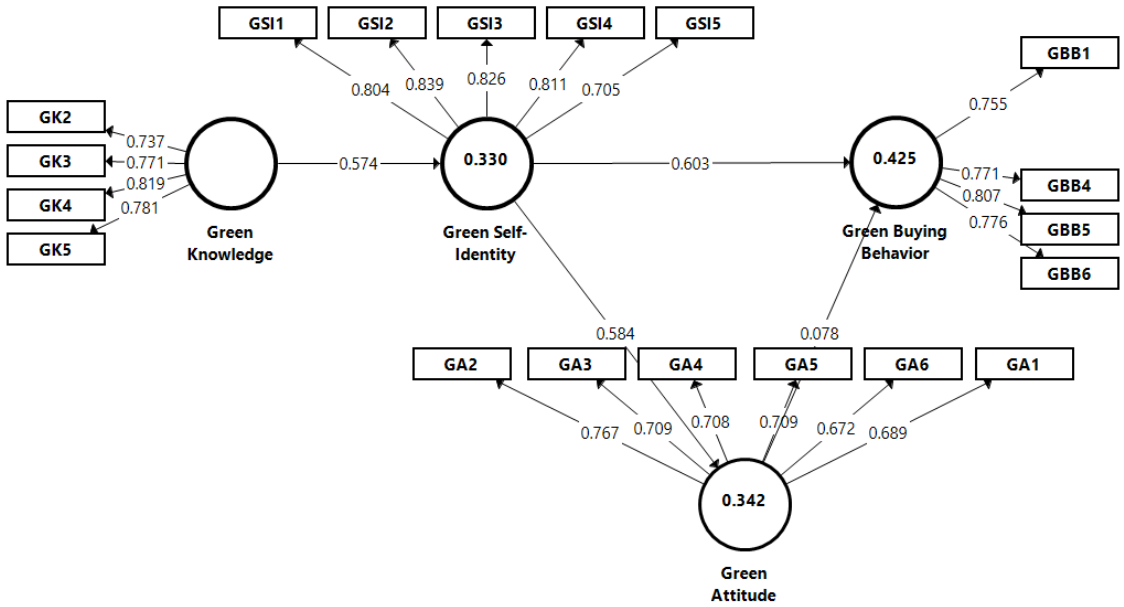

Fig. 1. Standardized results of the SEM calculations.

Table 4 demonstrates that Q^2 is greater than zero, indicating that the model retains predictive relevance (Hair et al., 2019). Overall, the R^2 value for this model depicts a satisfactory fit and moderate predictive significance (Hair et al., 2019).

Table 4. Values of the Stone–Geisser Test and R^2.

Variables	Q^2	R^2
Green attitudes	0.160	0.342
Green self-identity	0.207	0.330
Green buying behavior	0.250	0.425

Discriminant Validity

The next step was to investigate the discriminant validity to determine how significantly a construct differs from other constructs based on empirical criteria using the Fornell-Larcker Criterion [see Table 5] and cross-loadings [see Table 6].

Table 5. Fornell-Larcker Criterion.

	GA	GBB	GK	GSI
GA	0.710			
GBB	0.430	0.778		
GK	0.324	0.507	0.778	
GSI	0.584	0.649	0.574	0.799

The cross-loadings show that the outer loadings indicator for the associated construct is higher than any cross-loadings for the other constructs, and all of the roots of the AVE [Fornell-Larcker Criterion] for each construct are higher than their correlations with other variables.

Table 6. Cross-loadings.

	GA	GBB	GK	GSI
GA1	0.689	0.399	0.302	0.463
GA2	0.767	0.371	0.329	0.533
GA3	0.709	0.278	0.201	0.381
GA4	0.708	0.244	0.152	0.337
GA5	0.709	0.240	0.119	0.324
GA6	0.672	0.233	0.196	0.374
GBB1	0.297	0.755	0.384	0.476
GBB4	0.365	0.771	0.433	0.549
GBB5	0.320	0.807	0.343	0.465
GBB6	0.348	0.776	0.408	0.516
GK2	0.262	0.366	0.737	0.405
GK3	0.241	0.410	0.771	0.430
GK4	0.227	0.410	0.819	0.482
GK5	0.281	0.391	0.781	0.464
GSI1	0.475	0.512	0.500	0.804
GSI2	0.424	0.599	0.532	0.839
GSI3	0.463	0.544	0.444	0.826
GSI4	0.530	0.497	0.437	0.811
GSI5	0.447	0.424	0.365	0.705

A discriminant validity test can determine whether or not two hypothetically unrelated constructs are, in fact, unrelated. The criteria for discriminant validity require that the inter-construct values are below 0.90 (Henseler, Ringle, & Sarstedt, 2015). Table 7 demonstrates that all constructs are within the threshold. Hence, discriminant validity is observed.

Table 7. Heterotrait-Monotrait [HTMT] Ratio for Discriminant Validity.

	GK	GSI	GA	GBB
GK				
GSI	0.696			
GA	0.383	0.682		
GBB	0.644	0.784	0.517	

Hypothesis Testing

After all the conditions were satisfied, the next step was to test the hypotheses of the developed research model. Table 8 displays the results of the hypothesis testing. As predicted, green knowledge and green self-identity exhibit a positive and significant relationship [β = 0.574, t = 23.586, p = 0.000], empirically supporting H1. Similarly, this study found a positive and statistically significant relationship between green self-identity and green buying behavior [β = 0.603, t = 18.963, p = 0.000], supporting H2. Next, the results reveal that green self-identity mediates the relationship between green knowledge and green buying behavior [β = 0.346, t = 13.748, p = 0.000], supporting H3.

Table 8. Results of the Direct and Indirect Effects.

Hypotheses	Structural path	Std. β	Std error	t-value	p-value	Decision
H1	Green knowledge → Green self-identity	0.574	0.024	23.586	0.000	Supported
H2	Green self-identity → Green buying behavior	0.603	0.032	18.963	0.000	Supported
H3	Green knowledge → Green self-identity → Green buying behavior	0.346	0.025	13.748	0.000	Supported
H4	Green self-identity → Green attitudes	0.584	0.028	20.877	0.000	Supported
H5	Green attitudes → Green buying behavior	0.078	0.036	2.177	0.030	Supported
H6	Green self-identity → Green attitudes → Green buying behavior	0.046	0.021	2.151	0.032	Supported

Meanwhile, H4 is also empirically supported as the results show a positive and significant relationship between green self-identity and green attitude [β = 0.584, t = 20.877, p = 0.000]. H5 is also supported, implying that green attitudes positively and significantly influence green buying behavior [β = 0.078, t = 2.177, p = 0.030], but with a relatively low effect. Finally, green attitudes mediate the relationship between green self-identity and green buying behavior. Thus, supporting H6 [β = 0.046, t = 2.151, p = 0.032]. However, the empirical results show a relatively low mediating effect. This can be caused by the presence of multiple mediation in the research model developed in the study. This condition will produce a lower regression coefficient.

Discussion

Green buying behavior deserves common attention, especially because of the recent environmental changes. Buying green products will arguably mitigate the negative environmental impacts and ensure environmental sustainability. There is still limited research conducted on green marketing issues that use green self-identity as a factor that increases green buying behavior. This study seeks to investigate the effects of green knowledge, green self-identity, and green attitudes on green buying behavior in Indonesia. This study demonstrates that all hypotheses are accepted.

The consumers' understanding of the importance of environmental sustainability is shaped by education (Steg & Vlek, 2009). Therefore, green knowledge encompassed the importance of preserving a healthy environment for future generations (Kumar, 2012). Individuals are more motivated to act responsibly for the environment when they understand environmental issues and their causes (Amoako et al., 2020). This fact suggests that when people had more environmental knowledge, they have a stronger pro-environmental self-identity. Their efforts to learn about the environmental issues in their communities will also boost their pro-environmental self-identity. In this study, environmentally friendly consumers, or those who care about environmental issues, are satisfied when buying environmentally friendly products. Consequently, their purchases of environmentally friendly products increase. Following the social identity theory, consumers perceive themselves as caring about the environment or responsible for their surroundings.

This study also confirms that green self-identity influences green attitudes, green attitudes affect green buying behavior, and green attitudes partially mediate the relationship between green self-identity and green buying

behavior. These findings are consistent with Han et al. (2021), who observed that green self-identity significantly influences green attitudes. This study also confirmed that green attitudes predict consumers' buying behavior for environmentally friendly products (Amoako et al., 2020) even though it has a low effect size. The green attitude variable was added to this research model by looking at the statement made by Schultz and Zeleny (2000), who contended that an "environmentally conscious attitude is rooted in individuals' self-concepts and the extent to which they view themselves as an integral part of the environment." Individuals need green attitudes to adopt the behavior of buying environmentally friendly products. Green attitudes may include a view that environmental protection is critical, a preference for environmentally friendly products, a belief that such products can save the environment, an emphasis on public environmental awareness, and the promotion of an eco-friendly lifestyle.

An analysis based on the demographic structure can be seen that the number of female respondents is greater than the number of male respondents. However, this is not a problem because based on the results of the T-Test, the buying behavior of environmentally friendly products between the two groups shows that the Sig. Levene's Test for Equality of Variances is 0.773 > 0.05, which means that the variance of the data between the male and female groups is homogeneous or the same. Based on the output results in the t-test for the Equality of Means, the Sig. [2-tailed] value of 0.558 > 0.05, which can be concluded that there is no significant difference between the average buying behavior of environmentally friendly products in the male and female groups.

The demographic structure for education consists of five groups, namely high school, 1-3-year diploma, 4-year diploma/bachelor's degree, master's degree, and doctorate degree. A One-Way Anova Test was carried out to determine the variability of the data in the five groups. After the One-Way Anova Test was completed, it can be seen that the results of the Test of Homogeneity of Variances obtained a Levene Statistic number of 2,194 with a value of Sig. 0.068 > 0.05, so that it can be stated that the variances of the five groups for the education being compared are the same or homogeneous. Based on the results of the ANOVA output, it is known that the value of Sig. 0.035 < 0.05, so that it can be concluded that the average of the five groups based on education is significantly different.

Environmental sustainability is a current global concern, including for Indonesians. Business actors are now required to produce environmentally friendly products considering the increasing demands to preserve environmental sustainability and the growing public awareness of the importance of consuming non-hazardous products. As a result, academicians are paying more attention to green marketing. However, little is known about how concepts like green knowledge, green self-identity, and green attitudes affect Indonesians' green buying behavior, which makes this study important.

Theoretical Contributions

This research is based on the social identity theory, a socio-psychological theory that investigates the relationship between personal and social identity (Hogg, 2016). The theory was developed to illustrate how individuals create and consolidate their positions in societies (Harwood, 2020). This study contributes to the social identity theory by highlighting the impact of customers' green self-identities on their green purchasing decisions. Individuals with a more comprehensive understanding of the environment will develop a more positive self-perception of the environment. Furthermore, individuals with stronger environmental personalities will demonstrate more environmentally friendly behaviors, feel more connected to nature, and exhibit greater environmental concerns (Davis et al., 2011). Everyone aspires to be a member of a social group that cares about the environment in response to environmental sustainability demands.

Practical Implications

The results of this study suggest that business professionals should learn more about consumers' purchasing patterns for environmentally friendly products. Regarding green knowledge, they need to provide consumers with information about using environmentally friendly products for environmental protection through various methods, including their product advertisements that emphasize the significance of using products that are not hazardous to their health or the environment. It is expected that when consumers have greater green knowledge, it will enable them to develop a green self-identity, which will later shape their green attitudes and affect their green buying behavior. Hence, business actors can contribute by educating consumers about environmental sustainability. Consumers with better environmental knowledge arguably have greater environmental consciousness. In addition, companies that produce green products are expected to be increasingly involved in the activities of social groups or communities to be able to form a consumer green self-identity.

Conclusion

This research model focuses on the relationships between green knowledge, green self-identity, green attitudes, and green buying behavior. This study applies the PLS-SEM method to test the hypotheses or research model. The results demonstrate that green knowledge positively influences green self-identity, green self-identity positively affects green buying behavior, green self-identity positively affects green attitudes, and green attitudes positively influence green buying behavior. Moreover, green self-identity mediates the relationship between green knowledge and green buying behavior, and green attitudes mediate the relationship between green self-identity and green

buying behavior. The magnitude of the effects indicate that green knowledge and green self-identity play greater roles in the buying pattern of environmentally friendly products. The findings indicate that consumers must be provided with more environmental information. Additionally, green self-identity, which assumes that individuals care about the environment, will substantially affect consumption patterns.

According to the social identity theory, everyone arguably aspires to be a part of environmentally conscious social groups. With the social identity theory, people tend to classify themselves and others into various social categories, such as organizational membership, religious affiliation, gender, and age group (Tajfel & Turner, 1986). Based on this opinion, a person can be classified into various categories and different individuals using different categorization schemes (Ashforth & Mael, 1989). Even with a social classification it allows individuals to be able to place or define themselves in a certain social environment, for example a social environment that cares about environmental sustainability. Thus, a social identity can also be used to stimulate positive health behavior (Scheepers & Ellemers, 2019). This finding is in line with Harwood (2020), who argues that the social identity theory was developed to explain how individuals create and determine their social positions, i.e., their inherent identity that they wish others to know. This study confirms that Indonesians already have a strong green self-identity.

This study has several limitations. First, we relied on an online survey to generate the research data and did not have direct contact with consumers due to the COVID-19 pandemic restrictions. Second, most of the respondents are from Java Island – which is also home to the majority of Indonesians. Third, this study investigated buying behavior for all environmentally friendly products without specific criteria. Thus, future studies are suggested to focus on certain products, such as organic vegetables, recyclable goods, safe equipment, and environmentally safe personal care products.

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