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The relationship between green packaging awareness, initiatives, and behavior: an exploratory study on India rural population

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Abstract

Purpose – This study aims to investigate the antecedents and consequences of green packaging behavior (GPB). A conceptual model has been developed wherein green packaging awareness (GPA) and green packaging initiatives (GPI) are precursors of GPB, and environmental concern and availability of various green packaging alternatives are moderators. The outcomes of GPB in terms of environmental and personal benefits are examined.

Design/methodology/approach – Unlike most papers focusing on green packaging from a marketing perspective, this study explores the behavior of rural households from 47 villages in southern India. A carefully crafted survey instrument was developed, and data were collected from 395 respondents. After checking the instrument's psychometric properties, the results were analyzed using Hayes's PROCESS macros.

Findings – The results indicate that GPA and GPI are positively associated with GPB, GPA predicts GPI, and GPI mediates the relationship between GPA and GPB. Furthermore, findings suggest that environmental concern moderates the relationship between GPI and GPB, and the three-way interaction between the availability of green packaging (second moderator), environmental concern (first moderator), and GPI influences the GPB. Moreover, the outcomes of GPB in terms of environmental and personal benefits are established.

Research limitations/implications – This research has several theoretical implications. It documents that individual awareness of green packaging is a precursor to GPB. This study focused on the rural population from a developing country (India) and hence may suffer from a lack of generalizability across developed nations. However, the results could be generalizable across other developing nations worldwide.

Practical implications – This study motivates individuals to engage in proenvironmental behavior. Moreover, it highlights the importance of GPB in deriving environmental and personal benefits. It is also

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equally crucial for individuals to engage in proper waste management practices so that the environment is not polluted.

Social implications – The findings from this research are helpful to society as it focuses on the proenvironmental behavior of individuals. Particularly concerning packaging, this study points out that buying products with green packaging and reusing and recycling such packages is essential to protect the environment.

Originality/value – This study fills the gaps in the literature by focusing on the GPB of the rural population. To the best of the authors' knowledge, the moderated-mediation model developed and tested in this research is the first of its kind and thus makes a significant contribution to the literature on green packaging and waste management.

Keywords Green packaging behavior, Green packaging initiatives, Environmental benefits, Green packaging awareness, India

Paper type Research paper

1. Introduction

Sustainable packaging has become a catchphrase and has received increasing attention from researchers worldwide for the past two decades (Chan, 2001; Da Cruz, Ferreira, Cabral, Simões, & Marques, 2014; Nguyen, Parker, Brennan, & Lockrey, 2020; Roberts, 1995; Wong, Lai, Shang, Lu, & Leung, 2012). The escalated importance of environmental protection has resulted in organizations and individuals preferring "going green" (Wandosell, Parra-Meroño, Alcayde, & Baños, 2021). Green packaging – also known as "environmentally friendly packaging," "eco-friendly packaging," "recyclable packaging," "sustainable packaging," "eco-green packaging" – is concerned with packaging items with materials that are bio-degradable (Wandosell et al., 2021). Individuals and organizations must shift away from nonbiodegradable waste as it harms the ecosystem, including humans, animals and plants. One of the best ways is to use the reduce, reuse, recycle and recover (4Rs) (Welivita, Wattage, & Gunawardena, 2015).

A study by Grand View Research estimated that the global green packaging market will reach US$441.41bn by 2028 (Grand View Research, 2022). Growing concern for environmental protection increased the demand for sustainable packaging as a fruitful alternative to other packaging that ends up in landfills as waste. Both organizations and consumers tend to prefer packaging that is recyclable, reusable and degradable (Oloyede & Lignou, 2021; Olsen, Slotegraaf, & Chandukala, 2014). Examples of recyclable and recycled packaging materials include paper, plastic, glass and metal, and using these materials would reduce the release of harmful toxins that adversely affect the environment (Huang, 2017; Liu, 2010). Several researchers in the past found that sustainable packaging is a viable alternative to traditional nonbiodegradable packaging.

Both organizations and individuals must take initiatives to reduce plastic waste, use recycling strategies and exhibit eco-friendliness (Tobler, Visschers, & Siegrist, 2011). Packaging with a relatively low environmental impact based on life-cycle assessments evokes eco-friendliness from the individual's viewpoint (Glavic & Lukman, 2007; Magnier & Crie, 2016). The benefits of green packaging for business organizations and individuals have been well-documented in the literature (Esmaeilpour & Rajabi, 2016; Xin, Sen, & Rajendran, 2019). Some studies focused on green packaging to maintain a sustained competitive advantage by tapping environmentally-conscious consumers (Maziriri, 2020; Tuwanku, Rohman, & Rofiq, 2018). Early scholars distinguished between socially responsible consumer behavior and ecologically conscious consumer behavior, and ecological consciousness is a subset of socially responsible behavior (Roberts, 1995). Some scholars focused on socially conscious consumers (Anderson & Cunningham, 1972; Kinnear, Taylor,

& Ahmed, 1974), while others studied environmental concerns (Van Liere & Dunlap, 1981). In this research, our focus is on the environmental concerns the individuals exhibit.

Most of the studies on sustainable packaging focused on consumer behavior concerning green package products (Martinho, Pires, Portela, & Fonseca, 2015; Steenis, van Herpen, van der Lans, Ligthart, & van Trijp, 2017), recycling behavior of consumers (Tencati, Pogutz, Moda, Brambilla, & Cacia, 2016), consumer shopping behavior (Guyader, Ottosson, & Witell, 2017) or retailers' strategies of sustainability initiatives motivating the consumers toward green consumption (Gustavo, Pereira, Bond, Viegas, & Borchardt, 2018). However, some researchers found that green packaging positively relates to consumers' purchase intention (Pan, Lei, Wu, & Wang, 2021). Their studies focused on greenwashing effect and green consumption (Braga Junior, Martínez, Correa, Moura-Leite, & Da Silva, 2019), ecological awareness, brand trust and purchase intention (Munaier, Miyazaki, & Mazzon, 2022) and sustainability models from start-up companies (Nunes, Morioka, & Bolis, 2022).

Despite volumes of research on green packaging and sustainability, little is known about the influence of green packaging awareness (GPA) on green packaging initiatives (GPI) and the behavior of individuals. Besides the efforts on the part of companies, efforts from individuals to engage in green packaging play an important role in protecting the environment – for example, a lack of concern for the environment results in landfills of waste material. The problem of landfills is more rampant in thickly populated developing countries (such as India), and the proenvironmental behavior starts with bringing awareness about green packaging.

Furthermore, the studies focusing on the rural population, particularly regarding green packaging, are very scant in the literature (James & Kurian, 2021). While several scholars focused on metropolitan cities in India (e.g. New Delhi, Mumbai and Calcutta) (Verma & Chandra, 2018; Prakash et al., 2019; Prakash & Pathak, 2017), this study focused mainly on the rural population. Since over three-fourths of the people in India reside in villages, studying the green packaging behavior (GPB) of the population living in these areas is essential. Therefore, we consider that the rural folks accurately represent India, and this study bridges the research gap in the current literature. This study aims to unravel the dynamics of GPA among the rural population in India. Therefore, this study proposes to answer the following research questions (RQs):

RQ1. How do GPA and GPI influence the GPB?

RQ2. How do environmental concerns and the availability of green packaging multiplicatively influence GPB?

RQ3. How does GPB affect the environmental and personal benefits?

This study makes five significant contributions to theory and practice on environmental sustainability and green packaging. First, it found that GPA and initiatives are essential precursors to GPB. This study also found that GPA and its direct effect influence GPB through GPI. Second, this study underscores the importance of environmental concern in strengthening the effect of GPI on GPB. As global awareness of sustainability is increasing daily, the pressure to maintain a sustainable environment is felt by all the countries worldwide. India, the largest populated country, recognized the call for sustainability, in which both individuals and organizations play a vital role.

Our study reiterates that when individuals show concern for protecting the environment, it is more likely that the initiatives will translate into GPB. Third, this study emphasizes the importance of the availability of green packaging in other fortifying GPB. Fourth, this research empirically documented that GPB results in environmental and personal benefits.

The fifth pivotal contribution is the complex double-layered moderated-mediation model, which is the first of its kind done in the context of a developing country (India) and adds significantly to the literature on sustainability.

2. Literature review

Research on green packaging has been progressing in two different directions. One stream of research focuses on green packaging from a marketer standpoint, where organizations attract proenvironmental customers by implementing green packaging (Esmaeilpour & Rajabi, 2016; Gustavo et al., 2018; Guyader et al., 2017; James & Kurian, 2021; Lisboa, Vitorino, & Antunes, 2022; Martinho et al., 2015). Another stream of research concentrates on the waste management practices followed by individuals regarding green packaging (Da Cruz et al., 2014; Escario, Rodriguez-Sanchez, & Casaló, 2020; Hanssen et al., 2017; Limon, Vallente, & Corales, 2020) and sustainable consumption (Young, Hwang, McDonald, & Oates, 2010). What is lacking is the studies that highlight the behavior of individuals, as both consumers and practitioners of GPB. The objective of this study is to assess the role of individuals in exhibiting behavior about purchasing green packaged products and engaging in waste disposal of green packages.

The research on green packaging and waste management and their effect on sustainability has been exhaustive (Grunert, 1993; Hassan, Batool, Zhu, & Khan, 2022; Schmidt & Laner, 2021; Tencati et al., 2016; Welivita et al., 2015). Studies conducted among rural households mainly focus on waste management awareness and practices to see whether they exhibit proenvironmental behavior (Fan, Yang, & Shen, 2019). In a study conducted among 332 households in the Philippines rural community, the respondents had positive beliefs about waste management but lacked implementation (Limon et al., 2020). Research on 1,000 women households from El Gharbia, Egypt, revealed a positive relationship between awareness of waste management and sustainability practices (Hassan & Elsehry, 2022).

While some studies focused on the awareness of green packaging and waste management practices, some highlighted promoting proenvironmental behavior by impositioning waste management charges. For example, in a study on developing countries, researchers suggested imposing higher waste management charges to promote sustainability through the proper use of the 4Rs (Welivita et al., 2015). Similarly, Tencati et al. (2016) prescribed prevention policies for green packaging and waste management in 11 developed countries, including Europe, Australia and Canada. The researchers found that awareness is an essential factor that promotes proenvironmental behavior. Tallentire and Steubing (2020) explained the environmental benefits of improving the proper disposal of packaging waste in Europe. Schmidt and Laner (2021) emphasized the advantages of single-use packaging of plastic strategies in German households.

Some of the recent studies conducted in India reveal that consumers show a strong preference for green product consumption. Prakash and Pathak (2017) studied 204 consumers from Calcutta (India) and found that "purchase intention of eco-friendly packaging products is influenced by personal norms, environmental concern and willingness to pay" (p. 385). In another study conducted on 227 customers from two big cities in India (New Delhi and Mumbai), researchers found that altruistic values significantly influence the purchase intention of eco-friendly packaged products (Prakash et al., 2019). A study by Verma and Chandra (2018) conducted with 295 respondents from India found that moral reflectiveness and conscientiousness are significant predictors of green hotels' visit intention. Using a sample of 218 respondents from Ghana, researchers found that consumers' environmental awareness of green packaging was a substantial predictor of

green purchasing decisions (Mahmoud, Tsetse, Tulasi, & Muddey, 2022). All the studies conducted in various countries provided empirical evidence for the growing importance of green packaging. The present study focuses on the rural population in India, which largely remained under-researched, particularly concerning GPB.

2.1 Theoretical framework, the study variables and hypotheses development

2.1.1 Theoretical underpinnings. The theory of reasoned action (TRA) (Ajzen & Fishbein, 1977) is used as a theoretical platform for this study. The basic tenet of TRA is that an individual's behavior is determined by attitude and subjective norms. The attitude toward the behavior depends on assessing the outcome of such behavior; if the outcome is positive, the individual engages in the behavior, but if the outcome is negative, the individual does not engage in the behavior. From a social psychology standpoint, TRA explains the broad range of human behaviors (Ajzen, 1991). Subjective norms refer to the expectations of other individuals, which are essential to an individual's behavior. An individual engages in behavior only if others approve of such behavior (Ajzen, 2002). Past researchers have used TRA to explain green marketing and packaging behavior (Davies, Foxall, & Pallister, 2002; Manaktola & Jauhari, 2007; Prakash & Pathak, 2017).

In this study, we conceptualize that GPB is preceded by the attitude of individuals shaped by GPA and GPI. Furthermore, when others show concern for the environment, individuals are more likely to subscribe to it (following subjective norms). In this study, we adopt various components of TRA that help explain the intention of an individual's attitude toward environmental protection and the resultant behavior (Bamberg & Möser, 2007; Jansson, 2011; McEachan, Conner, Taylor, & Lawton, 2011; Ramayah, Lee, & Mohamad, 2010; Steg & Vlek, 2009). TRA is, thus, relevant in predicting the effects of individual perceptions of GPA on GPB. The additional variables we used in this study are the environmental and personal benefits stemming from GPB.

2.1.2 The study variables. In this research, we used seven variables: GPA, GPI, GPB, availability of green packaging, environmental concern, environmental benefits and personal benefits.

2.1.2.1 Green packaging behavior. We define GPB as scalable actions and behaviors in which individuals engage in packaging that would not be detrimental to environmental sustainability. GPB is a significant part of green behavior (Ones & Dilchert, 2012) linked to an environmental-friendly approach. Individuals may translate the initiatives into action by implementing proenvironmental behavior (Jaiswal & Kant, 2018). These include avoiding plastic bags and purchasing store products that have green packaging (Rokka & Uusitalo, 2008). Proper disposal of waste material and promoting proenvironmental behavior are included in GPB.

2.1.2.2 Green packaging initiatives. The initiatives the individuals engage in are related to all the steps taken to reduce the negative environmental impact (Han, Hsu, & Lee, 2009). As a consumer, an individual purchases green-packaged products (Mishal, Dubey, Gupta, & Luo, 2017). After purchasing the products, the consumer may have initiatives that include reuse, recycle and reduce the green packages and engage in the proper disposal of waste material. Thus, these initiatives include purchasing green packaged products and appropriately disposing of the waste material.

2.1.2.3 Green packaging awareness. The awareness is related to the knowledge of the impact of green packaging on the environment (Koenig-Lewis, Palmer, Dermody, & Urbye, 2014). Individuals are aware of various types of packaging that have a positive impact and those that are detrimental to the environment (Munerah, Koay, & Thambiah, 2021). More precisely, awareness of the less toxic packages that do not adversely affect human and animal

lives and do not affect the ozone layer is a fundamental antecedent of proenvironmental behavior.

2.1.2.4 Environmental concern. It involves concerns about caring for the Earth, protecting the environment and seeing that resources are not depleted so that future generations are not adversely affected. Environmental concern refers to the degree to which individuals are aware of environmental problems and willing to contribute to protecting the environment (Dunlap & Jones, 2002; Bickart & Ruth, 2012). Some early scholars found that green packaging is considered a vital product attribute by individuals with high levels of environmental concern (Larceneux, Benoit-Moreau, & Renaudin, 2012; Rokka & Uusitalo, 2008). Environmentally-conscious people are more likely to buy eco-friendly products and engage in green packaging to protect the environment (Kilbourne & Pickett, 2008). Furthermore, recommending others to protect the environment and motivating them to engage in green behavior come under environmental concerns.

2.1.2.5 Environmental benefits. One of the outcome variables is the environmental benefits of following GPB and proper disposal of waste material (Braga Junior et al., 2019). The benefits include reduction of the carbon footprint, protection of the fertility of the soil and reduction of toxicity in the waste material.

2.1.2.6 Personal benefits. Individuals exhibiting green packaging and proenvironmental behavior tend to derive intrinsic satisfaction from being good eco-citizens. Furthermore, society looks at these individuals with respect. Reusing and recycling packaged material also help individuals enjoy the benefit of lower cost of packaging (Braga Junior et al., 2019).

2.1.2.7 Availability of green packaging. This variable relates to various options available for packaging, including jute bags, banana leaves, newspapers and cardboard. (Magnier & Schoormans, 2015; Munaier et al., 2022; Walker & Kent, 2013). When several alternatives are available, individuals can easily choose the alternative suitable for packaging their products.

2.1.3 Hypotheses development.

2.1.3.1 Effect of green packaging awareness. GPB starts with the awareness of the benefits of green packaging, an essential precursor for GPB. The level of awareness plays a significant role in green marketing and organizations (Lekhanya, 2014). Some researchers documented that media plays a vital role in this process (Trivedi, Patel, & Acharya, 2018). Packaging with a relatively low environmental impact based on life-cycle assessments evokes eco-friendliness from the individual's viewpoint (Glavic & Lukman, 2007; Magnier & Crie, 2016). Several researchers documented the impact of the awareness of green packaging on the consumer's willingness to buy products (Banterle, Cavaliere, & Ricci, 2012; Steenis et al., 2017; Venter, Van Der Merwe, De Beer, Kempen, & Bosman, 2011).

A study conducted with 2,487 individuals in Spain found that environmental concerns and attitudes were positively related to proenvironmental behavior concerning recycling, reducing and reusing packing materials (Escario et al., 2020). In a study conducted in the United Arab Emirates, researchers found that consumers showed the importance of serving the environment by properly disposing of waste and packaging fruits and vegetables (Rajagopal & Bansal, 2015). In higher educational institutions in Thailand, the initiatives about the 4Rs positively affected the attitudes and behavior of individuals (Tangwanichagapong, Nitivattananon, Mohanty, & Visvanathan, 2017). Sometimes, individuals are aware of the pollution generated by nonbiodegradable packaging but may be unsure of the properties of different packaging materials (Mitchell, 2021). Once they understand how to engage in green packaging, they will likely exhibit the GPB. A recent study documented that the environmental awareness of individuals is positively related to sustainable packaging attitudes and behavior

(Lisboa et al., 2022). Thus, based on the limited available research, especially concerning the awareness-initiatives-behavior chain, we posit the following exploratory hypotheses:

H1. GPA positively and significantly predicts GPB.

H2. GPA positively and significantly predicts GPI.

H3. GPI positively predicts GPB.

2.1.3.2 Green packaging initiatives as a mediator. In addition to direct effects, GPA may influence the GPB through the GPI, which can be seen in individual steps. Relatively scant research revealed that attitudes are an essential mediator between an individual's environmental knowledge and awareness and adopting eco-friendly packaging behavior (Shimul & Cheah, 2022). The initiatives include using packages that reduce the negative impact on the environment and packages that can be reused and recycled. Finding closed-loop packaging and using the right-sized packaging would directly affect GPB. However, an individual's awareness of green packaging may influence GPB through these initiatives (Hsu, Tan, Zailani, & Jayaraman, 2013). Because no prior studies have investigated the mediation of initiatives in the relationship between GPA and GPB, it would be interesting to explore this mediation, and hence, we offer the following hypothesis:

H4. GPI mediates between green packaging awareness and green packaging behavior.

2.1.3.3 Consequences of green packaging behavior. Extant research focused on the effect of GPB on the environment (Guillard et al., 2018; Huang, 2017; Oloyede & Lignou, 2021; Lisboa et al., 2022). GPB of individuals helps reduce the toxicity of the waste material and results in less garbage going to landfills. In addition to reducing pollution of the environment, green packaging also reduces the carbon footprint. Moreover, green packaging does not adversely affect soil fertility. Thus, green packaging has several environmental benefits.

When individuals exhibit GPB, they derive the satisfaction of being good citizens to protect the environment. Environmentally-conscious consumers are often attracted by green packaging and tend to buy green products. Several marketing studies documented that environmentally-friendly consumers prefer green-packaged products (Ischen, Meijers, Vandeberg, & Smit, 2022; McCarthy & Wang, 2022). Often, individuals reuse the material, spend minimum packaging, and quickly dispose of the packages. Furthermore, extant research revealed that green packaging positively relates to environmental benefits (Hanssen et al., 2017; Lea & Worsley, 2008; Tobler et al., 2011; Young, 2010). Thus, based on available empirical evidence, we predict that GPB positively impacts the environment and individuals. Therefore, we offer the following hypotheses:

H5. GPB is positively and significantly related to environmental benefits.

H6. GPB is positively and significantly related to personal benefits.

2.1.3.4 Environmental concern as a first moderator. Though proenvironmental behavior is necessary for exhibiting GPB, the environmental concern may differ across individuals. We posit in this research that environmental concern changes the strength of the positive association between GPI and GPB. In a study conducted in Romania, the researchers found that the consumers' environmental concerns resulted in a preference for products packaged with paper, glass and cardboard because of the capability of recycling and reusing, thus protecting the environment (Orzan, Cruceru, Bălăceanu, & Chivu, 2018). When individuals care for the Earth, show concern for future generations, follow GPB, and recommend others to follow. A more profound environmental concern motivates individuals to translate their

GPI into behavior. Though no prior studies examined the moderating effect of environmental concern, we argue that it would be interesting to see how environmental concern affects the positive association between GPI and GPB. We, therefore, offer the following exploratory hypothesis:

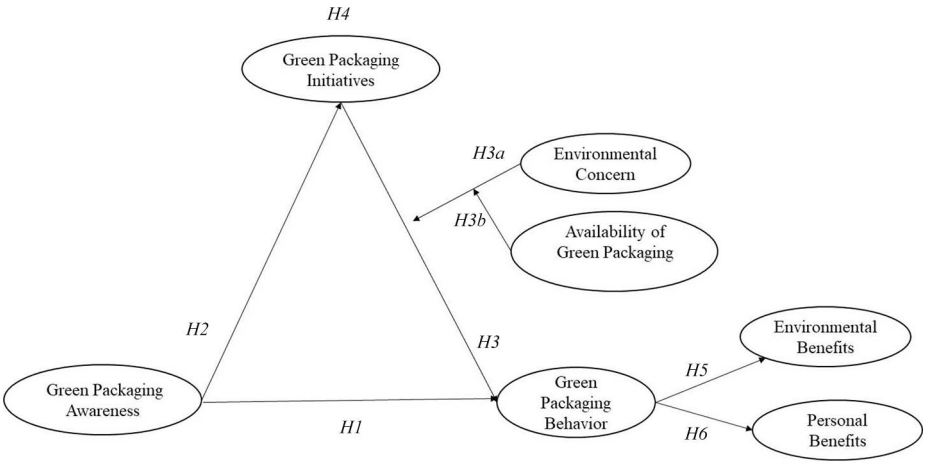
H3a. Environmental concern moderates the relationship between GPI and GPB.

2.1.3.5 Availability of green packaging as a second moderator. Though individuals exhibit proenvironmental behavior about green packaging, the availability of alternative options to traditional packaging plays a vital role. This alternative packaging includes jute bags, banana leaves, newspapers, cloth bags, palm leaves and earthen wares. In developing countries like India, banana leaves, palm leaves and newspapers are used for packaging as these are available in vast amounts and are less expensive. In Indonesia, dangle fresh cheese is sold in packaging made from banana leaf material, and the researchers found that when compared to plastic bags, banana leaf material reduces microbial contamination (Zakariah, Malaka, Laga, & Aka, 2019). Unfortunately, research focusing on the effect of the availability of green packaging on the attitude and behavior of individuals is very sparse and scattered.

In this study, we argue that when environmental concern strengthens the relationship between GPI and GPB, the availability of green packaging fortifies such a moderated relationship. In other words, the behavior of individuals toward green packaging is enhanced when more alternative packaging is available. To the best of our knowledge, the double moderation has not been examined by previous researchers, and we assert that it would be interesting to explore such a relationship. Therefore, we offer the following exploratory hypothesis:

H3b. Availability of green packaging (second moderator) positively moderates the moderated relationship between GPI and environmental concern (first moderator), influencing GPB.

The conceptual model is presented in Figure 1.



Source: The authors

Figure 1.
Conceptual model

3. Method

3.1 Sample

This study assesses the rural population's eco-friendly approach toward sustainable development, particularly concerning GPA and GPB. A carefully crafted survey instrument was developed, and data was collected by the researcher personally visiting 47 coastal villages of Kanyakumari, the southern part of India.

The sample consists of data collected from 395 respondents. All the surveys were complete as the researcher took care of seeing that the local rural population answered all the questions in the survey. Since the researcher has traveled to these villages, data collection took nearly three months. When the population exceeds 100,000, the minimum sample size required is 384, so our sample meets the criteria (Krejcie & Morgan, 1970). We used a nonprobability-based sampling, and since we are dealing with homogenous populations from several villages, we used "quota sampling," according to which we selected at least ten respondents from each village to interview. In social science research, when we deal with cross-sectional studies, snowball sampling is also acceptable (Drăgan & Isaic-Maniu, 2012; Gabor, 2007). We stopped when we reached the data saturation point, where no additional information was available for subsequent data collection. We assessed the nonresponse bias by comparing the first 100 responses and the last 100 responses and found no statistical differences between these two groups.

3.2 Demographic profile

The respondents comprised 207 (52.4%) males and 188 (47.6%) females. The demographic profile of the respondents is presented in Table 1.

3.3 Measures

We measured all the constructs on a Likert-type five-point scale (1 = "strongly disagree;" 5 = "strongly agree"). We adapted the measures of seven constructs from the previous literature (Júnior, Silva, Moretti, & Lopes, 2012; Jerzvk, 2015; Koenig-Lewis et al., 2014; Magnier & Schoormans, 2015; Munaier et al., 2022; Walker & Kent, 2013), and modified them by consulting expert faculty members before collecting data from the respondents. We followed the construct conceptualization using the prior validated scales and found that indicators associated with each construct are highly correlated (Hair, Anderson, Tatham, & Black, 1998). The constructs, indicators and sources of these measures are mentioned in Table 2.

4. Analysis and findings

4.1 Descriptive statistics and multicollinearity

Table 3 captures the descriptive statistics (means, standard deviations and zero-order correlations).

The preliminary analysis of correlations suggests that multicollinearity is not a problem with the data, as the correlations between the variables were less than 0.75 (Tsui et al., 1997). The highest correlation was 0.70 (between environmental and personal benefits), and the lowest was 0.30 (between the availability of green packaging and environmental benefits). We also checked the variance inflation factor (VIF), another way to test multicollinearity. We found that the VIF values were less than five for all the indicators, suggesting the absence of multicollinearity (Montgomery *et al.*, 2021).

Category	Profile	Total no.	%
Gender	Male	207	52.4
	Female	188	47.6
Age	Below 35	252	63.8
	36–55	135	34.2
	Above 56	8	2.0
Educational qualification	Less than 8th grade	186	47.1
	Undergraduate (Bachelor's degree)	121	30.6
	Postgraduate (Master's degree)	49	12.4
	Illiterates	14	3.5
	Others (not declared)	25	6.3
Annual income	Below Rs 120,000 ($1,500)	71	18.0
	Rs 120,000–240,000 ($1,500–$3,000)	120	30.4
	Rs 240,000–360,000 ($3,000–$4,500)	78	19.7
	Rs 360,000–480,000 ($4,500–$6,000)	64	16.2
	Rs 480,000–600,000 ($6,000–$7,500)	29	7.3
	Over Rs 600,000 ($7,500)	33	8.4
Residential status	Village	330	83.5
	Town/city	65	16.5
	>10 years	81	20.4
Marital status	Married	257	65.1
	Single	138	34.9
Occupation	Government employee	13	3.3
	Employee in private sector	80	20.3
	Professional	19	4.8
	Businessmen	13	3.3
	Fishermen	141	35.7
	Self-employed	129	32.7

Source: The authors

Table 1. Demographic profile of the respondents

4.2 Measurement model and confirmatory factor analysis, convergent validity, discriminant validity and common method bias

Following the procedures recommended by Anderson & Gerbing (1988), we first checked the measurement model using the Lisrel software of structural equation modeling based on maximum likelihood estimation before testing the structural model. The results of confirmatory factor analysis (CFA) [measurement model] are presented in Table 2.

As can be seen in Table 2, the factor loadings of all the indicators, reliability coefficients (Cronbach's alpha), composite reliability (CR) and average variance extracted (AVE) estimates for all the constructs were above the acceptable levels (Hair, Black, Babin, & Anderson, 2014). The goodness-of-fit statistics reveal that χ^2 = 3,438.05; df = 1,463; χ^2/df = 2.35; RMSEA = 0.045; RMR = 0.066; Standardized RMR = 0.047; CFI = 0.953; NNFI or TLI = 0.946; and GFI = 0.926. The CFI (>0.90) and RMSEA (<0.08) vouch for a good fit of the data to the model.

We also compared the seven-factor model with six alternative models and found that the seven-factor model yields a better fit. The results are presented in Table 4.

We checked the convergent validity by examining the factor loadings of the indicators, which ranged from 0.70 to 0.87 (except one indicator with a factor loading of 0.68), which are acceptable levels (Browne & Cudeck, 1993; Hair, Anderson, Tatham, & Black, 1998, Hair, Ringle, & Sarstedt, 2011). Furthermore, the AVE for each construct ranged between 0.55 and

Constructs and indicators	Alpha	Composite reliability	Standardized loadings (λ_{yi})	Reliability (λ^2_{yi})	Variance (Var(ε_i))	Average variance–extracted estimate $\Sigma(\lambda^2_{yi})/[(\lambda^2_{yi}) + (\text{var}(\varepsilon_i))]$
Green packaging awareness (GPA) (Braga Junior et al., 2019)	0.82	0.92				0.61
Green packaging does not pollute the environment as it bio-degradable one			0.70	0.49	0.51	
Less time-consuming to recycle			0.87	0.75	0.25	
It does not create a toxic environment			0.86	0.74	0.26	
It does not affect humans and animals adversely			0.84	0.71	0.29	
It does not result in global warming			0.71	0.50	0.50	
It does not create hazardous waste			0.74	0.54	0.46	
It does not destroy the ozone layer			0.71	0.51	0.49	
It does not create marine, air or land pollution			0.82	0.68	0.32	
Green packaging initiatives (GPI) (Braga Junior et al., 2019; Jerzvk, 2015)	0.71	0.94				0.65
Initiatives include the use of packages that "reduce" the negative impact on environment			0.80	0.63	0.37	
Initiatives include the use of packages that can be "reusable"			0.86	0.74	0.26	
Initiatives include the use of packages that can be "recycled"			0.78	0.61	0.39	
Use minimum packaging or right-sized packaging			0.82	0.66	0.34	
Explore multiple-use or closed-loop packaging			0.85	0.72	0.28	
Buying products in bulk with less packaging			0.83	0.70	0.30	
Buying products that do not have over-packaging			0.79	0.62	0.38	
Buying products that contain recycled materials			0.87	0.75	0.25	
Buying unwrapped products			0.72	0.52	0.48	

Table 2.
CFA (factor loadings, reliability coefficient Cronbach's alpha; composite reliability; average variance extracted estimates)

(*continued*)

Constructs and indicators	Alpha	Composite reliability	Standardized loadings (λ_{yi})	Reliability (λ^2_{yi})	Variance (Var(ε_i))	Average variance–extracted estimate $\Sigma(\lambda^2_{yi})/[(\lambda^2_{yi}) + (\text{var}(\varepsilon_i))]$
Buying products that save natural resources			0.76	0.58	0.42	
Green packaging behavior (GPB) (Jerzvk, 2015; Braga Junior et al., 2019)	0.74	0.93				0.62
I avoid plastic bags			0.77	0.59	0.41	
I do not litter the plastic cover			0.77	0.59	0.41	
I purchase to store products and use green packaging			0.74	0.54	0.46	
I purchase products packed with eco-friendly materials			0.79	0.62	0.38	
I am willing to pay extra for green packaging			0.85	0.72	0.28	
It gives me pleasure to buy green packaged products			0.82	0.67	0.33	
I use packages that can be disposed off easily			0.76	0.58	0.42	
I use packages that are bio-degradable			0.73	0.53	0.47	
I use packages that can be reused and recycled			0.83	0.69	0.31	
Environmental Benefits (Jerzvk, 2015; Braga Junior et al., 2019)	0.70	0.93				0.59
Helps in wastage reduction			0.75	0.57	0.43	
Reduces the toxicity of the waste material			0.85	0.72	0.28	
Containers can be reused			0.83	0.70	0.30	
Reduces the number of layers, materials and toxins at source			0.79	0.62	0.38	
Less garbage to go to landfill			0.72	0.52	0.48	
Does not adversely affect the health of community			0.74	0.55	0.45	
Would not pollute the environment			0.78	0.61	0.39	
Reduces carbon footprint			0.72	0.52	0.48	
Does not result in depletion of natural resources			0.76	0.58	0.42	

(*continued*)

Table 2.

Constructs and indicators	Alpha	Composite reliability	Standardized loadings (λ_{yi})	Reliability (λ^2_{yi})	Variance (Var(ε_i))	Average variance–extracted estimate $\Sigma(\lambda^2_{yi})/[(\lambda^2_{yi}) + (\text{var}(\varepsilon_i))]$
Does not reduce soil fertility			0.71	0.50	0.50	
Personal benefits (Braga Junior et al., 2019)	0.73	0.90				0.56
I can dispose off easily			0.70	0.49	0.51	
I feel attracted to green packaging and derive satisfaction			0.72	0.52	0.48	
I feel proud to contribute to the reduction of waste and protect the environment			0.74	0.55	0.45	
It gives me pleasure to buy a green packaged product			0.81	0.66	0.34	
I save money reducing costs by preventing waste			0.78	0.60	0.40	
I enjoy being a good citizen exhibiting eco-friendly behavior by engaging in green packaging			0.74	0.54	0.46	
I can reuse the containers at home			0.73	0.54	0.46	
I spend less with minimum packaging			0.75	0.56	0.44	
Environmental concern (Koenig-Lewis et al., 2014)	0.75	0.90				0.57
I make a special effort to buy paper and plastic products that are made from recycled materials			0.68	0.47	0.53	
I have switched products for ecological reasons			0.73	0.53	0.47	
When I have a choice between two equal products, I purchase the one less harmful to other people and the environment			0.76	0.58	0.42	
Mankind was created to rule over the rest of nature			0.77	0.60	0.40	
I feel it is the duty of the manufacturers to provide goods with bio-degradable packages			0.75	0.56	0.44	

(*continued*)

Table 2.

Constructs and indicators	Alpha	Composite reliability	Standardized loadings (λ_{yi})	Reliability (λ^2_{yi})	Variance (Var(ε_i))	Average variance–extracted estimate $\Sigma(\lambda^2_{yi})/[(\lambda^2_{yi}) + (\text{var}(\varepsilon_i))]$
I think environmental safety is responsibility of every person			0.79	0.62	0.38	
I recommend others to use eco-friendly packages for the products			0.77	0.60	0.40	
Availability of green packaging (Magnier & Schoormans, 2015; Munaier et al., 2022; Walker & Kent, 2013)	0.75	0.91				0.55
I am aware of the availability of paper bags			0.70	0.49	0.51	
Jute bags			0.73	0.54	0.46	
Cloth bags			0.77	0.59	0.41	
Banana leaves			0.71	0.50	0.50	
Palm leaves			0.72	0.52	0.48	
Corrugated cardboard cartons made with paper			0.79	0.62	0.38	
Earthen wares			0.76	0.58	0.42	
Newspapers			0.77	0.59	0.41	

Source: The authors

Table 2.

0.65, which were higher than the acceptable values of 0.50 (Fornell & Larcker, 1981). These statistics confirm the convergent validity of the indicators (Babin & Zikmund, 2016).

We also assessed the internal consistency of the measures by calculating Cronbach's alphas and CR. The reliability coefficients of all measures ranged between 0.70 and 0.82, whereas the CR for all the measures ranged from 0.90 to 0.94. These values provide evidence of internal consistency.

We assessed the discriminant validity by comparing the square root of AVEs with the correlations between the constructs (Fornell & Larcker, 1981). The correlation matrix shows that the square root of AVE for each construct exceeded the correlation between the constructs. For example, the square roots of AVEs of GPA and GPI were 0.78 and 0.81, respectively, higher than the correlation coefficient between GPA and GPI, which is 0.54. Similarly, the correlation coefficient between environmental concern and environmental benefits was 0.53, lower than the square root of AVEs of 0.75 and 0.77, respectively. These statistics vouch for the discriminant validity of the constructs in this research.

To address the common method variance (CMV), we conducted Harman's single-factor test and found that a single factor accounted for 24.56% of the variance, implying that CMV is not a problem with the data (Podsakoff, MacKenzie, Podsakoff, & Lee, 2003). We also performed a latent factor approach of testing CMV and found that the inner VIF values were less than 3.3 by loading all the indicators one factor each time, indicating that data is not infected with CMV (Kock, 2015).

Before testing the structural model, we conducted measurement invariance analysis for the demographic variables and found no significant differences between the groups.

4.3 Testing structural model: testing H1–H4

To test *H1–H4*, we used Hayes (2018) PROCESS macros [Model # 4]; results are presented in Table 5.

Step 1 in Table 3 shows the effect of GPA on GPB. The regression coefficient of GPA was positive and significant ($\beta = 0.376$, $t = 9.197$; $p < 0.001$). The 95% bias-corrected confidence interval (BCCI) was 0.2953 (lower bound bootstrapping confidence intervals, LLCI) and 0.4559 (upper bound bootstrapping confidence intervals, ULCI). The model was significant and explained the 17.7% variance in the GPB [$R^2 = 0.177$; $F(1,393) = 84.58$; $p < 0.001$]. These results support *H1* that GPA is positively associated with GPB.

H2 proposes that GPA positively predicts GPI. Step 2 (Table 5) shows that the regression coefficient of GPA on GPI was positive and significant ($\beta = 0.443$; $t = 12.89$; $p < 0.001$). The 95% (BCCI) LLCI and ULCI were 0.3761 and 0.5114, respectively. The model was significant and explained the 29.7% variance in the GPI because of GPA [$R^2 = 0.297$; $F(1,393) = 166.26$; $p < 0.001$]. These results support *H2*.

H3 states that GPI positively influences GPB. The results mentioned in Step 3 (Table 4) reveal that the regression coefficient of GPI on GPB was positive and significant ($\beta = 0.507$; $t = 9.366$; $p < 0.001$). The model is significant and explains the 32.8% variance in GPB [$R^2 = 0.328$; $F(2,392) = 95.48$; $p < 0.001$], thus supporting *H3*.

4.4 Indirect effect (H4)

H4 predicts that GPI is a mediator in the relationship between GPA and GPB. To prove this mediation hypothesis, the indirect effect must be significant. As can be seen in Table 5, the total effect (0.3756) was indicative of a direct effect of GPA on GPB (0.1504) and an indirect effect through GPI (0.2252). The indirect effect was calculated by multiplying the regression coefficient of GPA on GPI (0.4438), with the regression coefficient of GPI on GPB being 0.5074 (i.e. $0.4438 \times 0.5074 = 0.2252$). Therefore, the total effect of GPA on GPB was $0.1504 + 0.2252 = 0.3756$. The indirect effect of GPA → GPI → GPB ($\beta = 0.2252$; Boot SE = 0.0316), and the bootstrapping results based on 20,000 bootstrap samples in Hayes (2018) PROCESS macros show that the 95% confidence intervals (CI) are between 0.1644 and 0.2887. Because zero was contained in CIs, GPI mediates the relationship between GPA and GPB, thus supporting *H4*.

Table 3.
Descriptive statistics: means, standard deviations and correlations

Variables	Mean	SD	1	2	3	4	5	6	7
1. GPA	3.84	0.75	*0.78*						
2. GPI	3.65	0.61	0.54**	*0.81*					
3. Environmental concern	3.79	0.72	0.52**	0.58**	*0.75*				
4. Availability of green packaging	3.85	0.68	0.51**	0.41**	0.38**	*0.74*			
5. Environmental benefits	3.61	0.54	0.48**	0.61**	0.53**	0.30**	*0.77*		
6. Personal benefits	3.56	0.54	0.51**	0.59**	0.52**	0.32**	0.70**	*0.75*	
7. GPB	3.56	0.67	0.42**	0.56**	0.53**	0.42**	0.53**	0.49**	*0.79*

Notes: **$p < 0.01$; italic numbers in the diagonals are the square root of average variance extracted estimates
Source: The authors

Models	Factors	χ^2	df	$\Delta\chi^2$	RMSEA	RMR	Standardized RMR	CFI	TLI = nNFI	GFI
Null		19,250.47	1,540							
Baseline model	Seven factors: GPAWARE; GPIN; GPBEH; ECONC; AVAILGP; EBEN; PBEN	3,438.05	1,463		0.045	0.066	0.047	0.953	0.946	0.926
Model 1	Six-factor model: GPAWARE + GPIN; GPBEH; ECONC; AVAILGP; EBEN; PBEN	4,533.26	1,469	1,095.21**	0.052	0.072	0.055	0.923	0.830	0.896
Model 2	Five-factor model: GPAWARE + GPIN + GPBEH; ECONC; AVAILGP; EBEN; PBEN	5,749.39	1,474	2,311.34**	0.060	0.082	0.064	0.886	0.874	0.857
Model 3	Four-factor model: GPAWARE + GPIN+ GPBEH + ECONC; AVAILGP; EBEN; PBEN	7,145.54	1,479	3,707.49**	0.113	0.212	0.175	0.668	0.646	0.631
Model 4	Three-factor model: GPAWARE + GPIN+ GPBEH + ECONC; + AVAILGP; EBEN; PBEN	8,393.68	1,484	4,955.63**	0.126	0.215	0.174	0.537	0.498	0.595
Model 5	Two-factor model: GPAWARE+ GPIN + GPBEH + ECONC; + AVAILGP + EBEN; PBEN	9,123.45	1,487	5,685.40**	0.142	0.252	0.164	0.407	0.363	0.524
Model 6	One-factor model: GPAWARE + GPIN+ GPBEH + ECONC; + AVAILGP + EBEN+ PBEN	9,765.67	1,489	6,327.62**	0.157	0.265	0.179	0.398	0.348	0.476

Notes: **$p < 0.01$. GPAWARE = green packaging awareness; GPIN = green packaging initiatives; GPBEH = green packaging behavior; ECONC = environmental concern; AVAILGP = availability of green packaging; EBEN = environmental benefits; PBEN = personal benefits
Source: The authors

Table 4.
Comparison of measurement models

4.5 Testing the first-order moderation (H3a), and second-order moderation (H3b) [moderated moderated-mediation hypotheses]

The most important part of the model is testing the first-order moderation *environmental concern* and the second-order moderation *availability of green packaging* (i.e. moderated moderated-mediation model). We used Hayes's (2018) PROCESS macros (Model 18), and the regression results are presented in Table 3.

The first-order moderation hypothesis suggests that environmental concern moderates the relationship between GPI and GPB. The regression coefficient of the multiplicative term (GPI × environmental concern) was significant [$\beta_{\text{GPI} \times \text{Environmental concern}} = -0.623$; $t = -2.314$; $p < 0.05$; Boot LLCI (−1.1529); Boot ULCI (−0.0937)]. These results support *H3a*. The interaction effect is presented in Figure 2.

As shown in Figure 2, the relationship between GPI and GPB was stronger when environmental concern is high compared to "low" level of environmental concern. Furthermore, as GPI increases from the lower to the higher level, the interaction curve becomes steeper, implying a stronger multiplicative effect of environmental concern on GPB. These results corroborate the support for moderation *H3a*.

H3b posits that environmental concern (first moderator) and availability of green packaging (second moderator) interact with GPI to affect GPB. The regression coefficient of the three-way

Table 5.
Testing *H1*, *H2*, *H3* and *H4*

	DV = GPB Step 1				DV = GPI *H2* Step 2				DV = GPB Step 3			
Variables	Coeff	se	*t*	*p*	Coeff	se	*t*	*p*	Coeff	se	*t*	*p*
Constant	2.1153	0.1596	13.2514	0.0000	1.9482	0.1345	14.4814	0.0000	1.1268	0.1789	6.2975	0.0000
GPA *H1*	*0.3756*	*0.0408*	*9.1971*	*0.0000*	*0.4438*	*0.0344*	*12.8945*	*0.0000*	0.1504	0.0441	3.4111	0.0007
GPI *H3*									*0.5074*	*0.0542*	*9.3662*	*0.0000*
R-square	0.177				0.297				0.328			
F	84.58				166.26				95.48			
df1	1				1				2			
df2	393				393				392			
p	0.0000				0.0000				0.0000			
Total effect												
			Total effect		se	*t*	*p*	LLCI	ULCI			
			0.3756		0.0408	9.1971	0.0000	0.2953	0.4559			
Direct effect												
			Direct effect		se	*t*	*p*	LLCI	ULCI			
GPA → GPB			0.1504		0.0441	3.4111	0.0007	0.0637	0.2371			
Bootstrapping indirect effect (H4) [to verify mediation]												
			Indirect effect		BOOT se	BOOT LLCI	BOOT ULCI					
GPA→ GPI → GPB			0.2252 (0.4438 × 5,074 = 0.2252)		0.0316	0.1644	0.2887					

Notes: n = 395. Boot LLCI refers to the lower bound bootstrapping confidence intervals. Boot ULCL refers to the upper bound bootstrapping confidence intervals. The bias-corrected confidence intervals (BCCI) are based on 20,000 bootstrapping samples. The level of confidence for all confidence intervals in output was 0.95. We have four decimal digits for bootstrap results because some values may be very close to zero

Source: The authors

interaction was significant ($\beta_{\text{GPI} \times \text{environmental concern} \times \text{availability of green packaging}} = 0.189$; $t = 2.66$; $p < 0.01$) and Boot LLCI (0.0493) Boot ULCI (0.3281). The regression result (Hayes, 2018; PROCESS – Model 18) reveals that the three-way interaction in the relationship between environmental concern and the availability of green packaging is supported through GPI as a mediator. This is called testing the "moderated moderated-mediation." As shown in Table 6, the index of moderated moderated-mediation (0.0837), as well as Boot SE (0.0350), Boot LLCI (0.0152) and Boot ULCI (0.1538) show significant values (as zero is not contained in the lower and upper limits), thus supporting *H3b*.

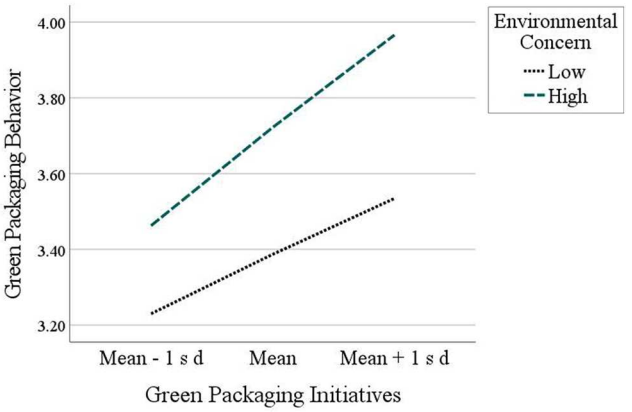
At the bottom of Table 6, we present the conditional effects of the focal predictor (GPB) at values of moderators (environmental concern vs availability of green packaging). Table 7 shows conditional X * W interaction (GPI × environmental concern) at values of the moderator Z (availability of green packaging).

Figure 3 (Panel A and B) shows the three-way interaction plots. Panel A shows the moderating effect of environmental concern in the relationship between GPI and GPB at the low level of availability of green packaging. As can be seen in the figure, the relationship between GPI and GPB is more robust at a high level of environmental concern than when the environmental concern is low. However, when we move to Panel B, which shows the interaction effect of environmental concern on GPB when the availability of green packaging is high, the curve representing a high level of environmental concern is steeper than when environmental concern is low. These figures render support to the three-way interaction *H3b*.

4.6 Testing H5 and H6

We used Hayes's (2018) PROCESS macros to test the *H5* and *H6* and present the results in Table 7.

As can be seen in Table 5, the regression coefficient of GPB on environmental benefits was positive and significant ($\beta = 0.321$; $t = 8.830$; $p < 0.0010$; Boot LLCI = 0.2494; Boot ULCI = 0.3923). The model is significant and explains 35.5% of the variance in environmental benefits [$R^2 = 0.355$; $F(2,392) = 107.73$; $p < 0.001$], thus supporting *H5*. The regression coefficient of GPB on personal benefits was positive and significant ($\beta = 0.270$; $t = 7.454$; $p < 0.001$; Boot LLCI = 0.1986; Boot ULCI = 0.3410). The model is significant and



Source: The authors

Figure 2.
Environmental concern as a moderator in the relationship between green package initiatives and green packaging behavior (two-way interaction)

Table 6.
Testing of *H3a* (two-way interaction) and *H3b* (three-way interaction): results of moderated moderated-mediation model

Variables	DV = GPB					
	Coeff	*SE*	*t*	*p*	LLCI	ULCI
Constant	−7.3758	3.4171	−2.1585	0.0315	−14.0942	−0.6573
GPA	0.0226	0.0464	0.4884	0.6256	−0.0685	0.1138
GPI	2.8074	1.0199	2.7525	0.0062	0.8021	4.8127
Environmental concern	2.2996	0.9632	2.3876	0.0174	0.4059	4.1934
Availability of green packaging	2.6627	0.9644	2.7611	0.0060	0.7666	4.5588
GPI × Environmental concern *H3a*	*−0.6233*	*0.2693*	*−2.3142*	*0.0212*	*−1.1529*	*−0.0937*
GPI × Availability of green packaging	−0.7512	0.2788	−2.6946	0.0074	−1.2993	−0.2031
Environmental concern × Availability of green packaging	−0.6349	0.2587	−2.4540	0.0146	−1.1435	−0.1262
GPI × Environmental concern × Availability of green packaging *H3b*	*0.1887*	*0.0709*	*2.6609*	*0.0081*	*0.0493*	*0.3281*
R-square	0.412					
F	833.82					
df1	8					
df2	386					
p	0.0000					

Index of moderated moderated-mediation

Index	BOOT SE	BOOT LLCI	BOOT ULCI
0.0837	0.0350	0.0152	0.1538

Indices of conditional moderated mediation by environmental concern

Availability of green packaging	Index	BOOT SE	BOOT LLCI	BOOT ULCI
3.1250	−0.0150	0.0400	−0.0957	0.0628
3.8750	0.0478	0.0411	−0.0347	0.1274
4.6250	0.1106	0.0561	0.0018	0.2214

(*continued*)

Conditional effects of the focal predictor (GPB) at values of moderators (Environmental concern × Availability of green packaging)

Environmental concern	Availability of green packaging	Effect	se	*t*	*p*	LLCI	ULCI
Low	*Low*	0.3539	0.0825	4.2899	0.0000	0.1917	0.5161	0.3539
Low	Medium	0.2352	0.0775	3.0355	0.0026	0.0829	0.3875	0.2352
Low	High	0.1165	0.1208	0.9644	0.3354	−0.1210	0.3541	0.1165
Medium	*Low*	0.3298	0.0838	3.9346	0.0001	0.1650	0.4946	0.3298
Medium	Medium	0.3122	0.0585	5.3396	0.0000	0.1972	0.4271	0.3122
Medium	High	0.2945	0.0840	3.5075	0.0005	0.1294	0.4597	0.2945
High	*Low*	0.3057	0.1176	2.5986	0.0097	0.0744	0.5369	0.3057
High	Medium	0.3891	0.0784	4.9631	0.0000	0.2350	0.5433	0.3891
High	High	0.4726	0.0965	4.8959	0.0000	0.2828	0.6624	0.4726

Moderator value(s) defining Johnson–Neyman significance region(s)

Value		% below	% above
4.1098	62.7848	37.2152	4.1098

Source: The authors

Table 6.

explains 35% of the variance in environmental benefits [$R^2 = 0.350$; $F(2,392) = 105.34$; $p < 0.001$], thus supporting *H6*.

5. Discussion

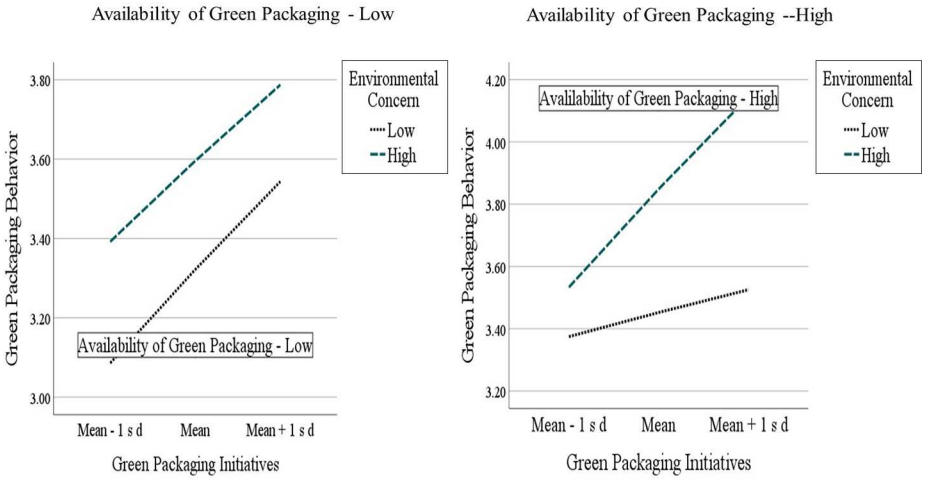
The double-layered moderated-mediated model was tested by collecting data from 395 respondents from 47 villages in southern India, and the results reveal the following.

First, the results demonstrate that GPA positively predicts GPB (*H1*), consistent with previous studies on green packaging (Lekhanya, 2014; Magnier & Crie, 2016). It is expected that when individuals are aware of the positive impact of green packaging, they are more likely to exhibit GPB. Especially concerning the rural population in India, people tend to

	DV = Environmental benefits (*H5*)						DV = Personal benefits (*H6*)					
Variables	Coeff	se	*t*	*p*	LLCI	ULCI	Coeff	se	*t*	*p*	LLCI	ULCI
Constant	1.6099	0.1383	11.6393	0.0000	1.3379	1.8818	1.5938	0.1378	11.5689	0.0000	1.3229	1.8646
GPB	*0.3209*	*0.0363*	*8.8304*	*0.0000*	*0.2494*	*0.3923*	*0.2698*	*0.0362*	*7.4544*	*0.0000*	*0.1986*	*0.3410*
R-square	0.355						0.350					
F	107.73						105.34					
df1	2						2					
df2	392						392					
p	0.0000						0.0000					

Table 7.
Testing *H5* and *H6*

Source: The authors



Notes: Panel (a) The moderating effect of environmental concern in the relationship between GPI and GPB at a low level of availability of green packaging; Panel (b) the moderating effect of environmental concern in the relationship between GPI and GPB at a high level of availability of green packaging

Source: The authors

Figure 3.
Three-way interaction

follow healthy practices (e.g. consuming organic food and avoiding junk food). Similarly, awareness about the environmental-healthy practices prompts them to exhibit the behavior accordingly. This is consistent with several past studies conducted in India (Ghosh & Shankar, 2017; Tiwari & Jain, 2019; Vyas & Rangnekar, 2019).

Second, the results support that GPA positively influences GPI (*H2*), corroborating the evidence from the previous studies (Steenis et al., 2017; Venter et al., 2011). When individuals are aware of the consequences of green packaging, they start initiatives to engage in the behavior. Third, GPI significantly and positively affects GPB (*H3*). This finding is somewhat expected because once individuals show their intent and increase their initiatives, they are more likely to engage in GPB (Escario et al., 2020; Lisboa et al., 2022).

Fourth, the results support the hypothesis that GPA indirectly influences GPB through GPI (*H4*). Though no previous research is available to vouch for this finding, the results can be explained with intuitive logic. Fifth, the positive influence of GPB on environmental benefits (*H5*) found support in this research. Again, this finding is consistent with other studies (Lisboa et al., 2022; Oloyede & Lignou, 2021). Sixth, the GPB also positively and significantly affects personal benefits (*H6*). Individuals derive intrinsic satisfaction by engaging in GPB. Furthermore, they are also deemed by society as good citizens who care for the environment. Several past studies have documented the positive influence of green behavior on individual satisfaction (Ischen et al., 2022; McCarthy & Wang, 2022).

Seventh, the moderation effect of the environmental concern on the relationship between GPI and GPB (*H3a*) found support in this research. Eighth, the availability of green packaging further strengthened the interaction effect of environmental concern and GPI in influencing GPB (*H3b*). Since this is an exploratory study and no previous research is available to support the two-way and three-way interactions, we explain the results with anecdotal evidence and logos. When individuals show concern for the Earth and the environment, it is more likely that the initiatives will be translated into behavior. Finally, the availability of alternative options further strengthens the positive interaction of GPI and environmental concern on GPB.

Overall, the conceptual model and hypotheses are appealing, informative and consistent with scant available research.

5.1 Theoretical implications

The current study makes several contributions to sustainability and waste management literature. First, the double-layered moderated-mediated model developed and tested fills a gap in the literature, particularly in a developing country context, and is the first of its kind. This study unpacks the antecedents and consequences of GPB. Second, this study found that GPA is a precursor to GPI and GPB. It is self-explanatory that awareness about the importance of green packaging is essential before individuals develop a positive attitude toward the environment and engage in the behavior. Following the theory of planned behavior, attitudes precede behavior and individuals tend to develop proenvironmental behavior. Individuals must be cognizant that packaging protects a product, enables them to use it and facilitates recycling and reuse to protect the environment. Third, this study emphasizes the importance of household initiatives in green packaging and waste management.

The fourth pivotal contribution of this study is the moderating role of environmental concern the individuals show in the relationship between initiatives and behavior – people showing a deep concern for the environment exhibit more pro green behavior than those showing lower concern. Furthermore, the GPB is reinforced when several options are available. It is rare to find various options (banana leaves, palm leaves, newspaper,

cardboard, etc.) in rural areas in India, and households can easily use them while packaging the products.

Sixth, the study highlights the consequences of GPB in terms of several environmental and personal benefits. To sum up, the moderated-mediation model unpacks the variables that contribute to eco-packaging and sustainable ecological behavior. Though some scholars argue that TRA has some attitude-behavior inconsistencies (Ogden, 2003), we used theoretical underpinnings of TRA in this study. The conceptual model developed and tested in this research aligns with the TRA.

5.2 Practical implications

This research's findings offer several recommendations to policymakers, administrators and manufacturers. First, the policymakers need to understand that bringing ecological awareness and the consequences of eco-friendly behavior to the population is vital to motivate it toward sustainability. Second, manufacturers need to engage in eco-friendly packaging and insert the labels that these packages are bio-degradable and can be reused and recycled. As green packaged products attract proenvironmental individuals, marketers must change strategies for economical, cost-efficient, affordable, recyclable and reusable packaging. Third, ecological citizens tend to consume green-packaged products to protect the environment from degradation; therefore, marketers must incorporate green elements in packaging.

Fourth, local governments must ensure that the used packets are not dumped onto the streets by educating people to use proper means of disposal. In densely populated countries like India, where the infrastructure for disposal facilities is inadequate, it is not unusual to find garbage on the streets, and waste management is abysmal. However, as evidenced in this study, the local authorities and governments need to take active measures by imposing taxes (waste management tax) and educating the population about the harmful effects of improper garbage disposal. Finally, governments, companies and households must make collective efforts to undertake activities that protect the environment and increase the number of socially responsible citizens so that future generations can lead happy and comfortable lives.

5.3 Limitations and future research

This research is not without limitations. First, the focus of this study was on households in villages in the southern part of India. It did not consider the cosmopolitan and metropolitan cities with high environmental pollution due to heavy transportation and inadequate disposal facilities of used packages. However, the results could be generalizable across various other villages in the country. Second, this research focused on one of the most densely populated countries in the world, where 70% of people live in villages. This study did not include GPB of other neighboring nations such as China, Bangladesh, Pakistan and Sri Lanka to see if there are differences in GPA and GPB. Third, the social desirability bias is a potential problem in survey-based research where the respondents may show the tendency of good citizens, though the behavior may differ (King & Bruner, 2000). However, to address this limitation, we explained to the respondents that participation is voluntary and anonymous (Chung & Monroe, 2003). Fourth, a relatively small sample ($n = 395$ from 47 villages) may not fully represent the whole nation consisting of over 70,000 villages, and hence results may suffer from generalizability. Though sample size significantly influences outcomes (Faber & Fonseca, 2014), the sample in this study is much more significant when compared to other similar studies conducted in India (Verma & Chandra, 2018; Prakash et al., 2019; Prakash & Pathak, 2017). Fifth, common method bias, inherent in survey-based

research, is another limitation in this study. However, to address this problem, we followed the recommendations of Podsakoff et al. (2003) and found that Harman's one-factor test explained less than 30% of variance, thus suggesting common method bias is not a problem with the data. Sixth, in this study, we did not include the effect of social and personal norms on GPB as documented by earlier researchers (Goldstein, Cialdini, & Griskevicius, 2008; Jansson & Dorrepaal, 2015; Jansson, Marell, & Nordlund, 2011; Thøgersen, 2006). Since the effect of social and personal norms was studied by previous researchers, we decided not to include these variables.

This study offers several avenues for future research. First, a comparison between urban and rural areas can be made to see if there are any differences in people's proenvironmental behavior, particularly regarding green packaging. Second, future researchers can focus on comparing various developing countries and see if the cultural differences mar the results. Third, future studies may compare rural populations from different parts of the country to see if any socio-economic and cultural differences exist in the individuals' behavior about GPB. Fourth, problems the population faces in exhibiting proenvironmental behavior can be investigated. Fifth, future researchers can study the effect of personality factors in influencing green behavior. Finally, problems of implementing measures by local governments to foster eco-friendly behavior can be studied.

5.4 Conclusion

In this study, we attempted to unravel the antecedents and consequences of green packaging. This study underscored the importance of the awareness of green packaging in driving initiatives and positive attitudes toward GPB. It is essential to know the harmful effects of anti-environmental behavior by individuals to translate the initiatives into action. To ensure that individuals exhibit proenvironmental behavior, bringing awareness about the effects of ecological packaging on the environment through advertisements and campaigns is vital to increase eco-friendly packaging habits. Furthermore, from the manufacturers' point of view, it is essential to have labels on the packages about the environmental performance of the product packages as reusable and recyclable. As the importance of protecting the environment is escalating, the research on green behavior about packaging continues to be on the agenda of research on sustainable behavior.

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Research data are not shared.