administrative sciences

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Green Consumption and Sustainable Lifestyle: Evidence from India

Rosario Florence Kennedy [1], Sahayaselvi Susainathan [1], Hesil Jerda George [1] and Satyanarayana Parayitam [2,*]

[1] Holy Cross College (Autonomous), Nagercoil (Affiliated to Manonmaniam Sundaranar University, Tirunelveli), Tirunelveli 627012, Tamil Nadu, India; rosario.jk@gmail.com (R.F.K.); sahayaselvi@holycrossngl.edu.in (S.S.); hesiljerda@holycrossngl.edu.in (H.J.G.)

[2] Charlton College of Business, University of Massachusetts Dartmouth, 285 Old Westport Road, North Dartmouth, MA 02747, USA

* Correspondence: sparayitam@umassd.edu

Abstract: This study aims to comprehensively investigate the impact of green consumption on adopting a sustainable lifestyle. Based on the theory of planned behavior (TPB), a simple conceptual model is developed, and hypothesized relationships are tested in the context of a developing country—India. Using proportionate stratified random sampling, data were collected from 422 respondents from five districts in Tamil Nadu, southern India. First, the psychometric properties of the survey instrument were tested by PLS-SEM, and hypotheses were tested using path analysis. The findings show that (i) green product literacy (GPL) is not associated with green product purchase attitude (GPPA), (ii) green product orientation (GPO) is positively related to GPA, and (iii) social influence is positively associated with GPA. The results also indicate that GPA is a precursor to green purchase behavior (GPB), resulting in a sustainable lifestyle. This study found that social influence strengthens the positive effect of GPO on GPPA. From a practical standpoint, this study can provide valuable insights for policymakers, businesses, and organizations aiming to promote sustainable lifestyles by encouraging green consumption. As with any survey research, common method and social desirability biases can be significant limitations. However, every effort has been made to minimize these biases. To the best of our knowledge, the conceptual model is developed and tested for the first time, particularly in the context of a developing country—India. Thus, this study makes a unique contribution to the literature on sustainability.

Keywords: green consumption; sustainable lifestyle; green purchase behavior; green purchase attitude

Citation: Kennedy, Rosario Florence, Sahayaselvi Susainathan, Hesil Jerda George, and Satyanarayana Parayitam. 2024. Green Consumption and Sustainable Lifestyle: Evidence from India. *Administrative Sciences* 14: 262. https://doi.org/10.3390/admsci14100262

Received: 11 September 2024
Revised: 10 October 2024
Accepted: 14 October 2024
Published: 17 October 2024

1. Introduction

Sustainability, sustainable production, and sustainable consumption have become household names over the last two decades (Bonini and Oppenheim 2008; Chen et al. 2022; Guillen-Royo 2019; Shen et al. 2021; Shimul et al. 2021; Sun et al. 2021; Lubowiecki-Vikuk et al. 2021). Considering the fast rate at which the global environment degrades, governments worldwide have emphasized pro-environmental behavior (Kormos and Gifford 2014; Lisboa et al. 2022; Olsen et al. 2014). As a result, there is a mountain of studies on sustainability, and academic scholars have been devoted substantial space in journals related to the environment and sustainability (Tencati et al. 2016; Welivita et al. 2015; Young 2010). There has been a growing mountain of research in various fields (e.g., green human resource management, green marketing, green consumption, cleaner production, waste management, etc.) worldwide including India. According to recent report (Minhas 2023), the market size of organic product consumption in India is estimated to be USD 762 million in 2025. Economic growth, increased purchasing power, and growing health consciousness are the crucial factors that have resulted in the increased production and consumption of organic products in India. A relatively recent study reported that the dietary choices

of Indian consumers have radically changed to the consumption of healthier food than in the past (Kirmani et al. 2022; Prakash and Pathak 2017). Early scholars argued that ethical trade is a critical component of livelihood sustainability (Padel and Foster 2005), and over the past two decades, sustainable consumption has attracted attention worldwide. As consumer decisions affect society and the environment (Bonini and Oppenheim 2008), consumers' attitude towards green production consumption plays a vital role in protecting the environment. As green consumerism is gaining wide currency (Sachdeva et al. 2015), and consumers are aware of the availability of green products, sustainable consumption has become the order of the day. Some studies documented that consumer literacy regarding available green products and their benefits is more likely to change consumer behavior toward green purchasing habits (Bissing-Olson et al. 2016; Castellacci and Tveito 2018; Lee 2008a). Further, Forbes reported that over 87 percent of consumers will have a positive image of companies that produce and supply environmentally friendly products (Butler 2018). As documented by previous researchers, companies encourage consumers to engage in sustainable consumption by making green products available to them (Ramayah et al. 2010).

This paper is focused on consumer behavior towards green products, particularly with reference to the largest democratic country, India. The studies conducted worldwide have focused on green product literacy, green product intention, and behavior. In India too the focus has been on sustainable consumption. Green products generally refer to environmentally friendly products with minimal environmental impact (D'Souza et al. 2006). It was found that consumers' shopping habits have changed in favor of greener and ecologically friendly products because of the awareness of the importance of protecting the environment (Dung et al. 2013). Companies also realize that pursuing environmentally friendly strategies has a positive effect on performance (Danso et al. 2019), and consumers show a preference for products that do not cause harm to the environment. Environmentally conscious consumers are willing to pay a higher price for green products (Rehman et al. 2014). Though the literature on green consumption is exhaustive (Brown and Kasser 2005; Verhofstadt et al. 2016; Kim and Stepchenkova 2019; Lee et al. 2021; Liobikienė and Poškus 2019), the research has been scattered. Studies relating sustainable consumption to sustainable lifestyle are sparse, and little is known about the relationships between literacy, orientation, attitudes, behavior, and sustainable consumption.

Further, there need to be more studies investigating how social influence impacts consumers' attitudes toward purchasing green products. This study aims to bridge the gap by exploring the attitude–behavior–sustainable lifestyle relationship by focusing on green purchase literacy and orientation as antecedents of attitude and social influence as a moderating variable. More specifically, this study attempts to find answers to the following research questions (RQs):

RQ1: How do green purchase literacy, orientation, and social influence affect green product purchase attitudes?
RQ2: How does GPPA affect GPPB?
RQ3: How does GPPB influence a sustainable lifestyle?
RQ4: How does social influence moderate between green purchase literacy, green purchase orientation, and GPPA?

2. Literature Review and Variables in This Study

Variables in This Study

We constructed a conceptual framework based on six variables: green product literacy (GPL), green product orientation (GPO), social influence, green product purchase attitude (GPPA), green product purchase behavior (GPPB), and sustainable lifestyle.

Green Product Literacy (GPL)

GPL is concerned with knowledge about the ecosystem's natural, environmentally friendly products (Kim and Stepchenkova 2019). Consumer literacy regarding green products may profoundly influence the attitude toward purchasing environmentally friendly

products (Joshi and Rahman 2015). For example, Biswas (2020) reported that consumers' attitudes toward purchasing environmentally friendly products may be reflected in their knowledge, which aligns with other studies (Liobikienė and Poškus 2019).

Green Purchase Orientation (GPO)

GPO refers to the extent to which an individual expresses feeling for products that are not hazardous to the environment. These include natural products that are healthy and environmentally friendly. For example, people who show a strong connection to the natural world—the biosphere (lithosphere, hydrosphere, and atmosphere)—tend to shy away from products that cause harm to other living beings (Lee et al. 2021) and skew toward buying green products which are healthy and also protect the environment from degradation.

Social Influence

Society, consisting of individuals, groups, and organizations, plays a significant role in shaping consumer behavior. Social influence refers to how people alter their views to accommodate behavioral intentions related to product consumption (Chen et al. 2022). Following the subjective norms of TPB, consumers' product preferences are impacted by social influence (Lee 2008a). Some earlier scholars reported that consumers' purchases reflect social perceptions (Shen et al. 2021). Further, individuals create their social identities (Ozaki and Sevastyanova 2011), and to maintain their status as members, they need to conform to the group norms. For example, when a social group values the environment (Grier and Deshpandé 2001), it is more likely that the group members will continue purchasing green products to confirm the group's expectations. Growing environmental concern prompts individuals to benefit from a pro-social reputation and prestige (Griskevicius et al. 2010).

Green Product Purchase Attitude (GPPA)

According to the TPB, attitude is a precursor to behavior; the green purchase attitude is an antecedent to behavior and the resulting consumption. GPPA is related to consumers' attitudes toward purchasing and consuming green products that positively affect the environment and humans (Nguyen et al. 2019). GPPA depends on an individual's psychological evaluation of how the products protect the environment from degradation (Lee 2008b; Sun et al. 2021). The consumers' responsibility toward a sustainable environment is a driving force in exhibiting an attitude toward purchasing green products (Lubowiecki-Vikuk et al. 2021). Researchers in the past documented that customer attitudes are the key metric for predicting an individual's behavior regarding the consumption of green products (Kim and Han 2010).

Green Product Purchase Behavior (GPPB)

GPPB is how consumers prefer purchasing green products to maintain ecological sustainability (Masod and Chin 2014). The consumer's behavior reflected in sustainable consumption through green products is referred to as GPPB (Wang et al. 2020). Some of the latest studies have reported that consumers tend to buy products characterized by green packaging (Kamboj and Kishor 2022). Some previous studies have reported the positive effect of green citizenship behavior on sustainability (Norton et al. 2015; Pham et al. 2019).

Sustainable Lifestyle

A sustainable lifestyle is related to an individual's desire to consume products and services conducive to psychological well-being and sustainability rather than an increase in material consumption that harms the self and the environment (Jackson 2009). A sustainable lifestyle is reflected in the buying habits of consumers. Though the methods of assessing a sustainable lifestyle differ across scholars, some contend that the ecological footprint of household consumption may be used to assess consumer behavior regarding sustainable consumption (Brown and Kasser 2005; Verhofstadt et al. 2016). The consensus is that a sustainable lifestyle largely depends on the consumers' willingness to participate in sustainable consumption patterns (Andersson et al. 2013). Kasser (2017) pointed out that people differ in sustainable consumption practices, as some adopt 'strong' practices, whereas others adopt 'light' practices.

3. Theoretical Underpinnings and Conceptual Model

The theory of planned behavior (TPB) (Ajzen 1991), which is an extension of the theory of reasoned action (TRA) (Ajzen and Fishbein 1977), provides theoretical underpinnings for this research. The basic tenet of the TPB is that attitudes influence intentions, which in turn influence an individual's behavior. Further, the subjective norms, which are related to the perception of the individual's behavior by others, dictate whether an individual should engage in such behavior (Ajzen 1991). The subjective norms condition a behavior because an individual engages in behavior only when and if others approve of such behaviors (Ajzen 2002). Researchers have applied the TPB to explain consumer behavior in a wide variety of settings (Arvola et al. 2008; Lee and Yun 2015; Tarkiainen and Sundqvist 2005; Wu and Chen 2014; Yadav and Pathak 2016).

Drawing from the TPB, we conceptualize that attitudes precede green consumer behavior, which depends on green product awareness, literacy, and orientation. This study expresses subjective norms reflected in societal concerns for protecting the environment through social influence. As subjective norms condition an individual's behavior, individuals tend to exhibit green purchase behavior through social influence. Thus, we adopt various components of the TPB in explaining the green purchase attitude and behavior aimed at protecting the environment from degradation (Bamberg and Möser 2007; Kamboj and Kishor 2022; Ramayah et al. 2010). In addition, this theory aims to investigate the effect of green purchase behavior on a sustainable lifestyle.

Based on the TPB, this study aims to explore the relationships between the variables stated in the conceptual model presented in Figure 1.

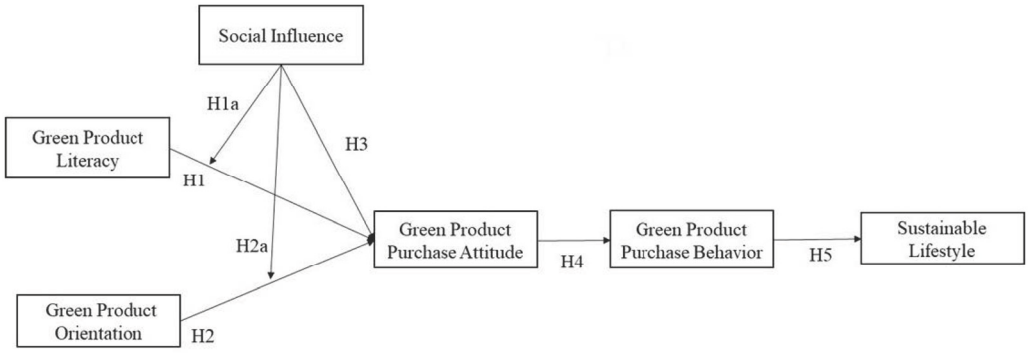

Figure 1. The conceptual model.

3.1. Hypotheses Development

3.1.1. GPL and GPPA

The relationship between green product literacy and attitudes towards green products has been examined by previous researchers (Cheah and Phau 2011; Kim and Stepchenkova 2019; Shimul et al. 2021). An individual's awareness and information about the environment and natural green products are more likely to influence their attitude toward green products. In a study on 256 consumers from Australia, researchers found that green product literacy has a positive impact on the green purchase attitude of consumers (Cheah and Phau 2011). Shimul et al. (2021) also provided empirical justification for the impact of literacy on attitudes towards green products. In one of the recent studies, Dhir et al. (2021) documented the importance of environmental literacy in changing the attitude and behavior of individuals towards green products. People who are more knowledgeable about environmentally friendly products tend to have a greater appreciation for the benefits of these products and, therefore, are more likely to have a positive attitude towards them (Biswas 2020; Vermeir et al. 2020). They understand these products' value and positive environmental impact and are willing to pay more for them. Thus, the following hypothesis is proposed:

H1: *GPL is positively and significantly related to GPPA.*

3.1.2. GPO and GPPA

Several researchers in the past have documented a positive association between orientation and attitude toward green products (Amin et al. 2020; Paswan et al. 2017; Sony and Ferguson 2017; Wickramasinghe 2019). The GPOs of consumers are more likely to increase their feelings about green products (Elias 2020; Yu and Huo 2019). Since consumers' orientation is related to attitudes toward green products, several companies have focused on producing green products and found that environmental orientation increases performance (Danso et al. 2019; Santra et al. 2021; Wickramasinghe 2019). Consumer orientation is a significant predictor of attitude, prompting companies to emphasize green product development and manufacturing. Based on the available empirical evidence and logical arguments, the following hypothesis is proposed:

H2: *GPO is positively and significantly related to a green purchase attitude*.

3.1.3. Social Influence and GPPA

The perceived social pressure that affects an individual's attitudes is frequently transformed by social influence (Ajzen 1991). In the present day of social media, individuals are more likely to be influenced by communication between the members about the importance attached to environmental protection. Empirical evidence supports the social influence on consumers' attitudes toward green products (Chen et al. 2021; Ojo and Fauzi 2020). The extant marketing literature has reported the influence of social media and networking on consumer behavior (Koe and Chung 2014; Tjokrosaputro and Cokki 2019; Varshneya et al. 2017). Several other scholars also reported a positive effect of societal impact on the attitude of individuals toward environmentally friendly products (Koe and Chung 2014; Yılmaz and Anasori 2021). Following the TPB, the social influence (subjective norms) on individuals plays a significant role in their attitudes and behavior towards green products (An et al. 2021). Therefore, a plethora of studies reported the influence of social groups on consumer behavior, and individuals tend to conform to societal norms and follow other group members who subscribe to green purchasing. Thus, based on the above arguments, the following hypothesis is proposed:

H3: *Social influence is positively and significantly related to GPPA*.

3.1.4. GPPA and GPPB

According to the TPB, attitude is a precursor to behavior (Ajzen 1991). Several scholars have empirically found a positive association between GPPA and GPPB (Dabija et al. 2018; Ogiemwonyi and Harun 2020). Environmental protection and growing health consciousness among consumers prompt them to prefer healthy organic products and wellness, and consumer-changing lifestyles significantly impact the purchase decisions of green products (Crofton et al. 2013; Quah and Tan 2009). Individuals with a positive attitude towards green products are also more likely to perceive environmental benefits and be motivated to purchase and consume green products. Based on the available abundance of empirical evidence (Chen et al. 2022; Nguyen et al. 2019; Vermeir et al. 2020), the following hypothesis is formulated:

H4: *GPPA is positively and significantly related to GPPB*.

3.1.5. GPPB and Sustainable Lifestyle

A sustainable lifestyle is concerned with maintaining harmony with society, the economy, and the environment. When consumers buy green products, the behavior aligns with sustainable consumption, a significant component of a sustainable lifestyle. Various environmental and health-related practices result in a sustainable lifestyle (Corral Verdugo 2012). In a recently conducted systematic review of green purchase behavior, Zhang and

Dong (2020) found a positive association between green consumption and sustainable consumption. Recent research has reported that millennials are adopting green purchase behaviors aimed at protecting the environment, leading to sustainable consumption (Ali et al. 2023). Individuals who engage in green purchase behavior, actively choosing environmentally friendly products, are likelier to exhibit behaviors and choices aligned with a sustainable lifestyle (Gierszewska and Seretny 2019). Though the research depicting the association of behavior with sustainable consumption is exhaustive, hardly any studies have investigated the effect of behavior on a sustainable lifestyle. Therefore, we offer the following exploratory hypothesis:

H5: *Green purchase behavior is positively and significantly related to a sustainable lifestyle.*

3.1.6. Social Influence as a Moderator

Social influence, in addition to directly impacting GPPA, may change the strength of the relationship between (i) GPL and GPPA and (ii) GPL and GPPA. While GPL can potentially increase the GPPA, the influence society (e.g., social networking) may have on individuals further strengthens the relationship. As pointed out earlier, individuals may alter their behavior following social norms (Lee 2008a; Shen et al. 2021), and literacy regarding green products may interact with the social influence to significantly impact an individual's attitude towards green products. While the confirmation of the group norms is one reason, retaining membership with groups that give weightage to the environment motivates individuals to change their attitude in favor of the green purchase of products and services.

Further, an individual's orientation towards green products, in addition to having a positive effect on their attitude towards green purchases, may interact with social influence to strengthen the positive effect (Grier and Deshpandé 2001; Griskevicius et al. 2010). Though previous studies did not investigate social influence as a moderator in the relationship between green product literacy and orientation and attitude, it will be interesting to explore such a relationship (Chen et al. 2022). Therefore, based on the direct relationships, we offer the following exploratory moderation hypotheses:

H1a: *Social influence moderates the relationship between GPL and GPPA such that at higher levels of social influence, the relationship between GPL and GPPA becomes stronger.*

H2a: *Social influence moderates the relationship between GPO and GPPA such that at higher levels of social influence, the relationship between GPO and GPPA becomes stronger.*

4. Materials and Methods

4.1. Sample

To test the hypothesized relationships, we collected data from respondents from five districts in Tamil Nadu, the southern part of India. Though India is the largest country in terms of population, the demographic characteristics of the population are similar across various parts of the country. We collected respondents from Tamil Nadu because of the proximity to the researchers. Since no remarkable differences exist with regard to the cultural values and consumption habits of people throughout the country, a sample from any part of the country will be a representative sample. A survey instrument was prepared, and a proportionate stratified random sampling technique was used to collect data. The data collection started in March and was completed by the end of May 2023. In all, we received 422 surveys that were complete. The sample size exceeds the minimum of 382 when the population is over 100,000 (Krejcie and Morgan 1970), and researchers felt satisfied with the total number of respondents. To test for non-response bias, the researchers tested the first seventy-five respondents with the last seventy-five respondents and found no statistical difference between these two groups.

4.2. Demographic Profile

The sample consisted of 166 (39.3%) males and 256 (60.7%) females. Most of the respondents were in the age group of 26–30 years (78; 45.1%). The socio-economic status of respondents is presented in Table 1.

Table 1. Demographic profile of the respondents.

Category	Profile	Total Number	Percentage
Gender	Male	166	39.3
	Female	256	60.7
Age	16–20	44	10.4
	21–25	64	15.2
	26–30	78	18.5
	31–35	76	18.0
	36–40	35	8.3
	41–45	22	5.2
	46–50	34	8.1
	>50 and above	69	16.4
Education qualifications	Primary	27	6.4
	Secondary	35	8.3
	Higher secondary	29	6.9
	Undergraduate	141	33.4
	Postgraduate	129	30.6
	Professional	54	12.8
	Technical	7	1.7
Annual salary	Less than INR 250,000 (USD 3000)	215	50.9
	INR 250,000–INR 500,000 (USD 3000–USD 6000)	88	20.9
	INR 500,000–INR 750,000 (USD 6000–USD 9000)	39	9.2
	INR 750,000–INR 1,000,000 (USD 9000–USD 12,000)	30	7.1
	INR 1,000,000–INR 1,250,000 (USD 12,000–USD 15,0000)	9	2.1
	More than INR 1,250,000 (USD 15,000)	41	9.7
Marital status	Married	283	67.1
	Unmarried	125	29.6
	Divorced	5	1.2
	Widowed	9	2.1
Occupation	Government employees	34	8.1
	Private employees	147	34.8
	Students	112	26.5
	Housewife	68	16.1
	Businessperson	35	8.3
	Retirees	26	6.2
Number of members in the family	One	8	1.9
	Two	30	7.1
	Three	61	14.5
	Four	202	47.9
	Five and more	121	28.7
Amount spent on green products per annum	Lower than INR 25,000 (USD 300)	133	31.5
	INR 25,000–INR 50,000 (USD 300–USD 600)	108	25.6
	INR 50,000–INR 100,000 (USD 600–USD 1200)	76	18.0
	INR 100,000–INR 200,000 (USD 1200–USD 2400)	49	11.6
	Above INR 200,000 (USD 2400)	56	13.3

Table 1. *Cont.*

Category	Profile	Total Number	Percentage
Where do they buy green products	Pharmacy	18	4.3
	Mall	30	7.1
	Departmental store	127	30.1
	Local market	177	41.9
	Petty shops	19	4.5
	Online	46	10.9
	Producing ourselves	5	1.2
How often do they purchase green products	Daily	28	6.6
	Weekly	160	37.9
	Fortnightly	67	15.9
	Monthly	93	22.0
	Rarely	74	17.5
How many years since they bought green products	Past 1 year	83	19.7
	1 to 3 years	96	22.7
	3 to 5 years	99	23.5
	More than 5 years	144	34.1
How they recognize green products	Eco-label	117	27.7
	Name	31	7.3
	Brand	75	17.8
	Quality	179	42.4
	Package	20	4.8

4.3. Measures

All constructs were measured on a five-point Likert scale (anchored as '1' = 'strongly disagree' and '5' = 'strongly agree'). All the constructs along with indicators and the sources were mentioned in Table 2.

Table 2. Confirmatory Factor Analysis.

Variables	Alpha	Standard Loading (λyi)	Reliability (λ^2 yi)	Variance (Var(εi))	Variance-Extracted Estimate Σ (λ^2 yi)/[(λ^2 yi) + (Var(εi))]
Green product literacy (Biswas 2020)	0.93				0.83
I am very knowledgeable about green product that protects human health from various diseases		0.86	0.74	0.26	
I know how to select green products		0.93	0.86	0.14	
I understand the green symbols on product packages		0.93	0.86	0.14	
All the products with green certification are environmental-friendly		0.92	0.84	0.16	
Green product orientation (Chen et al. 2022)	0.77				0.63
Human activities that exploit natural and biological resources endanger the environment		0.85	0.72	0.28	
I consider the environmental impact of my actions when making many of my consumption decisions		0.77	0.59	0.41	
I would describe myself as environmentally responsible		0.77	0.59	0.41	

Table 2. *Cont.*

Variables	Alpha	Standard Loading (λyi)	Reliability (λ^2 yi)	Variance (Var(εi))	Variance-Extracted Estimate Σ (λ^2 yi)/[(λ^2 yi) + (Var(εi))]
Social influence (Hundal and Kumar 2015)	0.90				0.77
The purchase of eco-friendly products will make a positive impression on other people		0.90	0.81	0.19	
Green advertisements influence my purchase decision		0.92	0.84	0.16	
Consumption of eco-friendly products will help me feel socially acceptable		0.83	0.69	0.31	
My choice of eco-friendly product is influenced by other consumers' word of mouth		0.87	0.76	0.24	
Green product purchase attitude (Witek and Kuźniar 2020)	0.96				0.62
Purchasing green products is a positive attitude		0.90	0.81	0.19	
Purchasing green products is beneficial to us		0.91	0.83	0.17	
Purchasing green products is a wise decision		0.91	0.83	0.17	
I think the green product consumption attitude will increase my health		0.91	0.83	0.17	
I have a favorable attitude towards purchasing and consuming green products		0.91	0.83	0.17	
I prefer to buy green products that are harmless		0.89	0.79	0.21	
Green purchase behavior (Dangelico and Pontrandolfo 2010; Hundal and Kumar 2015)	0.76				0.58
I often buy organic products		0.78	0.61	0.39	
I often buy products that are against animal-testing		0.74	0.55	0.45	
I often buy products that contain no or fewer chemical ingredients		0.80	0.01	0.99	
I often buy products that use recycled/recyclable packaging		0.71	0.50	0.50	
Sustainable lifestyle (Lubowiecki-Vikuk et al. 2021)	0.83				0.54
I purchase only seasonal food products		0.68	0.46	0.54	
I use products that are recyclable and produce minimum waste		0.78	0.61	0.39	
I usually prefer Energy conservation products		0.71	0.50	0.50	
I always choose electrical appliances with A+ label		0.78	0.61	0.39	
I mostly purchase local food		0.63	0.40	0.60	

GPL was measured with four items adapted from Biswas (2020), and the reliability coefficient Cronbach's $\alpha = 0.93$, and Composite Reliability (CR) = 0.95.

GPO was measured with three items ($\alpha = 0.77$; CR = 0.84) adapted from Chen et al. (2022).

Social influence was measured with four indicators (α = 0.90; CR = 0.93) adapted from Hundal and Kumar (2015). GPPA was measured with six indicators (α = 0.96; CR = 0.97) adapted from Witek and Kuźniar (2020). GPPB was measured with four indicators (α = 0.76; CR = 0.84) adapted from Dangelico and Pontrandolfo (2010) and Hundal and Kumar (2015). Sustainable lifestyle was measured with five items (α = 0.83; CR = 0.87) adapted from Lubowiecki-Vikuk et al. (2021).

5. Analysis

5.1. Confirmatory Factor Analysis (CFA) and Construct Reliability

Following the procedures outlined by Anderson and Gerbing (1988), we checked the measurement model and mentioned the results of the CFA in Table 2.

As shown in Table 2, the factor loadings for the indicators of the constructs ranged between 0.68 and 0.86, and the Cronbach's alpha of all variables exceeded the acceptable level of 0.7, thus vouching for the reliability.

5.2. Correlations, Multicollinearity, and Discriminant Validity

The descriptive statistics (means, standard deviations, zero-order correlations, reliability coefficients (Cronbach's alpha), Composite Reliability, and average variance extracted (AVE)) are presented in Tables 3–5.

Table 3. Correlation, reliability, and validity.

Variables	Mean	SD	1	2	3	4	5	6	α	CR	AVE
1. GPL	2.84	1.03	0.91						0.93	0.95	0.83
2. Green purchase behavior	3.35	0.77	0.67 **	0.76					0.76	0.84	0.58
3. GPO	3.27	0.89	0.72 **	0.74 **	0.80				0.77	0.84	0.64
4. Social influence	3.75	0.75	0.25 **	0.53 **	0.47 **	0.88			0.90	0.93	0.77
5. Sustainable lifestyle	3.29	0.72	0.63 **	0.72 **	0.71 **	0.59 **	0.73		0.83	0.87	0.54
6. GPPA	3.85	0.75	0.29 **	0.57 **	0.46 **	0.69 **	0.53 **	0.90	0.96	0.97	0.82

** $p < 0.01$; elements in diagonal and bold are the square root AVE. Abbreviations: 'α' = reliability coefficient Cronbach's alpha; CR = Composite Reliability; AVE = average variance extracted estimate.

Table 4. Outer VIF values.

Indicator	VIF	Indicator	VIF
GPL 1	2.311	GPPA 4	4.293
GPL 2	4.390	GPPA 5	3.342
GPL 3	4.345	GPPA 6	2.943
GPL 4	3.873	Green purchase behavior 1	2.007
GPO 1	1.157	Green purchase behavior 2	3.191
GPO 2	3.349	Green purchase behavior 3	2.045
GPO 3	3.335	Green purchase behavior 4	3.121
Social influence 1	2.943	Sustainable lifestyle 1	3.076
Social influence 2	3.508	Sustainable lifestyle 2	2.131
Social influence 3	2.087	Sustainable lifestyle 3	3.916
Social influence 4	2.515	Sustainable lifestyle 4	2.192
GPPA 1	3.775	Sustainable lifestyle 5	3.875
GPPA 2	4.241	Sustainable lifestyle 6	1.847
GPPA 3	4.283		

Table 5. Inner VIF values.

	1	2	3	4	5	6
1. GPL				1.581		
2. GPO				2.265		
3. Social influence				1.562		
4. GPPA					1.000	
5. Green purchase behavior						1.000
6. Sustainable lifestyle						

A preliminary analysis of correlations (Table 3) revealed that the correlation between the variables ranged from 0.25 (between GPL and social influence) to 0.73 (between GPPB and sustainable lifestyle). Since the correlations were less than 0.75, multicollinearity is present in the data, according to Kennedy (1997). Further, an additional check for multicollinearity was conducted by observing the Variance Inflation Factor (VIF), and it was found that the values are less than 5, suggesting that multicollinearity is not a problem in this research.

The reliability coefficients of all the constructs are over the acceptable level of 0.7 (Aiken and West 1991; Hair et al. 2019), and the square root of AVEs is greater than the correlations between the variables. The HTMT criterion and Fornell and Larcker (1981) criterion of discriminant validity (Tables 6 and 7) vouch for the discriminant validity of the constructs used in this study (Montgomery et al. 2021).

Table 6. Discriminant validity [HTMT criterion].

	GPL	GPO	GPPA	GPPB	SI	SLIFE
GPL						
GPO	0.831					
GPPA	0.303	0.573				
GPPB	0.744	0.945	0.731			
SI	0.268	0.604	0.743	0.68		
SLIFE	0.672	0.914	0.633	0.953	0.72	

Table 7. Discriminant validity [Fornell–Larcker criterion].

	GPL	GPO	GPPA	GPPB	SI	SLIFE
GPL	0.909					
GPO	0.592	0.797				
GPPA	0.286	0.575	0.905			
GPPB	0.576	0.698	0.659	0.759		
SI	0.242	0.586	0.694	0.594	0.88	
SLIFE	0.614	0.73	0.55	0.752	0.606	0.734

Abbreviations: GPL = green product literacy; GPO = green product orientation; GPPA = green product purchase attitude; GPPB = green product purchase behavior; SI = social influence; SLIFE = sustainable lifestyle.

5.3. Testing H1–H4

To test the structural model, we used Partial Least Squares (PLS) using Smart-PLS-4 software for structural equation modelling. The results of path analysis are presented in Table 8. The path diagram is shown in Figure 2.

The path coefficient of GPL on GPPA was positive but not significant ($\beta = 0.013$, $p = 0.81$); thus, H1 is not supported. The path coefficient of GPO on GPPA was positive

and significant (β = 0.211; $p < 0.001$); thus, H2 is supported. The path coefficient of social influence on GPPA was positive and significant (β = 0.449, $p < 0.001$); thus, H3 is supported. The path coefficient of GPPA on GPPB was positive and significant (β = 0.659, $p < 0.001$); thus, H4 is supported. The path coefficient of GPPB on sustainable lifestyle was positive and significant (β = 0.752, $p < 0.001$); thus, H5 is supported.

Table 8. Results of hypotheses testing.

	Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	*p* Values	Result
GPL→GPPA	H1	0.013	0.013	0.056	0.23	0.818	Not supported
GPO→GPPA	H2	0.211	0.211	0.079	2.65	0.008	Supported
Social Influence→GPPA	H3	0.449	0.457	0.061	7.39	0.000	Supported
GPPA→GPB	H4	0.659	0.656	0.047	14.08	0.000	Supported
GPB→Sustainable Lifestyle	H5	0.752	0.754	0.035	21.24	0.000	Supported
GPL × Social Influence→GPPA	H1a	0.056	0.049	0.078	0.72	0.469	Not supported
GPO × Social Influence→GPPA	H2a	−0.136	−0.129	0.055	2.47	0.013	Supported

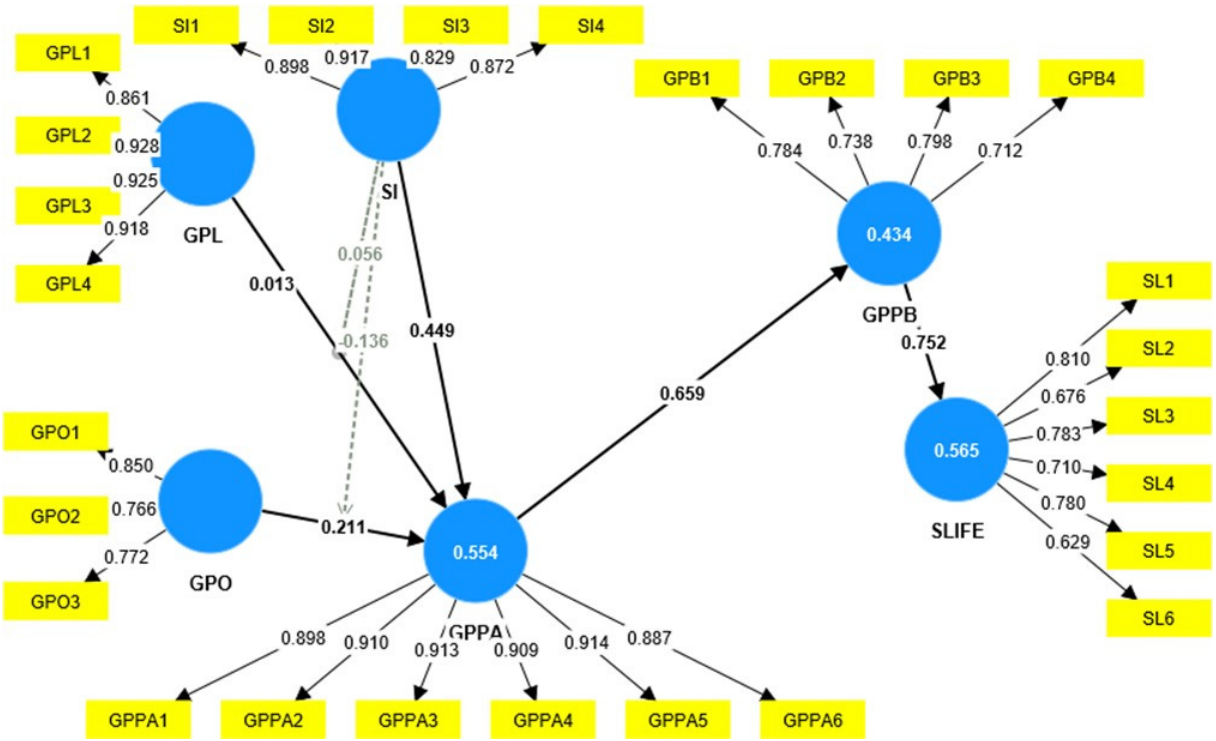

Figure 2. Path diagram.

5.4. Testing H1a and H2a

Hypothesis H1a predicts that social influence moderates between GPL and GPPA. The regression coefficient of the interaction term was significant (β GPL × social influence = 0.056, $p = 0.469$), thus not supporting H1a.

Hypothesis 2a predicts that social influence moderates between GPO and GPPA, and the interaction term was significant (β GPO × social influence = −0.136, $p < 0.013$), thus supporting H2a.

The interaction effect of GPO and social influence on GPPA is shown in Figure 3.

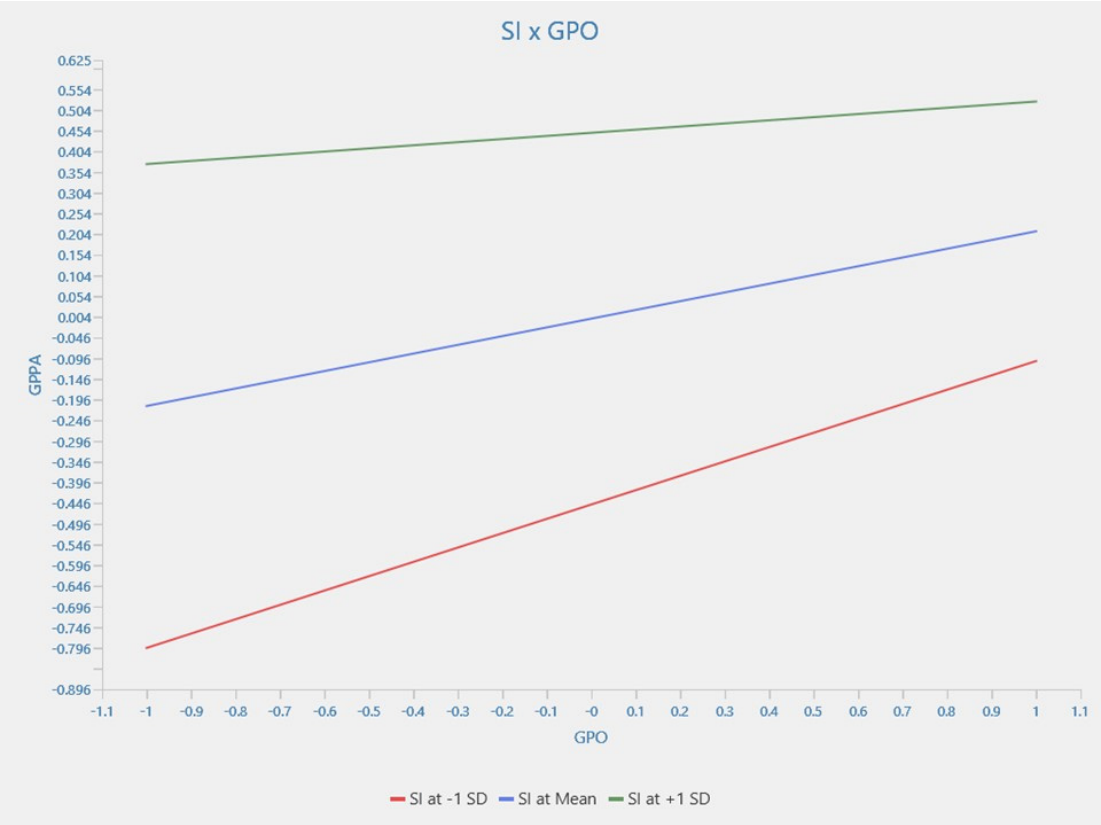

Figure 3. Social influence moderating the relationship between green product orientation and green product purchase attitude.

As shown in Figure 3, at higher levels of social influence, GPO results in a higher GPPA when compared to lower levels of social influence. Further, when GPO increases from 'low' to 'high', the effect of social influence on GPPA gets slightly reduced, though the level of GPPA is higher when compared to low levels of social influence. These results support H2a.

5.5. Predictive Values and Effect Size

Smart PLS has an in-built functionality for checking the predictive values of the sample. This is called the blindfolding strategy, where a part of the data matrix is omitted, and the results are used to forecast the omitted portion. When there is less variation between the estimated and actual values, the resultant Q^2 values will be high. The Q^2 value of GPPA was 0.510, that of green purchase behavior was 0.428, and that of sustainable lifestyle was 0.380. According to Hair et al. (2017), predictive values of 0.02 should indicate a small influence, 0.15 should indicate a medium effect, and values exceeding 0.35 should indicate a large impact. The variables reflected a large effect size. The Q^2 and effect size are presented in Table 9.

Table 9. R^2 and Adjusted R^2; Q^2 and effect size.

Variables	R^2	Adjusted R^2	Q^2	Effect Size
1. GPPA	0.554	0.549	0.527	Large
2. Green purchase behavior	0.434	0.432	0.427	Large
3. Sustainable lifestyle	0.565	0.564	0.377	Large

It is very important to predict the accuracy of the model by calculating the R^2 value. The R^2 values of GPPA, green purchase behavior, and sustainable lifestyle were 0.525, 0.434, and 0.565 (see Table 9). As suggested by Hair et al. (2017), R^2 values over 0.75 are considered 'good', 0.50 are moderate, and less than 0.25 are considered weak in predictive accuracy. Out of three variables, two variables' R^2 values are more than 0.50, thus considered to be moderate in predictive accuracy.

5.6. f2 Effects

As suggested by Hair et al. (2017), the effect size is calculated by the following formula:

$$f^2 = \frac{\left(R^2_{\text{included}} - R^2_{\text{excluded}}\right)}{\left(1 - R^2_{\text{included}}\right)}$$

The suggested values are 0.02 (small effect size), 0.15 (medium effect size), and 0.35 (large effect size) (Cohen 1988). The f^2 values of GPL (0.000), GPO (0.059), social influence (0.401), GPPA (0.766), and green purchase behavior (1.301) were calculated. GPO (0.059) reflects a medium effect size; social influence (0.401), GPPA (0.766), and green purchase behavior (1.301) reflect a large effect size. The f^2 values are shown in Table 10.

Table 10. f^2 effects.

	GPL	GPO	GPPA	GPPB	SI	SLIFE	SI × GPL	SI × GPO
GPL			0					
GPO			0.042					
GPPA				0.766				
GPPB						1.301		
SI			0.235					
SLIFE								
SI × GPL			0.003					
SI × GPO			0.039					

6. Results and Recommendations

This research is aimed at investigating the relationship between the green consumption behavior of individuals and sustainable lifestyles. A conceptual model was developed, and data collected from 422 respondents from the southern part of India were analyzed using structural equation modelling [Smart PLS 4 software]. Except for one hypothesis, the results validated the model.

First, the results from this research did not provide support for the positive association of GPL and GPPA (Hypothesis 1). This finding contradicted the results from the literature (Biswas 2020; Cheah and Phau 2011; Shimul et al. 2021; Vermeir et al. 2020). The results imply that GPL does not necessarily lead to positive attitudes toward purchasing green products. Individuals knowledgeable about green products may only sometimes prioritize or value them when purchasing. However, the results align with one of the latest studies conducted in the Indian context, which reported no relationship between GPL and GPPA

(Dhir et al. 2021). Second, the findings from this study provide strong support for the relationship between GPO and GPPA (Hypothesis 2), which aligns with results from past studies (Amin et al. 2020; Paswan et al. 2017; Sony and Ferguson 2017; Wickramasinghe 2019). The findings validate the assertion that individuals with a higher GPO are more likely to exhibit positive attitudes toward purchasing green products. Third, this study empirically supports the positive relationship between social influence and GPPA (Hypothesis 3). Several previous studies from the literature supported the positive impact of social influence on the attitude of consumers towards green products (An et al. 2021; Chen et al. 2021; Koe and Chung 2014; Yılmaz and Anasori 2021). Understandably, an individual's behavior is influenced by the opinions, perceptions, and recommendations of people around them (e.g., friends, family members, colleagues). Thus, social influence plays a significant role in motivating individuals towards making environmentally friendly purchase decisions. The literature review also reveals that studies conducted in other countries yielded similar results. For example, health consciousness, purely nutritional perspectives, and the perceived values of the consumption of organic products were the major factors in organic consumption.

Fourth, the results support that GPPA is a precursor to GPB (Hypothesis 4). Following the TRA, which asserts that attitudes lead to behavior, individuals who exhibit high attitudes toward green products are more likely to translate their attitudes into behavior. Some earlier scholars also empirically demonstrated the positive effect of attitude on behavior concerning sustainable purchasing (Chen et al. 2022; Crofton et al. 2013; Dabija et al. 2018; Nguyen et al. 2019; Ogiemwonyi and Harun 2020; Vermeir et al. 2020). Fifth, the positive association of GPB with a sustainable lifestyle (Hypothesis 5) aligns with earlier studies (Ali et al. 2023; Gierszewska and Seretny 2019). Considering the increasing importance of a sustainable environment, individuals must lead sustainable lifestyles that society appreciates. These results reiterate the importance of shaping positive attitudes and aligning them with sustainable behaviors, ultimately contributing to the broader goal of environmentally conscious consumption. When followed by most people in society, they contribute to sustainable ways of living by protecting the environment from degradation (Gierszewska and Seretny 2019).

Sixth, the results did not support the moderating effect of social influence on the relationship between GPL and GPPA (Hypothesis 1a). In this study, we did not find either a direct effect of the literature on the attitude or an interaction of social influence with literacy on the attitude. Seventh, the moderation effect of social influence in the relationship between GPO and GPPA was supported in this research (Hypothesis 2a). Individuals are thus more likely to be influenced by their friends and colleagues to change their attitude towards green purchasing, especially when they have an orientation towards green behavior. The conceptual model is validated except for the relationship between literacy and attitude and the interaction of literacy and social influence on attitude.

6.1. Theoretical Contributions

Drawing on the TPB, the results from the present study have several contributions to sustainability and pro-environmental behavior. First, in the context of a thickly populated developing country—India—this study indicates that literacy regarding the benefits of green purchasing is necessary but inadequate to foster an attitude towards green consumption. Second, the green purchase orientation plays a significant role in enhancing the attitude towards green product purchases. Third, the effect of social influence on an individual's attitude toward green purchases is substantial. Therefore, opinions and suggestions from family members, friends, peers, and others play a vital role in influencing the attitude of individuals toward green purchases and consumption. Fourth, as predicted, green purchase behavior is an antecedent to a sustainable lifestyle. Besides the satisfaction from consuming products, individuals tend to derive personal pleasure in terms of exhibiting environmental concern by purchasing products that do not hurt the environment. Though an individual's values, beliefs, and perceptions are essential, the cumulative effect

of their orientation and social influence is vital in a sustainable lifestyle. Individuals are more inclined to engage in green consumption when it is consistent with the values of their peers, friends, and family members. To sum up, the conceptual model adds to the bourgeoning research on sustainability.

6.2. Practical Implications

The findings from this study have several implications for practicing managers, administrators, and society. First, organizations need to promote products that do not harm the environment. Second, GPL is essential to bring awareness about the benefits of green products, and such understanding is vital in influencing attitudes. Following the attitude–intention–behavior relationship, an individual's attitude toward green purchase leads to green purchase behavior; this study recommends that organizations be cognizant of how individuals feel about the products that help protect the environment so that they engage in purchasing and consuming those products. Second, since orientation is crucial in attitude formation, promoting green consumption by incentivizing customers to engage in green purchases is necessary. Creating and marketing eco-friendly products and advertising them increases the customers' orientation towards green consequences, increasing their attitude towards green products and their subsequent purchase behavior. According to our study, a sustainable lifestyle depends on buying and consuming green products. The third practical implication is to find ways to educate individuals about green product benefits. Educational institutions must conduct seminars and courses to teach the students about pro-environmental products. The students, who are the future generations who will live in the world, must understand the benefits of green product buying and consumption to protect the environment from degradation.

Additionally, governments must take the necessary steps to promote sustainability by offering incentives for the organizations that manufacture and sell green products. Further, initiatives encouraging green consumerism can be developed through collaboration between businesses, governments, and non-government organizations (NGOs). To sum up, enabling sustainable lives through green consumption involves a multifaceted strategy that combines education, teamwork, and reforms in the law to protect the environment.

6.3. Limitations

Some of the limitations of this study need to be acknowledged. First, though we used representative samples to test the hypothesized relationships, a small sample size is a potential limitation that may limit the generalizability of the findings across different parts of the world. However, to the extent that living conditions are similar in developing countries, we expect the results to be generalizable across other developing nations. Second, as with any survey-based cross-sectional study, our research suffers from common method bias. Though we have taken adequate care and tested statistically to minimize the common method variance, cross-sectional studies cannot eliminate this bias. Therefore, the results need to be interpreted considering this limitation. Third, social desirability bias, another inherent limitation in survey-based research, may skew the results. However, some researchers contend that maintaining the survey results' anonymity can minimize social desirability bias. We included a statement that the researchers will protect the privacy of respondents by promising that the contents of the surveys will not be revealed. Fourth, we focused on a limited number of variables influencing the green behavior of individuals. Some variables might have been omitted, which may have influenced the green purchase behavior of individuals.

6.4. Suggestions for Future Research

This study has several avenues for future research. First, to improve the generalizability of the findings, future studies may aim for more extensive and more numerous samples. Second, future researchers may focus on the respondents' cultural, geographical, and socio-economic conditions that may profoundly affect green purchase behavior and

consumption. Third, cross-country comparisons—between various developing countries and developing versus developed countries—may help to understand the differences in an individual's attitude–intention–behavior relationship concerning green product purchase behavior and sustainable lifestyle. For example, though socio-demographic factors may not play a significant role, health consciousness prompts consumers to engage in buying and consuming organic food in Sweden and Greece (Diagourtas et al. 2023). Similar studies conducted in Denmark revealed that a purely nutritional perspective was considered as healthy eating, and hence, Danish consumers prefer organic food (Ditlevsen et al. 2019). In a study conducted in Vietnam, researchers found that perceived values and reasons drive the consumers' intention to buy organic food (Nguyen and Dang 2022).

Fourth, future studies may investigate the antecedents to green purchase awareness and literacy, GPO, and social influence. Since this study was focused on the consequences of green purchase literacy, orientation, and social influence, future researchers may identify some moderator variables that influence these direct relationships. Fifth, it will be interesting to identify the factors that encourage the green consumption and sustainable lifestyle decisions of individuals. Though difficult, future researchers can conduct longitudinal studies to see how the individuals' behavior changes after initiating training programs and educational sessions regarding the benefits of green purchase production and consumption. It would also be interesting to compare the self-reported data about purchase attitudes and the actual purchase behavior of individuals.

Since this study concentrated on six variables, future studies may include additional variables that may act as moderators (e.g., promotions by organizations for green products by offering price discounts and incentives) that may profoundly influence an individual's green purchase attitude and behavior. Further, future studies may investigate the behaviors differentiated by factors such as gender or age (e.g., elderly vs. younger individuals), income, and personality characteristics by using a large sample. Organizations may conduct green awareness programs to stimulate green product consumption and promote the sustainable lifestyles of individuals. Eco-labels and certifications may also promote sustainable consumption.

The existing literature revealed that businesses are encouraged to embrace sustainable practices and communicate their commitment through marketing tactics, as customers show willingness to invest in green products, thereby speeding up the availability and accessibility of green products. An innovative journey towards a more harmonious connection between human consumption and the environment is indicated by the collaboration between ethical trade, sustainable consumption, and the development of green products. As society adopts a more mindful and responsible approach to consuming, changing consumer attitudes and market dynamics indicate the possibility of change.

6.5. Conclusions

This study highlights the importance of green product attitude in driving a sustainable lifestyle. Though GPL did not significantly impact green purchase attitude, this study concludes that green orientation is a significant predictor of attitude. This study also found that societal influence plays a vital role in GPPAs; it is essential to have a sustainable society. In developing countries such as India, with several million people under the poverty line, these populations often focus on survival rather than protecting the environment. As survival precedes the environment in importance, it is essential to bring reforms by educating people about the benefits of green consumption. The results of this study underscore the importance of encouraging green consumption to promote a sustainable lifestyle. From a practical standpoint, the analysis can provide valuable insights for policymakers, businesses, and organizations aiming to promote sustainable lifestyles by encouraging green consumption.

Author Contributions: Conceptualization, R.F.K., S.S. and H.J.G.; methodology, R.F.K., S.P. and H.J.G.; software, H.J.G., S.P. and R.F.K.; validation, R.F.K., S.S. and S.P.; formal analysis, H.J.G., S.P. and S.S.; investigation, R.F.K. and S.S.; resources, R.F.K., H.J.G. and S.S.; data curation, H.J.G. and S.P.; writing—original draft preparation, R.F.K., S.S. and S.P.; writing—review and editing, S.S., H.J.G. and S.P.; visualization, R.F.K.; supervision, S.S.; project administration, S.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study did not require ethical approval.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data will be available upon request from authors.

Conflicts of Interest: The authors declare no conflicts interest.

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