



# The moderating influence of environmental consciousness and recycling intentions on green purchase behavior



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## ARTICLE INFO

### Article history:

Received 20 February 2019

Received in revised form

4 April 2019

Accepted 29 April 2019

Available online 30 April 2019

### Keywords:

Green marketing  
Consciousness  
Recycling intentions  
Environment  
Sustainability  
Emerging markets

## ABSTRACT

This article examines the moderating influence of environmental consciousness and recycling intentions on green purchase behavior (GPB) in an emerging economy. Through this study, we attempt to significantly contribute to the existing body of knowledge on green marketing by ascertaining the role of those ethical constructs, on GPB. A hypo-deductive research design was adopted and a theoretical model was conceptualized by linking the moderating effects of environmental consciousness and recycling intentions to GPB. To collect the data for the study, a self-administered questionnaire was run with 312 consumers from India. The data were analyzed for assessment of the measurement and structural models via structural equation modeling. The findings indicate that environmental consciousness and recycling intentions significantly moderate the impact of perceived consumer effectiveness (PCE) and willingness to be environmentally friendly (WEF) on GPB. The study offers managerial insights for green marketers to operate in fast growing emerging markets. The present study is significant as it is the first of its kind which links the moderating effects of environmental consciousness and recycling intentions in light of the theory of planned behavior (TPB) on GPB in such a context.

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## 1. Introduction

The rapid proliferation of environmental concerns, sustainability challenges, and increased level of consumer awareness about environmental deterioration have positioned green consumption with social relevance (Barbarossa and De Pelsmacker, 2016; Johnstone and Tan, 2015; Patel et al., 2017; Seifi et al., 2012; Swim et al., 2012). Understanding green purchase behavior (GPB) and consumers' attitude toward environmentally friendly products can be useful for corporations exploring insights on sustainable marketing models for the business markets (Carrete et al., 2012; Thøgersen et al., 2015). To facilitate the sustainable movement, green consumption, and conservation, behavioral factors is being explored in emerging economies (Ali et al., 2010; Mainardes et al., 2017). These include topics such as recycling (Chu and Chiu, 2003) as well.

The population residing in urban regions increased substantially in most countries. Census of India (2011) in the year 1950, total of 30 per cent of the world's population were urbanized, and by 2050, it is projected that around 66 per cent of the world's population will be urbanized (United Nations, 2014). As per the United Nations (2018), the urban population of the world has rapidly grown from 746 million in 1950 to 4 billion in 2017. Due to urbanization of the population, increasing income levels, health hazards, and changing lifestyles have given rise to different consumption-related challenges in the country, such as packaged food items, packaged drinking water, etc. To counter these, nowadays people are gradually shifting their preferences towards organic food (Rana and Paul, 2017). The substantial growth of the organic sector is attributed to growing awareness about green products, increasing health consciousness, growth in numbers of the urban middle-class population, rising consumer disposal income, and increased spending on food products (Business World, 2018; Lee (2009)). In short, consumers are at the helm of steering the environmentally friendly product sector; they are equipped with ample knowledge, health concerns, and purchasing capacity for green products. Though not all consumers really purchase what they intend to purchase in case of green purchase decisions in particular, which led to the notion of

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the intention-behavior gap of the consumer psychology (Barbarossa and Pastore, 2015; Gupta and Ogden, 2009).

Past researches on the GPB of emerging market consumers has concentrated on the influences of environmental awareness (Kautish, 2015, 2018; Paul, Modi & Patel, 2017), knowledge, concern, PCE, willingness to pay more (Kautish and Dash, 2017; Kautish and Soni, 2012), consumer lifestyle (Adnan et al., 2017; Patel et al., 2017), susceptibility (Khare, 2014), and what is called a “green attitude” (Jaiswal and Kant, 2018; Khare, 2015; Nath et al., 2017; Singh and Gupta, 2013; Uddin and Khan, 2016). There has been a great dearth in research, understanding the influence of environmental consciousness and recycling inclination factors on consumers' GPB in the context of emerging markets (Rana and Paul, 2017). Kumar and Ghodeswar (2015) showed that willingness to protect the environment, the drive for environmentally responsible behavior, green product involvement, the environmental friendliness of corporations, and social appeal are essential aspects affecting green product purchase decisions.

In recent times, consumers' recycling intentions and their influences on consumer behavior have been researched in the western cultures and developed countries' contexts (Chen & Tung, 2009; Knussen et al., 2004; McCarty and Shrum, 1994; Tonglet et al., 2004). According to Elgaaied (2012) environmental concern, knowledge and awareness about the negative magnitudes linked to the increase of waste materials are not adequate circumstances to encourage conscientious recycling efforts; rather expected guilt directly influences behavior and mediates the connection between environmental concerns and the intention to recycle (Os Kamp et al., 1991). Among all the conventional measures of environmental orientation, i.e. values, concern, and green consumption, only values are associated with the claim to know guidelines and higher levels of recycling efforts (Flagg and Bates, 2016). Essoussi and Linton (2010) suggest that perceived operational risk is a key factor of the price range within which customers are willing to pay even higher price for products that contains recycled or reused content.

Closer investigation of existing literature reveals that there are limited number of studies related to recycling disposition and its influences on GPB in emerging markets. Paul and Rana (2012); Satapathy (2017) asserts that plastic recycling has received much consideration across the globe because many corporations are using it as a strategic practice to better serve their customers and to make better revenue stream. However, there is a severe paucity of effective recycling units in developing economies as compared to developed economies. Therefore, studying the moderating effects of environmental consciousness and recycling inclination on GPB may reveal vital consumer insights for academics and practitioners. As has been identified, the primary grounds for influencing the consumers' actual green buying behavior in an emerging economy to use organic products are health conscious, subjective norms, environmental knowledge, perceived price, and availability (Singh and Verma, 2017).

Numerous studies have examined the environmentally conscious consumer behavior (ECCB) in varied green marketing contexts (Akehurst et al., 2012; Brochado et al., 2017; Carrete et al., 2012; Harland et al., 1999; Kautish and Dash, 2017; Zabkar and Hosta, 2013). Further, the theory of reasoned action (TRA) and theory of planned behavior (TPB) have been extensively applied to understand the factors influencing environmentally friendly consumer behavior in varied perspectives (Coleman et al., 2011; Fielding et al., 2008; Han, 2015; Kim and Han, 2010), including in several recent studies (Liu et al., 2017; Paul et al., 2016; Taufique and Vaithianathan, 2018; Verma and Chandra, 2017). Yet, their applicability to environmental consciousness and the recycling inclination dimension has not been explored. Nevertheless,

Ramayah et al. (2012) specified that environmental awareness significantly associate with the attitude towards recycling intention, whilst attitude and social norms together have a significant influence on recycling behavior. The present study aims at filling the research gap and understanding the effect of environmental consciousness, recycling intention, TRA, and TPB on GPB using a sample from an emerging market, India. Therefore, the purposes of the current research are as follows:

- (a) To understand the factors inducing GPB in an emerging market.
- (b) To understand how consumers' environmental consciousness and recycling inclination affects GPB.

The findings of the current research will help green marketers to conceptualize and design products and services in accordance to consumers' willingness to consume environmentally friendly products or their disposition to use recycled materials. The study would facilitate in comprehending the vital influences of TRA/TPB on green purchases that could help marketers in refining environmentally friendly characteristics. The following section delimitates the research variables operationalized in the present study.

## 2. Conceptual background and hypotheses development

The following sub-sections provide a theoretical grounding which helped us to derive the hypotheses for the present paper.

### 2.1. The theory of reasoned action and theory of planned behavior

So far, the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980) and the theory of planned behavior (TPB) (Ajzen, 1991) are two of the most widely used theoretical frameworks for predicting and understanding human behavior. Both the theories postulate that human behavior is grounded on systematic information usage by individuals in a rational decision-making process (Madden et al., 1992). The determinants of specific behaviors are directed essentially by a reasoned action approach that undertakes individuals' behavior judiciously follows their beliefs, attitudes, and intentions (Ajzen and Fishbein, 2005). In TRA, human behavior is considered to be under volitional control, in which behavioral intentions predict behavior and behavioral intentions are predicted by attitude (general feeling of favor or disfavor) and subjective norms (Madden et al., 1992). Volition or will is the cognitive process by which an individual decides on and commits to a particular course of action (Wegner, 2003). Volitional control is defined as purposive striving and is one of the primary human psychology oriented functional procedure which can be applied consciously, or can be automatized as habits over time (Linser and Goschke, 2007). While TPB endeavors to envisage non-volitional behaviors by the inclusion of the perception of control or regulation over the behavior as an additional predictor of both intention and behavior (Ajzen, 1991). Therefore, TPB posits that the direct antecedent of behavior is the intention to perform the certain behavior (Ajzen, 1985, 1991). TPB proposes three theoretically independent determinants for analysis in the form of i) attitude, ii) subjective norm and iii) perceived behavioral control (PBC). Attitude denotes the degree to which an individual has a positive or negative appraisal of the behavior, subjective norm denotes the perceived social pressure or social approval to perform a certain behavior and PBC indicates whether a person can easily perform a certain behavior and have greater control or not (Ajzen, 1991, 2002). TPB has frequently been considered as an addition to the classical behavior model, while TRA, through the integration of a supplementary construct termed

as PBC (Ajzen and Fishbein, 1973, 1977; Taylor and Todd, 1995). TPB and TRA provide comprehensive and systematic models to conceptualize, measure, and empirically identifies factors that determine behavior and behavioral intentions, including green marketing (Ajzen and Madden, 1986; Bang et al., 2000; Conner and Abraham, 2001; Kalafatis et al., 1999; Perugini and Bagozzi, 2001). Past empirical researches also validate that the constituents of TPB are pertinent to predict different types of pro-environmental behavior, such as soil conservation, energy saving and recycling (Botetzagias et al., 2015; Granzin and Olsen, 1991). Thus, TPB increases the green purchase intention model's predictability (Jebarajakirthy and Lobo, 2014).

In this study, an extended version of TPB and TRA, which includes PCE, PBC, and WEF, is operationalized by moderating the influence of environmental consciousness and recycling intentions on GPB in the form of the attitude-intention-behavior framework from the past literature.

## 2.2. Perceived consumer effectiveness and perceived behavioral control

Perceived Consumer Effectiveness (PCE) is identified as a control factor and denotes to the extent to which individuals believe that their actions make a difference in solving the environmental problems (Ellen et al., 1991). PCE was originally considered as a constituent of the attitude itself and subsequently, was shown as a direct predictor of environmentally conscious consumer behavior (Antil, 1984; Berger and Corbin, 1992, p. 80) in the case of emerging market as well (Yadav and Pathak, 2016; Zhao et al., 2014). It can be seen that PCE is demarcated as “the evaluation of the self in the context of the issue” and reflects on the attitudinal changing process (Tesser and Shaffer, 1990; Cheng et al., 2018). PCE is also a measure of the individual's judgment of their ability to influence environmental resource problems (Antil, 1984). High PCE can encourage consumers to prompt their positive intentions towards GPB (Roberts, 1996) and low PCE may prevent the green product purchases (Diamantopoulos et al., 2003). Ellen et al. (1991) posit that PCE is distinct to environmental concerns and makes a unique contribution to the GPB. PBC refers to “the perception of ease or difficulty of performing a particular behavior” (Ajzen, 1991, p. 183). Researches based on TPB emphasizes upon the significance of PBC in predicting intentions and behaviors when the concerned behavior is beyond volitional control of an individual (Paul et al., 2016; Yadav and Pathak, 2017). Thus, we posit the first hypothesis as:

**H1.** PCE would influence consumers' GPB.

### 2.2.1. Perceived behavioral control

The individual's behavior is often normalized by the ability and the level of confidence to perform the behavior (Bandura et al., 1980). The term ‘perceived behavioral control’ (PBC) denotes two factors viz. inner control factors (self-efficacy) and external control factors (perceived barriers) or general factors such as difficulty in terms of product availability, etc. (Ajzen, 1991; Armitage and Conner, 2001; Sparks et al., 1997). Amongst all the three base antecedents of TPB, PBC emerges as the key for behavioral concerns and patterns owing to its volitional control. Sparks and Shepherd (1992) despite the consumers' positive attitude towards the environment and favorable subjective norms, still many of them do not actually indulge in green purchases because they lack the sufficient resources and/or opportunities (low PBC). Taylor and Todd (1995) shown that PBC is positively linked to recycling intentions. Few past researches on pro-environmental behavior has operationalized PBC as control factors about facets such as availability, time,

cost, content and labeling, which usually specify the perceived barriers to GPB (Barbarossa and De Pelsmacker, 2016; Kalafatis et al., 1999). Hence, this has been hypothesized here as:

**H2.** PBC would influence consumers' GPB.

## 2.3. Willingness to be environmentally friendly

Product price is always considered as one of the key factors that determines the consumers' decision processes and understanding the consumers' willingness for environmentally friendly products is critical for the organizations as premium price is a barrier to green consumption (Gleim et al., 2013). Willingness to be environmentally friendly (WEF) is theorized as consumers' readiness to act (or incline) in an environmentally friendly manner (Kumar et al (2017)). The preconditions for WEF are an environmental concern, environmental knowledge and perceived psychological consequences (Choi and Ng, 2011). Empirical studies indicate that the environmental concern positively impact consumers' WEF (Bang et al., 2000; Dunlap and Jones, 2002; Kautish and Dash, 2017; Moon and Balasubramanian, 2003). Abdul-Muhmin (2007) asserts that consumers who anticipate deriving a positive emotional feeling or satisfaction out of their endeavors towards environmental protection should be willing to be more environmentally friendly than those who do not anticipate in any manner. A willingness continuum from information search to readily pay more for green products is considered to be a most reliable indication to confirm environmentally friendly behavior (Kautish and Soni, 2012; Laroche et al., 2001; Lee, 2011b). For research in those countries where all the necessary amenities are not available to indulge in environmentally friendly behavior, “willingness as a construct is more apt than intent” (Abdul-Muhmin, 2007). Kalafatis et al. (1999) reported the significance of social influence and personal norms in envisaging consumers' willingness and intention to purchase environmentally friendly products. Thus, we present the following hypothesis:

**H3.** WEF would influence consumers' GPB.

## 2.4. Environmental consciousness and recycling intentions

Several studies have validated the noteworthy relationship between environmental consciousness and behavioral intentions in the green marketing context (Ahn et al., 2012; Mishal et al., 2017). Ahn et al. (2012) posit that social norms and personality factors are key predictors of environmental behavior. Zelezny and Schultz (2000) demarcated environmental consciousness as “an element of the belief system that denotes to specific psychological influences related to individuals' propensity to join pro-environmental behavior regime”. Environmental consciousness is considered to be a mental state research variable, a multi-dimensional construct which diverges from low level (general) to high level (product) and it is distinctive from its antecedents as well as behavioral consequences (Sharma and Bansal, 2013). Tobler et al. (2012) suggest that perceived climate costs and perceived climate benefits have turned out to be the most robust predictors of willingness to act or to support climate strategy measures. Chan and Lau (2002) employed the TPB to relate environmental consciousness among American and Chinese consumers. The TPB has been confirmed in numerous researches on recycling intentions and pro-environmental behavior (Boldero, 1995; Cheung et al., 1999; Davies et al., 2002; Davis et al., 2006) and GPB (Kanchanapibul et al., 2014; Nguyen et al., 2017; Rana and Paul, 2017; Yadav and Pathak, 2016). Milfont et al. (2010) and Kautish and Sharma (2018) studied the

moderating character of the constituents of norm activation on the relationship between environmental values and behavioral intentions. Also, ample empirical researches are available to establish a positive link between environmental consciousness and green purchase intentions (Wang, 2014; Chen and Chang, 2012; Walker, 2013; Wimmer, 1993). Zabkar and Hosta (2013) recommended a comprehensive gap model for environmentally conscious consumer behavior between willingness to act and actual GPB by addressing the moderating role of pro-social status. Vining and Ebreo's (1992) research suggests that specific recycling attitudes moderately relate to a generalized environmental concern. Therefore, the subsequent hypotheses are proposed:

**H4a.** Environmental consciousness moderates the relationship between PCE and GPB.

**H4b.** Environmental consciousness moderates the relationship between PBC and GPB.

**H4c.** Environmental consciousness moderates the relationship between WEF and GPB.

**H5a.** Recycling intentions moderate the relationship between PCE and GPB.

**H5b.** Recycling intentions moderate the relationship between PBC and GPB.

**H5c.** Recycling intentions moderate the relationship between WEF and GPB.

Fig. 1 shows the proposed hypothesized research model (see Fig. 2).

### 3. Research methodology

The methodology used in the research is detailed in the following subsections.

The current study followed a hypo-deductive approach in which the variables are classified in two groups, structural and functional, a classification that drives the formulation of hypotheses and the statistical tests to be performed on the data so as to increase the efficiency of the research (Mesly, 2015, p. 126).

#### 3.1. Sample characteristics and data collection

In this section, a self-administered questionnaire was employed to collect the data from India, using the convenience sampling method. Reason for selecting India is because the country has emerged as the second fastest growing economy in the world and has attracted the attention of the rest of the world (Paul, 2015; Paul and Mas, 2016). Prior to the final data collection, a preliminary survey was administered by distributing a total of 20 questionnaire to departmental research scholars and few changes were incorporated based on their recommendations. Two different cities (New Delhi and Jaipur) were chosen in order to address the issue of demographic diversity, which is a peculiar trend in the country (Burgess and Steenkamp, 2006). Table 1 contains the demographic details of the respondents. The target population of the study were educated young consumers of the urban areas since they can easily respond to the survey owing to the better knowledge and acceptance of green products (Prakash and Pathak, 2017; Taufique and Vaithianathan, 2018; Verma and Chandra, 2017; Yadav and Pathak, 2017). The sample size required for this study was far

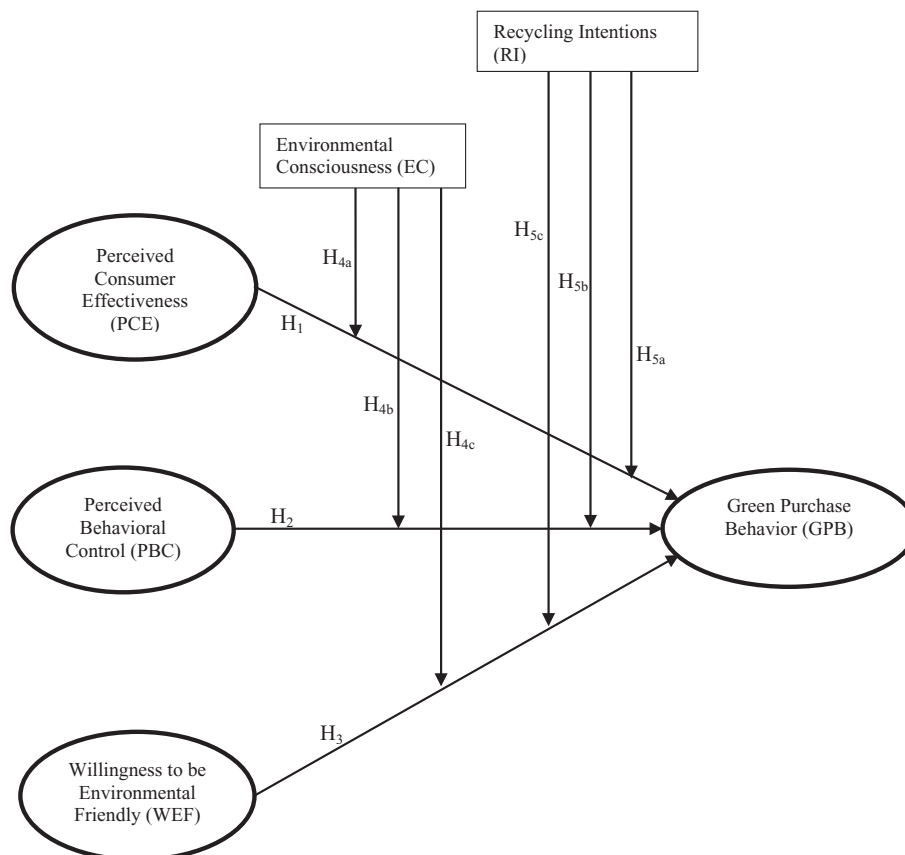
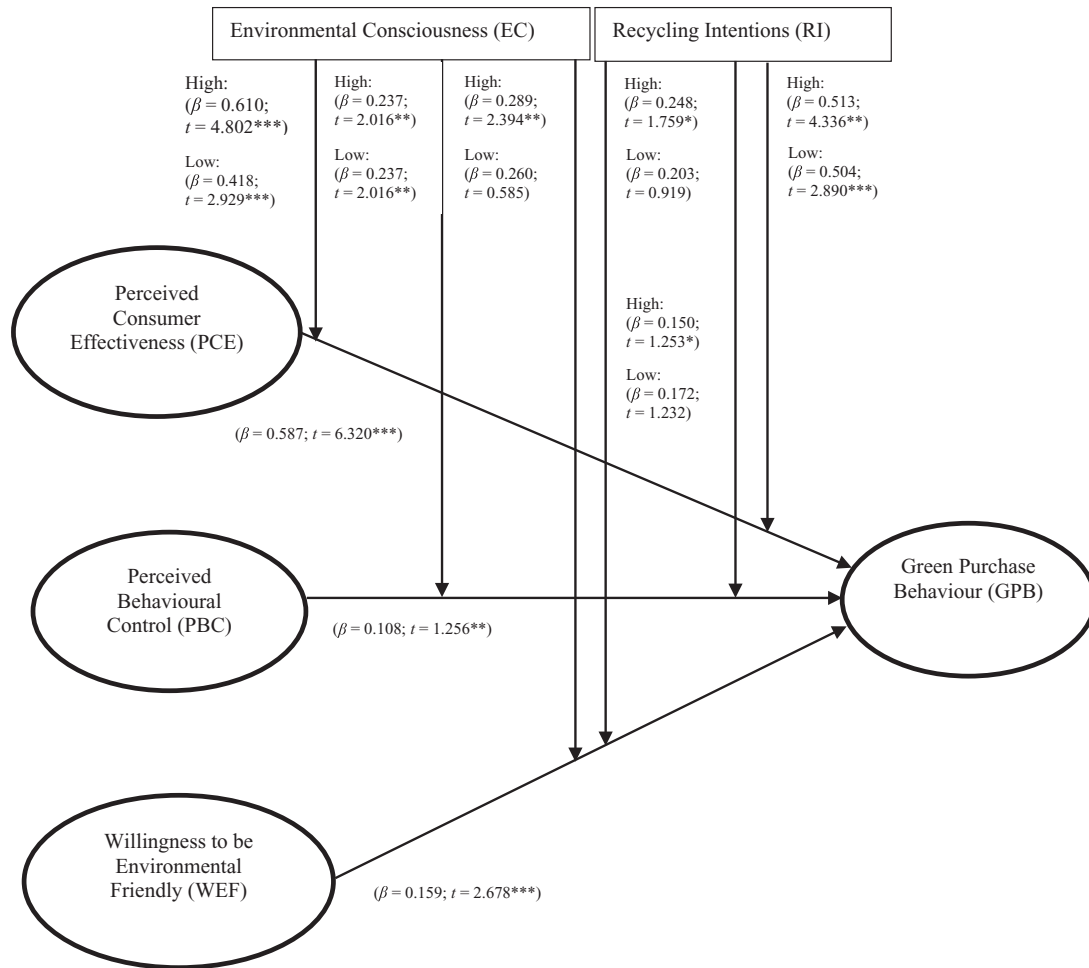


Fig. 1. Proposed hypothesized research model.





**Fig. 2.** Research model estimates.  
Notes: \*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.10$ .

**Table 1**  
Demographic description of participants.

Variables/criteria	N	%
<b>Gender</b>		
Male	194	62.18
Female	118	37.82
<b>Age (years)</b>		
18-30	186	59.61
31-45	78	25.00
Older than 46 years	48	15.39
<b>Civil status</b>		
Single	22	7.05
Married	290	92.95
<b>Education</b>		
Graduate	36	11.53
Post-graduate	208	66.66
Professional	68	21.81
<b>Household income level (monthly)</b>		
INR 15,000–25,000	140	44.87
INR 25,000–35,000	70	22.43
INR 35,000–50,000	46	14.74
Above INR 50,000	56	17.96

more than the suggested sample for structural equation modeling (Boomsma, 1987; Kline, 2011). The questionnaires were distributed among the target population using group administration approach as it allows fast data collection with high response rate (Adler and Clark, 2006). We reached out to a total of 450 respondents, and all

of the respondents willingly provided their responses. However, a few of the respondents were excluded from the analysis because they had no intent of either purchasing or consuming the recycled products or they were labeled as unengaged responses. Also, inappropriate responses were not included (where all the answers were identical). After eliminating the incomplete questionnaires, the final sample contained responses from 312 respondents. As the participants were assured of anonymity and privacy, it helped to reduce their apprehension regarding evaluation and the social desirability problem (Podsakoff et al., 2003). The data collection took place at diverse points of time and on a few days of the week to take care of periodic and non-coverage issue. The entire process of data collection took 4 months.

### 3.2. Measures

A survey instrument in the form of a questionnaire was developed to gather information on measures such as education, age, and income levels of Indian consumers. It comprised different scales adapted from past research work. These scale items have been widely used and their applicability is well-established in diverse contexts. A 5-point Likert-type scale was operationalized to measure PCE (6-items) was designed based on Kim and Choi's (2005) research; a 5-point Likert-type scale to measure WEF (6-items) was designed based on Abdul-Muhmin's (2007) and Zabkar and Hosta's (2013) work; a 5-point Likert-type scale to

measure PBC (3-items) was developed based on the research by Chan and Lau (2002) and Sparks et al. (1997); and lastly, a 5-point Likert-type scale to measure GPB (3-items) was based on Kim and Choi (2005) and Taylor and Todd's (1995) study. Though all the adapted scale items are from the validated constructs developed in western contexts but at the same time they are widely used in emerging economies as well (Jaiswal and Kant, 2018; Khare, 2015; Saleem et al., 2018). Additionally, the present study employed validated conceptual frameworks (i.e. TRA and TPB) with priori structural elements, thus we straight away deployed CFA to confirm the framework since the factor identification/exploration was already taken place (following Thompson, 2004; van Prooijen and Van der Kloot, 2001) and same method has been with the same/similar set of constructs/scale items has been used in prior studies as well (Singh and Verma, 2017; Taufique and Vaithianathan, 2018; Yadav and Pathak, 2017). Still in all the standardized measurement scales, some items were removed because either they were very similar or the pre-test did not relate with the respondents in order to make it contextual driven (Graham et al., 2003). According to Netemeyer et al. (2003), this may lead to an increase in the reliability of the instrument. Table 2 contains details about the scale items.

4. Data analysis

The data analysis for the present study is explained in the following subsections.

4.1. Data fit and cleaning

The model employed in the research to test the relationships of PCE, PBC, WEF, and GPB along with the moderating influences of environmental consciousness and recycling intentions was assessed using AMOS (v. 22), by means of the maximum likelihood method. The outliers' existence was evaluated by the Mahalanobis ( $d^2$ ) square distance values and the asymmetry coefficients of skewness ( $Sk$ ) and kurtosis ( $Ku$ ) was calculated to check normality of the variables (Aguinis et al., 2013). The data analysis revealed not

a single variable with values for  $Sk$  and  $Ku$  ( $|Sk| < 3$ ;  $|Ku| < 6-9$ ) to point out violations of the normal distribution (Hair et al., 2006, p. 106). A total of twelve observations indicated problematic  $d^2$  values, proposing the elimination of outliers ( $p1$  and  $p2 = 0$ ); thus data analysis was accomplished after removing these observations.

4.2. Reliability and validity analyses

An adequate level of Cronbach alpha ( $\alpha$ ) values (ranged between 0.785 and 0.923) determined the internal consistency of the scales; hence meet the threshold value of 0.7 and above (Nunnally and Bernstein, 1994). The convergent validity and discriminant validity were established in order to ensure construct validity. Convergent validity was ascertained using the factor loadings, the average variance extracted (AVE) values and composite reliability (CR) values. The observed variables with factor loadings less than 0.6 were excluded from the analysis. A total of eight such observed variations was eliminated from the GPB construct; the remaining variables exhibited significant factor loadings of 0.6 and above ( $p = 0.000$ ). Table 2 displays the Cronbach alpha values and confirmatory factor loadings. The CR values of all the constructs were within the recommended range, from 0.776 to 0.920 (Bagozzi and Yi, 1988) in the study. The average shared squared variance (ASV) and maximum shared squared variance (MSV) were used to estimate the discriminant validity along with AVE (Hair et al., 2006). Table 2 exhibits that the ASV and MSV values were less than the AVE values, specifying that different constructs do not correlate greatly with each other. It thus establishes that the discriminant validity and AVE are within the suggested range varied from 0.532 to 0.647 and further confirms the constructs' convergent validity. The discriminant validity of the constructs was observed by means of the comparative values of the square root of the AVE; for each construct, it exceeded the correlation value within the construct and with other constructs as well (Fornell and Larcker, 1981) (Table 3). Furthermore, all correlation values between constructs were less than 0.7; hence the possibility of multicollinearity was non-existent in the present study (Grewal et al., 2004).

Table 2  
Details about confirmatory factor loadings.

Factors	Measurement items	Factor loadings	MSV	ASV	AVE	CR
Perceived consumer effectiveness	Each person's behavior can have a positive effect on society by their signing a petition in support of promoting the environment	0.764	0.388	0.357	0.597	0.892
	I feel I can help solve the natural resource problem by conserving water and energy	0.785				
	I can protect the environment by buying products that are friendly to the environment	0.693				
	There is much more that we can do about the environment	0.894				
	I feel capable of helping solve the environment problems	0.763				
	When I buy products, I try to consider how my use of them will affect the environment and other consumers	0.776				
Willingness to be environmental friendly	I willingly and wholeheartedly take responsibility to become environment-friendly	0.835	0.428	0.401	0.647	0.924
	I am willing to pay to higher prices for environment-friendly products	0.793				
	I will boycott the products that damage the environment in one way or other	0.788				
	I am willing to take steps to control my activities which are not good for the environment	0.854				
	I am willing to stop buying products from companies that are guilty of polluting the environment	0.843				
	I am willing to sacrifice for the sake of slowing down pollution	0.746				
Perceived behavioral control	Whether or not I will purchase eco-friendly products for personal use in the coming month is entirely up to me	0.838	0.395	0.327	0.532	0.810
	I have complete control over the number of eco-friendly products that I will buy for personal use in the coming month	0.735				
	Whether or not I will purchase eco-friendly products for personal use in the coming month is completely within my control	0.783				
	I often buy products that are considered as environment-friendly	0.721				
Green purchase behavior	I often buy environmentally safe products	0.799	0.413	0.364	0.584	0.753
	I often buy products that use environmentally friendly packaging	0.725				

Notes: MSV – Maximum Shared Squared Variance; ASV – Average Shared Squared Variance; AVE – Average Variance Extracted; CR – Composite Reliability.

**Table 3**  
Discriminant validity of constructs.

	Composite reliability	PCE	WEF	PBC	GPB
PCE	0.898	0.773			
PBC	0.915	-0.102	0.814		
WEF	0.793	0.642	0.225	0.753	
GPB	0.782	0.685	0.246	0.528	0.734

Source: Author(s) own calculations.

Notes: Diagonal values represent the square root of AVE and non-diagonal values represent correlation coefficients.

PCE – Perceived Consumer Effectiveness; PBC – Perceived Behavioral Control; WEF – Willingness to be Environmentally Friendly; GPB – Green Purchase Behavior.

#### 4.3. Measurement model

The measurement model was assessed employing structural equation modeling (Byrne, 2001). The measurement model was appraised employing confirmatory factor analysis with the maximum likelihood estimation method (Chin et al., 2008). Four factors, namely, PCE, PBC, WEF, and GPB were measured while considering the measurement model. To confirm the convergent validity of the constructs, the observed variables with factor loadings below 0.6 were removed from the analysis. A total of eight observed variables was eradicated from the GPB construct and the remaining revealed significant factor loadings of 0.6 or more ( $p = 0.000$ ).

The initial model exhibited a satisfactory model fit. The modification index (MI) was considered by AMOS to improve the model and to minimize the inconsistency between the estimated and the proposed model (Chou and Bentler, 1993; Hair et al., 2006). We measured MI > 10 as an indication of local fitting issue and the theoretical acceptability of modifications was considered. Additionally, measurement errors leading to a substantial upgradation of the model adjustment were correlated. Owing to high MIs, the error terms measuring conceptually parallel indicators of the two scale items of PCE and the two scale items of WEF were accepted to co-vary within their corresponding factors (Hu and Bentler, 1999). The final measurement model offered a good fit as per the recommended levels: Normed  $\chi^2 = 1.874$ ; Goodness-of-fit Index (GFI) = 0.93; Adjusted Goodness of Fit Index (AGFI) = 0.88; Confirmatory Fit Index (CFI) = 0.95; Incremental Fit Index (IFI) = 0.95; Tucker-Lewis Index (TLI) = 0.96; Standardized Root Mean Square Residual (SRMR) = 0.074 and Root Mean Square Error of Approximation (RMSEA) = 0.052 (Hoelter, 1983; Hu and Bentler, 1995; Iacobucci, 2010).

#### 4.4. Structural model

A structural model was evaluated to test the hypotheses in the research (Hoyle, 1995). At this level, the moderating influence of recycling intentions and environmental consciousness was not measured. The structural model presented a good fit: Normed  $\chi^2 = 1.890$ ; GFI = 0.92; AGFI = 0.89; CFI = 0.96; IFI = 0.96; TLI = 0.95; Relative Normed Fit Index (RNFI) = 0.94; SRMR = 0.075 and RMSEA = 0.053 (Iacobucci, 2010; Hu and Bentler (1998)). We calculated RNFI to appraise the quality of the overall structural model and RNFI > 0.8 is considered to be evidence of good adjustment. To test the hypotheses, standardized regression coefficients,  $\beta$ -values,  $t$ -values and  $p$ -values were calculated (see Table 4). The results show that PCE has a positive significance ( $\beta = 0.587$ ;  $t = 6.320$ ;  $p = 0.000$ ) and WEF also has a positive significance ( $\beta = 0.159$ ;  $t = 2.678$ ;  $p = 0.006$ ) influence on GPB. But the influence of PBC of GPB was insignificant ( $\beta = 0.108$ ;  $t = 1.256$ ;  $p = 0.05$ ) (see Table 5).

**Table 4**  
Hypotheses testing.

	Hypotheses	$\beta$ -values	$t$ -values	Results
H <sub>1</sub>	PCE → GPB	0.587	6.320***	Accepted
H <sub>2</sub>	PBC GPB	0.108	1.256	Rejected
H <sub>3</sub>	WEF GPB	0.159	2.678	Accepted

Note: \*\*\* $p < 0.01$ .

### 5. Moderating effects of recycling intention and environmental consciousness

Now the moderating influences of recycling intention and environmental consciousness were examined by multi-group structural equation modeling (Byrne, 2004). This procedure entails two stages: first, measurement invariance, which ascertains whether associations between measured variables and latent constructs are invariant between sample groups; and second, structural invariance, which assesses whether regression weights for each of the structural paths are statistically invariant between the sample groups (Byrne, 2004). To understand the moderating influence of environmental consciousness, the whole sample was divided into two sub-samples of high environmental consciousness ( $n_1 = 155$ ) and low environmental consciousness ( $n_2 = 157$ ) by employing a median split procedure (Brochado et al., 2017; Hiramatsu et al., 2016).

The unconstrained structural multi-group model fit was checked to establish causality:  $\chi^2 = 416.632$ ;  $df = 253$ ;  $p = 0.000$ , Normed  $\chi^2 = 1.658$ ; IFI = 0.94; TLI = 0.92; CFI = 0.95; SRMR = 0.073, and RMSEA = 0.046. This indicates that all the values are within the recommended tolerable levels (Hu and Bentler, 1999; Iacobucci, 2010). To determine the invariance across the two sub-samples of high and low environmental consciousness, a fully-constrained model was made and the chi-square test of difference ( $\Delta\chi^2$ ) was considered to compare the fully-constrained and unconstrained model across high and low environmental consciousness (Savalei and Kolenikov, 2008). The two groups were found to be different since model invariance was not established ( $\Delta\chi^2 = 16.298$ ;  $\Delta df = 3$ ;  $p = 0.001$ ). Since full metric invariance was not supporting the analysis, partial metric invariance (PMI) was used by releasing the most restricting invariance (Byrne et al., 1989). Therefore, the structural paths were constrained in a sequential manner to decide in which path the groups are different, confirming that the factor loadings were comparable across both the consumer groups. The study results suggest that the relationship between PCE and GPB varies significantly ( $\Delta\chi^2 = 4.538$ ;  $\Delta df = 1$ ;  $p < 0.05$ ) across the high environmental consciousness consumer group ( $\beta = 0.610$ ;  $t = 4.802$ ;  $p = 0.01$ ) and low high environmental consciousness consumer group ( $\beta = 0.418$ ;  $t = 2.929$ ;  $p < 0.01$ ). The influence of WEF on GPB also varies significantly ( $\Delta\chi^2 = 3.910$ ;  $\Delta df = 1$ ;  $p < 0.05$ ) across the higher environmental consciousness consumer group ( $\beta = 0.289$ ;  $t = 2.394$ ;  $p < 0.05$ ) and low environmental consciousness consumer group ( $\beta = 0.260$ ;  $t = 0.585$ ;  $p > 0.05$ ). The high environmental consciousness consumer group indicated a significant relationship ( $p < 0.05$ ) between WEF and GPB; but for the low environmental consciousness consumer group, this relationship was less significant ( $p > 0.05$ ). Lim et al. (2014) claim that consumers who perceive a positive value associated are more enthusiastic to purchase environmentally friendly product (organic food), in which health was the key perceived benefit. Additionally, PBC had a positive significant relationship with GPB for the higher environmental consciousness consumer group ( $\beta = 0.237$ ;  $t = 2.016$ ;  $p < 0.05$ ) but for the low environmental consciousness consumer group the relationship was insignificant, though this

variation between consumer groups was not significant ( $\Delta\chi^2 = 1.823$ ;  $\Delta df = 1$ ;  $p > 0.05$ ). Hence, environmental consciousness moderates the influence of PCE and WEF on GPB. The details about environmental consciousness moderation are given in Table 6.

Likewise, we examined the moderating role of recycling intentions by splitting (with median split) the entire consumer sample into two sub-samples of high ( $n_1 = 148$ ) and low ( $n_2 = 164$ ) recycling intention consumer groups. The structural multi-group model fit was observed and shows a good model fit for all the fit indices. To get the unconstrained model  $\chi^2$  value, PBC was excluded from the model as its relationship with GPB was insignificant across the high recycling intentions consumer group ( $\beta = 0.150$ ;  $t = 1.253$ ;  $p > 0.05$ ) as well as the low recycling intentions consumer group ( $\beta = 0.172$ ;  $t = 1.232$ ;  $p > 0.05$ ). Therefore, recycling intentions do not moderate the relationship between PBC and GPB. The fully-constrained and unconstrained models ( $\Delta\chi^2 = 8.796$ ;  $\Delta df = 2$ ;  $p = 0.012$ ) differed significantly across high and low recycling intentions consumer groups. As the model invariance was not confirmed across the groups so each structural path was checked for variances across both the consumer groups. The significant relationship between PCE and GPB varies significantly ( $\Delta\chi^2 = 4.086$ ;  $\Delta df = 1$ ;  $p < 0.05$ ) across the high recycling intentions consumer group ( $\beta = 0.513$ ;  $t = 4.336$ ;  $p < 0.01$ ) and low recycling intentions consumer group ( $\beta = 0.504$ ;  $t = 2.890$ ;  $p < 0.01$ ).

Likewise, the significant relationship between WEF and GPB differs significantly ( $\Delta\chi^2 = 3.876$ ;  $\Delta df = 1$ ;  $p < 0.05$ ) across the high recycling intentions consumer group ( $\beta = 0.0148$ ;  $t = 1.759$ ;  $p < 0.10$ ) and low recycling intentions consumer group ( $\beta = 0.103$ ;  $t = 0.919$ ;  $p < 0.01$ ). Therefore, recycling intentions moderates the influence of PCE and WEF on GPB. The details about the recycling intentions moderation are given in Table 7.

### 6. Findings and discussions

The primary aim of the present research was to study the influence of environmental consciousness and recycling intentions on GPB. In order to achieve the aims of the research, the factors affecting GPB were examined as the first step. Secondly, it was investigated whether environmental consciousness and recycling intentions moderate these relationships. On the basis of standardized path coefficients and significance levels, PCE was determined to have positive significance ( $\beta = 0.587$ ;  $p < 0.05$ ) and WEF also showed positive significance ( $\beta = 0.159$ ;  $p < 0.05$ ) on GPB. So in the present research, two of the hypotheses, viz. H<sub>1</sub> and H<sub>3</sub> were empirically accepted, but the hypothesis H<sub>2</sub> could not be accepted since PBC did not affect GPB and the path was non-significant. This is in line with one such study made previously, where PBC and consumer green purchase intentions were not related (Arvola et al., 2008). On the other side, WEF and PCE were found to be positively significant in explaining consumers' GPB. These research outcomes are in tandem with some of the pretudies which suggest the importance of a locus of control and higher level of environmental knowledge as the deciding factors for green purchasing (Abdul-Muhmin, 2007; Cleveland et al., 2005; Ellen et al., 1991; Kumar and Ghodeswar, 2015; Moon and Balasubramanian, 2003; Paswan et al., 2017). It can thus be inferred that it is imperative to understand that green purchases are positively influenced by social, economic, behavioral, and psychological factors (Lee, 2011a; Mishal et al., 2017; Wang, 2014).

The moderating influences of recycling intentions and environmental consciousness suggest that environmental consciousness moderates the effect of PCE and WEF on GPB. Consequently, two of other hypotheses H<sub>4a</sub> and H<sub>4c</sub> were also empirically accepted in the study. The results are in tandem with the past literature review in which environmental consciousness in the form of values and personal norms moderate the relationship between PCE and

**Table 5**  
Moderating effects model.

Moderating variable	Model	$\chi^2$ (df)
Environmental consciousness	Unconstrained model	416.632 (253)
	Fully constrained model	432.926 (254)
	Constrained model: PCE GPB	421.165 (255)
	Constrained model: WEF GPB	424.503 (253)
	Constrained model: PBC GPB	425.485 (254)
Recycling intentions	Unconstrained model <sup>a</sup>	260.338 (167)
	Fully constrained model	268.172 (172)
	Constrained model: PCE GPB	265.463 (170)
	Constrained model: WEF GPB	264.238 (168)

Source: Author(s) own calculations.

Notes: PCE = Perceived consumer effectiveness; WEF = Willingness to be environmentally-friendly; PBC = Perceived behavioral control; GPB = Green purchase behavior.

<sup>a</sup> Unconstrained model without perceived behavioral control.

**Table 6**  
Moderating role of environmental consciousness.

Hypotheses		High consciousness		Low consciousness		$\Delta\chi^2$	Moderation
		Estimate	t-value	Estimate	t-value		
H <sub>4a</sub>	PCE GPB	0.610	4.802***	0.418	2.929***	4.538**	Yes
H <sub>4b</sub>	PBC GPB	0.237	2.016**	0.097	0.716	1.823	No
H <sub>4c</sub>	WEF GPB	0.289	2.394**	0.260	0.585	3.910**	Yes
Variance explained (%) for GPB		67.8		25.8			

Note: \*\*\* $p < 0.001$ ; \*\* $p < 0.05$  Source: Author(s) own calculations.

**Table 7**  
Moderating role of recycling intention.

Hypotheses		High consciousness		Low consciousness		$\Delta\chi^2$	Moderation
		Estimate	t-value	Estimate	t-value		
H <sub>5a</sub>	PCE → GPB	0.513	4.336***	0.504	2.890***	4.086**	Yes
H <sub>5b</sub>	PBC → GPB	0.150	1.253	0.172	1.232	–	No
H <sub>5c</sub>	WEF → GPB	0.248	1.759*	0.203	0.919	3.876**	Yes
Variance explained (%) for GPB		44.3		42.6			

Note: \*\*\* $p < 0.001$ ; \*\* $p < 0.05$ ; \* $p < 0.10$  Source: Author(s) own calculations.



WEF behavior in different green market contexts (Akehurst et al., 2012; Khare, 2015; Trivedi et al., 2015). For higher level of environmental consciousness, the relationship between PCE and GPB show a stronger coefficient ( $\beta = 0.610$ ) as compared to the lower level of environmental consciousness ( $\beta = 0.418$ ). That is, people with higher environmental consciousness would prefer to buy green products if they perceive that their purchase decisions may adversely affect the environment and they prefer to take responsibility for the same. The study by Mainardes et al. (2017) on personal values and organic food purchase intention posits that, in emerging markets, the relationship between individual characteristics such as values and GPB is stronger in comparison to environmental and social concerns. As personal values contribute to PCE, the relationship between PCE and green purchasing was found to be better for individuals having higher environmental consciousness. Eco-friendly product choice either undermines or reinforces the consequent behavior as in the event of high environmentally conscious consumers or in pro-environmental behavior display reinforcement such as recycling (Garvey and Bolton, 2017). Interestingly, WEF has not had a very encouraging impact on GPB for high ( $\beta = 0.289$ ) and low ( $\beta = 0.260$ ) environmental consciousness consumer groups; however, the relationship was found to be significantly relevant. Similarly, PBC had a positively significant influence on GPB for high environmental consciousness; though, the relationship was found to be insignificant in case of low environmental consciousness consumer group.

Recycling intentions were confirmed to moderate the influence of PCE and WEF on GPB. Thus, two of the hypotheses viz. H<sub>5a</sub> and H<sub>5c</sub> were empirically accepted in the present study. The higher recycling intentions consumer group had a stronger coefficient ( $\beta = 0.513$ ) for PCE and GPB in comparison to the lower recycling intentions consumer group ( $\beta = 0.504$ ). WEF did not show very encouraging results for high ( $\beta = 0.248$ ) as well as low ( $\beta = 0.203$ ) recycling groups for GPB. This may be ascribed to the complex recycling process, difficulty in recycling, understanding in practice, and related requirements which a consumer has to appreciate before they can reap the benefits of recycling. The relationship between PBC and GPB was found not to be significant for both higher and lower recycling intentions consumer groups. Nigbur et al. (2010) suggest that intentions predict behavior, while attitudes, personal norms and perceived control predict the intentions to recycle. Consumers with recycling intentions, usually get segment in a discriminatory manner, largely depending on the role to be promoted among people and attitudes about the inconvenience of recycling had a negative relationship with recycling behaviors (McCarthy and Shrum, 1994; Meneses and Palacio, 2005).

## 7. Theoretical and managerial implications

The main objective of the current research was to expand the understanding level about the determinants of GPB in an emerging economy like India by observing the moderating effect of environmental consciousness and recycling intentions. This research makes a vital contribution by fostering the argument in relation to the significance of environmental consciousness and recycling intentions as key determinants of GPB (Garvey and Bolton, 2017; Satapathy, 2017). The policy makers and marketers need to understand that young consumers are a potential market for environmentally friendly products as emphasized by number of researches (Gentina and Muratore, 2012; Prakash et al., 2018; Uddin and Khan, 2018). Precisely, this research paves the way forward to better understand how environmental consciousness and recycling intentions moderate the influence on PCE, PCB, and WEF, all of which in turn affect consumer behavior. Reports on green product marketing in India suggest that nearly 73% of consumers

are willing to pay more for environmentally friendly products in comparison to consumers from other comparable countries like Brazil, China, Germany, and the US (The Times of India, 2013). Consumers in emerging economies like India are considered to be nature loving; therefore, bundling environmentally friendly products with subtle promotions, i.e. price-offs, schemes and seasonal discounts may get market visibility and improving green purchases by conventional non-green shoppers (ASSOCHAM (2016)). The present study embraces crucial managerial implications for developing marketing campaigns for green products keeping in mind the environmental consciousness and recycling intentions of Indian consumers. Drawing from Anghelcev and Sar (2014), congruity between consumers' mood and the frame of the message would result in more favorable message evaluations and higher intentions to recycle than incongruity. The findings of the research extend to TPB and TRA, in which it was underpinned. An interesting insight from the present study is related to the environmental consciousness and recycling intentions of consumers. Consumers having high environmental consciousness and high recycling intentions favor green purchases as it gratifies their feelings about environmental protection. These findings of the study are found consistent with those research conclusions which suggested that environmentally friendly behavior is multidimensional construct and validated the sufficiency of TRA/TPB framework (Chaudhary and Bisai, 2018; Mishal et al., 2017). On the contrary, few studies reported minor or inconsistent effects of TRA/TPB elements (Lopes et al., 2019), owing to the impacts of other research variables such as culture, and gender on green purchase intention (Barbarossa and De Pelsmacker, 2016; Sreen et al., 2018). This suggests that emotional and sensitive consumers are likely to engage in the "green movement". The emerging market emphasis of this research is also worth mentioning as no past researches have investigated the environmental consciousness and recycling intentions together.

## 8. Limitations and future research directions

This study is one of the initial attempts that has incorporated the TRA/TPB framework to understand the moderating influence of environmental consciousness and recycling intentions on green purchase behavior of young consumers in emerging market context. So the generalizability of the findings could be low even in emerging markets as well since the magnitude of these markets is beyond the scope of the study (Liobikienė et al., 2016). Moreover, this study measured the behavior of young consumers using convenience sampling which may not be representative of the entire population. The representativeness of the sample could have been finetuned by taking population elements from the dispersed locations (Ramayah et al., 2010). Hence further research is recommended by applying TRA/TPB model and integrating few more constructs in relation to other locations within the country or outside the country for more representativeness of different age groups. One of the major limitations of the present study was that it had adopted the scale items from a spectrum of measurement instruments predominantly developed in western countries. Future research may try to develop reliable and validated scales for emerging economies to study the different parameters. Second, the research focused on only one of the emerging markets, therefore it is the need of the hour to conduct cross-cultural studies so as to compare and contrast the behavioral patterns of consumers across economies (Greendex, 2014). Thus a longitudinal study can be performed to understand the impact of moderating variables on green purchase behavior of consumers over time. Mancha and Yoder (2015) emphasize that there are some identifiable dissimilarities in the pro-environmental intent between human existence in diverse geographic areas. At the same time, cultural affluence

with certain value orientations is critical for GPB (Milfont, 2012). It would be very insightful if future researchers can consider consumer attitudes regarding recycling intentions from emerging markets. Troschinetz and Mihelcic (2009) further studies can illustrate how consumers' personal values can influence environmental consciousness building upon prior works such as Pinto et al. (2011). Besides, for environmental consciousness and recycling intentions, the variance explained for GPB was only 67.8% and 44.3% respectively, which indicates that there are few additional causal factors that can be examined, which directly or indirectly affect GPB. For instance, the inclusion of additional demographic moderating variables, e.g. gender, age, and income could offer actionable managerial insights towards green products for environmental consciousness and recycling intentions as consumers with different gender, age, and income disparities may react contrarily to recycling intentions.

## Acknowledgements

Authors would like to express their gratitude towards Ms. Seema Soni and Dr. D. Suresh Kumar in helping them in proof-reading and editing the initial drafts of the manuscript.

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