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Green purchasing behaviour: A conceptual framework and empirical investigation of Indian consumers

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ABSTRACT

The purpose of this empirical study is to operationalize the relationship of cognitive factors influencing on green purchase intention directly and indirectly via the mediating role of attitude towards green products which in turn investigated with green purchasing behaviour in order to validate the proposed research model in the Indian context of ecologically friendly buying behaviour. The model is based on 'attitude-intention-behaviour' and analysed by using structural equation modeling (SEM) from that data collected of 351 Indian consumers.

The findings unveiled that Green purchase intention (GPI) was significantly and directly driven by Attitude towards green products (AGP), Environmental concern (EC), and Perceived consumer effectiveness (PCE) directly and indirectly via the mediating the role of AGP however, perceived environmental knowledge (PEK) was found to be insignificant effect on both AGP and GPI in this study. Moreover the measure of GPI was found to be the fundamental predictor of Green purchase behaviour (GPB) in the model. Hence, the present model provides valuable inputs to policymakers and marketers to design from the perspective of green marketing policies and strategies in order to cope with the indigenous Indian context.

1. Introduction

Unsustainable level of consumption globally leads to severe environmental sustainability issues such as global warming, water, air and land pollution, and waste generation which drive society to change their conventional consumption patterns and purchase behaviour towards the pursuit of environmental sustainability. Consequently the phenomenon of green consumer behaviour has been evolved as a new paradigm of marketing discipline for marketers and researchers in the realm of contemporary consumer research (Ottman, 1998; Charter et al., 2002; Peattie and Belz, 2010; and Lai and Cheng, 2016). Regarding this behavioral phenomenon, numerous studies have been found in developed nations towards pro-environmental behaviour (Ottman, 1998; Kalafatis et al., 1999; Peattie and Charter, 2003; Zhao et al., 2014; and Yadav and Pathak, 2016). While in Asian developing economies like India and China etc., a few studies have been acknowledged purchasing behaviour for green products, still such literature on ecological issues and consumer research is a bit scant in the Indian context (Chan, 2001; Mostafa, 2006; Chen and Chai, 2010; Yadav and Pathak, 2016; and Kumar et al., 2017).

In the line of above discourse, Nielsen Survey (2011) on *Global Online Environment and Sustainability* found that 86 percent of Indian consumers has shown positive attitude towards energy efficient products and appliances, followed by recyclable packaging (79%) and least impact was given to products not tested on animals (41%), and fair trade products (44%). Similarly National Geographic Society and the international polling firm Globescan brought out the report on Greendex (2010) that the top scoring consumers were in the emerging economies of India, Brazil, and China; however industrialized countries ranked at the bottom.

Moreover India has witnessed as the second fastest growing emerging economies with the highest youth population with two third population which having the below age of 35 years, educated, and self-belief in speedy action oriented generation over the world leading to a young nation known as 'YOUNGISTAN'. Thus it is clear that Indian consumers are increasingly conscious towards the benefits of sustainable practices and environmentally friendly behaviour with the characteristics of rising young segment of population and their education level, such primary indicators has opened new avenues in the field of green behavioral research in India with the equal footing of green consumerism worldwide (Jain and Kaur, 2004; Datta, 2011; Paul et al., 2016; Yadav and Pathak, 2016; and Prakash and Pathak, 2017). Despite

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the fact of rising consumers' awareness and their pro-environmental behaviour for environmentally friendly products, the demand for such products is not actually found as high as expected (Lai and Cheng, 2016).

Concerning with the attitude-behaviour gap, two classical theory: TRA (theory of reasoned action) and TPB (theory of planned behaviour) purported by Fishbein and Ajzen (1975), and Ajzen and Fishbein (1980) which have been applied in a wide range of environmental behavioral studies to capture the behavioral measure of purchasing green or sustainable products including developing countries (Chan, 2001; Kim and Chung, 2011; Zhou et al., 2013; Yadav and Pathak, 2016; and Hsu et al., 2017). However, majority of the studies were found to be failed to elucidate the green purchase behaviour using by TRA and TPB approach driven with attitude, subjective norms, and perceived behavioral control, and thus found to be weaker relationship between the positive attitude towards green purchasing and the actual purchase decision (Tan, 2011; and Joshi and Rahman, 2015).

The notion is that the relevance of such behavioral measures of TRA and TPB are still questionable on its unanimous applicability in the ecological behaviour, and thus emerged an issue of debate for academia in order to address 'attitude–behaviour gap in the field of green consumer psychology. Therefore the study must be embraced with other cognitive factors to predict green purchase behaviour either using modified TRA and TPB or applying some customized approach in the view of different cultural and local settings (Chan, 2001; Chan and Lau, 2002; Akehurst et al., 2012; Joshi and Rahman, 2015; Wei et al., 2017). Concerning with the above arguments, several researchers have suggested to incorporate some other cognitive factors, viz. environmental concern, environment knowledge, and perceived consumer effectiveness etc. with the measure of environmental attitude of above classical models in order to assess purchase behaviour in the contemporary green consumer research (Straughan and Roberts, 1999; Chan, 2001; Mostafa, 2007; Kim and Choi, 2005; Tan, 2011; Kim, 2011; Paul et al., 2016; Kumar et al., 2017).

For instance Chan (2001) studied the impact of above cognitive constructs on purchase behaviour for general greener products via the mediation role of purchase intention. Roberts (1996), and Straughan and Roberts (1999) confirmed that consumer's perceived effectiveness is the single best predictor of green consumption behaviour, and consumers will purchase green products if and only if they believe that their behaviour will have positive effect on their environment. Similarly in Asian context, Kim and Choi (2005), Mostafa (2006), Kim (2011) also validated perceived consumer effectiveness with purchase behaviour for green products and they were found to be a significant impact on purchase behaviour for such products. Moreover researchers also reported that PCE is the one of the key significant subjective phenomenon after environmental concern and environmental knowledge found to be more effective factor than EC to capture the green consumerism (Roberts, 1996; Tan, 2011; Joshi and Rahman, 2015). On the contrary such behavioral relationships were a little bit accentuated and rarely tested in the Indian context (Uddin and Khan, 2016a, 2016b) parallel with the study of other Asian market settings (Kim and Choi, 2005; Mostafa, 2006).

In the light of discourse on this subject matter, it is obvious that there is a dearth of literature found to be examined the cognitive factors such as ecological concern, attitude towards green products, perceived consumer effectiveness, and environment knowledge in order to predict purchase intention and purchase behaviour for general green products, and such similar inter-relationship were nascent stage and a little bit accentuated directly and/or indirectly in the contemporary Indian context of green consumerism. Moreover the present study is the first to the best of our knowledge that the measure of perceived consumer effectiveness is validated as the antecedent of consumers' purchase intention for eco-friendly products directly and indirectly via attitude towards green products in the Indian setting.

Therefore this empirical study strives to fill the research gap by operationalising and validating the relationship of environmental concern (EC), perceived consumer effectiveness (PCE), attitude towards green products (AGP), and perceived environment knowledge PEK with green purchase intention (GPI) both directly and indirectly via the mediating role of AGP, and further GPI investigated with green purchasing behaviour (GPB) in the present Indian indigenous setting of ecologically sustainable behaviour. Hence the present integrated model is based on 'Attitude-Intention-Behaviour' in which GPI plays a linkage role between the above four antecedents of GPI and GPB in the proposed research model by using structural equation modeling.

This paper comprises with the following sections. The 'literature review' leads to a conceptual framework for hypothesis development followed by the section of 'Methodology' and 'Analysis and Results' with the findings of the measurement model and structural model. Next the study presents a discussion about the findings, implications in the section of 'Discussion and Implications' followed by 'Limitations and Future Research' in the possible avenues for further studies.

2. Literature review and hypothesis development

2.1. Green purchase behaviour

Green purchase behaviour refers to the purchase of environmentally friendly products or sustainable products those are 'recyclable and 'beneficial' to the environment and avoiding such products which harm the environment and society (Chan, 2001; Mostafa, 2007). Consumer behaviour for green purchasing is generally evaluated in terms of their consumers' willingness or intention to purchase green products and that conscious behaviour or intention eventually transformed into their purchase decision for such products in order to benign for environmental sustainability (Joshi and Rahman, 2015). In the research of consumer behaviour, it is first unveiled by TRA (Fishbein and Ajzen, 1975) that suggests consumer behaviour is determined by intentions, incorporated with attitude and subjective norms. Subsequently TPB (Ajzen and Fishbein, 1980) utilized as the extended model of TRA comprises of perceived behavioral control with the measure of attitude and norms. Although such classical models have been widely used by several scholars alike or with some modifications in order to validate purchase intention and purchase behaviour for green products in the field of environmental behavioral research including India (Zhao et al., 2014; Paul et al., 2016; Yadav and Pathak, 2016; Prakash and Pathak, 2017; Hsu et al., 2017), the applicability of TRA and TPB as standard measures are still ambiguous as their inconsistent effectiveness in the present scenario of different local settings (Joshi and Rahman, 2015). Moreover modified behavioral measures were also adopted in a wide range of environmentally friendly products including Asian and Indian market, viz. skin care products (Hsu et al., 2017), organic products and vegetables (Kim and Chung, 2011; Zagata, 2012; Zhou et al., 2013), eco-friendly packaging (Prakash and Pathak, 2017), energy efficient products (Ha and Janda, 2012), and general green products (Chan, 2001; Chan and Lau, 2002; Chen and Chai, 2010; Lai and Cheng, 2016; Yadav and Pathak, 2016).

In particular 'general green or sustainable products' are those which are beneficial to the environment and society usually includes eco-friendly carry bags, recycled papers, herbal products, energy saving bulbs, energy efficient appliances and vehicles, and household Products etc. (Lee, 2008; Joshi and Rahman, 2015). Moreover such products adopt ecologically sound production, are recyclable and having low waste generation (Chan and Chai, 2010).

Based on the above arguments, it is apparent that consumer behaviour is not only affected by attitudinal factors, but also required some other cognitive factors such as concern, knowledge, and consumer effectiveness with the measure of attitude directly and/or in order to deal with consumers' purchase intention and their purchase behaviour for general green products (Straughan and Roberts, 1999; Chan, 2001; Mostafa, 2007; Kim and Choi, 2005; Tan, 2011; Kim, 2011; Paul et al.,

2016; Kumar et al., 2017).

2.2. Green purchase intention

Green purchase intention or willingness (GPI) refers to consumers' willingness to purchase green products expressed by the consumer for the benign of the environment, and such consumers' willingness holds motive to be purchased green products (Chan, 2001; Akehurst et al., 2012; Dagher and Itani, 2014). In other words consumers are not only concerned about the ecological quality of the product but also about the environmental consequences associated with their purchase decision for such products.

The underlying relationship of purchase intention (GPI) with purchase behaviour (GPB) for green products, some recent studies also established the direct relationship of GPI with GPB in their local context including India (Kim et al., 2013; Kanchanapibul et al., 2014; Lai and Cheng, 2016), however such relationships were little emphasized in the Indian setting (Yadav and Pathak, 2016; Kumar et al., 2017). In addition Lai and Cheng (2016) found that consumers' expressed willingness is more effective than other behavioral factors to capture consumers' psyche for green purchase (Lai and Cheng, 2016).

Therefore the available literature revealed that intention is a fundamental predictor of a behaviour measure in the environmental behavioral research. Hence the authors endeavor to establish such fundamental relationship in the Indian context of ecologically consumer psychology, thus the above statements lead to development of following hypotheses;

H1:. *Purchase intention for green products has a positive and significant impact on purchase behaviour for such products*

2.3. Attitude toward green products

The phenomenon of attitude has been always emphasized as one of the imperative antecedent of behavioral intention, and actual behaviour in the studies of green consumer psychology. Fishbein and Ajzen (1975) defined the term attitude as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (p. 211). Moreover this behavioral phenomenon represents what consumers like and dislike in general and specific terms concerning to purchase decision for product or services (Blackwell et al., 2006). Thus, attitudes can be classified into general and specific terms: general attitude and specific attitude (Sun and Willson, 2008; Chen and chai, 2010; Tan, 2011). A general attitude entails the general predisposition to engage in relevant behaviour of a category of attitude object; while a specific attitude is a strong predictor of a single behaviour on a particular attitude object (Ajzen and Fishbein, 1977, Eagly and Chaiken (1993), Tan (2011).

Therefore this phenomenon of specific attitude usually treated as attitude towards green products or purchase in the environmental consumer research that holds one's beliefs or feelings towards the purchase decision of environmentally friendly products, and the impact of such specific behaviour on the ecological consequences (Hines et al., 1986; Kaiser and Gutscher, 2003; Riethmuller and Buttriss, 2008). However attitude towards green products differs from general environmental attitude at behavioral level of green purchase decision for the benevolence of environmental sustainability (Kaiser et al., 1999; Bamberg, 2003; Tan, 2011).

Several scholars confirmed the applicability of this specific phenomenon with purchase intention and purchase behaviour for general green products widely (Chan, 2001; Chan and Lau, 2002; Lee, 2008; Chen and Chai, 2010; Lai and Cheng, 2016; Yadav and Pathak, 2016). In addition, such underlying relationships were also validated recently in Indian context (Paul et al., 2016; Yadav and Pathak, 2016; and Kumar et al., 2017). Therefore the literature revealed that consumers with more favourable attitude towards general green products are expected to high degree of their involvement in purchase decision for such products (Lee, 2008; Chan and Chai, 2010; Joshi and Rahman, 2015). Hence the present study endeavors to examine the attitude towards general green products with the purchase intention for such products in order to validate in the Indian context parallel with the above discussion on this subject matter, the following hypotheses postulates;

H2:. *Attitude toward green products has a positive and significant impact on purchase intention for such products*

2.4. Environmental concern

In environmental behavioral research, environmental concern is always treated as an individual's concern level to the environmental issues (Hines et al., 1987). Environmental concern is emphasized as one of the key cognitive measure in order to predict one's ecological friendly behaviour in the literature of green marketing over time. In general it holds the individuals' consciousness towards the environmental problems and their readiness to solve the problem (Van Liere and Dunlap, 1981; Roberts and Bacon, 1997; Straughan and Roberts, 1999; Kim and Choi, 2005; Prakash and Pathak, 2017). Moreover, it implies the sense of responsibility to protect the environment, embodied with emotional appeal at the individuals' level which is reflected in their involvement towards the environmental protection (Lee, 2008; Dagher and Itani, 2014; Prakash and Pathak, 2017). Therefore the measure of environmental concern sought to be solved the environmental problem at individual level unlike collective orientations, ranging from waste recycling behaviour (Kim and Choi, 2005; Zhao et al., 2014) to green buying behaviour (Ottman, 1993; Straughan and Roberts, 1999; Chen, 2001; Mostafa, 2006; Paul et al., 2016; Prakash and Pathak, 2017). In other words such individuals' orientation is not related to their collectivistic tendencies to solve the ecological issues at a general level (Kim and Choi, 2005). Scholars reported that environmental concern has a direct and significant impact on attitude towards green products (Mostafa, 2007) which further influence on purchase intention for such products (Yadav and Pathak, 2016; Paul et al., 2016). The notion is that consumers having high environmental concern directly associates with their positive attitude toward green products which in turn their high level of purchasing intention for such products, hence the study proposes the following hypotheses;

H3:. *Environmental concern has a positive and significant impact on attitude toward green products*

H4:. *Environmental concern has a positive and significant impact on purchase intention for green products*

2.5. Perceived consumer effectiveness

In the literature of green consumer behaviour, perceived consumer effectiveness (PCE) has been noticed enormously by several scholars as an important predictor of green consumption behaviour (Kinnear et al., 1974; Ellen et al., 1991; Mostafa, 2006; Kim and Choi, 2005; Tan, 2011; Kim, 2011; Dagher and Itani, 2014). Perceived consumer effectiveness first illustrated by Kinnear et al. (1974) as a measure of an individual belief that he or she can have an effective contribution on pollution abatement. Ellen et al. (1991) defined perceived consumer effectiveness as the consumers' perception of what extent to which their actions can make a difference in solving environmental issues. Similarly Shamdasani et al. (1993) observed that green consumers are more internally controlled as they believe that an individual consumer can be effective in environmental protection. Moreover the phenomenon of PCE was also interpreted in terms of behavioral control and internal locus of control, and self-efficacy in the ecological consumer research similar to the Ajzen's (1991) perceived behavioral control (PBC), and

subjective norms of 'Theory of Planned Behaviour' (Ellen et al., 1991; Kim and Choi, 2005; Mostafa, 2006; Tan, 2011).

In other words perceived consumer effectiveness (PCE) is the measure that evaluates individual's subjective judgment how an individual can make efforts in the solution to the environmental problems faced by society and such effectiveness measure is directly related to the evaluation of the self in the context of ecological issue (Kim and Choi, 2005; Kim, 2011). Concerning this individual phenomenon Roberts (1996), and Straughan and Roberts (1999) observed that consumer's perceived effectiveness is the single best predictor of their environmentally friendly behaviour, and consumers will purchase ecological safe products if and only if they believe that their behaviour will have a positive effect on their environment, consequently consumers with high degree of PCE persuade them to high purchase intention of green products. Similarly such findings of Roberts (1996) in western context, Kim and Choi (2005), Mostafa (2006), Kim (2011) also validated that PCE is the significant predictor of green purchase behaviour in Asian context. Moreover few scholars also reported that PCE is significantly related to consumers' positive attitude towards green products which in turn influence on their green purchasing decision (Tan, 2011; Kang et al., 2013). However, such behavioral relationships were rarely tested and a little bit accentuated by Indian scholars (Uddin and Khan, 2016a, 2016b) in the contemporary Indian setting which is characterized by the highest young population over the world, rising educated segment of population, IT savvy and believe in self and speedy action oriented.

At prima facie, the present study is perhaps the first to the best of authors' knowledge that PCE has been directly scrutinized with the consumers' attitude towards green products and their purchase intention for such products in India. Based on the above discourse upon the subjective measure of the effectiveness, the authors attempt to establish such underlying relationship in the present Indian indigenous context of green consumption behaviour; hence we proposed the following hypotheses;

H5:. ***Perceived Consumer effectiveness has a positive and significant impact on attitude toward green products***

H6:. ***Perceived Consumer effectiveness has a positive and significant impact on purchase intention for green products***

2.6. Perceived environmental knowledge

The cognitive measure of Perceived environmental knowledge (PEK) can be conceptualized as one's cognitive ability to understand about environmental or sustainability related issues majorly including air, water and land pollution, energy usage and efficiency, and recycling and waste generation, and their consequences on society and physical environment at par (Chan, 2001; Murphy, 2005; Mostafa, 2006; Tan, 2011; Yadav and Pathak, 2016). Schahn and Holzer (1990) classified two forms of knowledge measure to evaluate the environmental action: abstract knowledge and concrete knowledge. Moreover, the measure of environmental knowledge can be evaluated with the help of two knowledge mechanism: subjective and objective measure (Tan, 2011). The subjective measure of knowledge is based on one's perception or self assessment of what and how much an individual aware about the green phenomenon, known as abstract knowledge or perceived environmental knowledge. On the hand, objective measure of knowledge is based on factual knowledge or concrete behavioral knowledge (Tan, 2011), typically refers to "a general knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystems" (Fryxell and Lo, 2003, p. 45). Similarly Laroche et al. (2001) defined the environmental knowledge as one's ability to identify or define a number of ecologically-related symbols, concepts, and behaviour.

However subjective phenomenon of abstract knowledge was better to predict green consumerism and found to be more effective than the other measure of environmental knowledge to evaluate green consumer behaviour (Hines et al., 1987; Schahn and Holzer, 1990; Mostafa, 2006; Tan, 2011). Concerning this subjective phenomenon, few researchers have acknowledged the direct effect of environmental knowledge on purchase intention for environmentally friendly products, and therefore they suggested that higher level of perceived environmental knowledge would lead to higher purchase behaviour for such products (Mostafa, 2006; and 2007; Yadav and Pathak, 2016). On the contrary Zhao et al. (2014), Kumar et al. (2017) observed that the above casual relationship were inconsistent and increased environmental knowledge does not necessarily in the occurrence of higher such behaviour for green products in the emerging economies like India and China. Moreover in the emerging economies, few scholars have also reported that the measure of perceived environmental knowledge may have a direct relation with favorable attitude towards green products which further effects on purchase intention for such products (Chan, 2001; Yadaw and Pathak, 2016; Kumar et al., 2017).

Based on the above arguments, the authors seek to scrutinize the underlying relationship of environmental knowledge and sustainable buying behaviour in the emerging market parallel with its other peers. Therefore the present study approached the subjective measure of perceived environmental knowledge based on individual perception about the phenomenon in order to capture the attitude towards green products and green purchase intention to be validated in the Indigenous Indian context. Hence this study postulates following hypothesis:

H7:. ***Perceived environmental knowledge has a positive and significant impact on attitude toward green products***

H8:. ***Perceived environmental knowledge has a positive and significant impact on purchase intention for green products***

3. Methodology

3.1. Data collection and the sample

To analyse the quantitative study, a well structured questionnaire was used to test the relationship of the proposed model. The language used for field study was Indian English as it is also official language of India. The questionnaire comprises of two sections; first section consists of demographic details of respondents or target population consists of age group, Income group, gender, education, marital status, and occupations. The other/second part includes questionnaire items intended to measure environmental concern, perceived consumer effectiveness, attitude towards green products, perceived environmental knowledge, green purchase intention, and green purchasing behaviour using five point Likert scale.

Data was collected from young adult and educated segment of consumers (age 18 or above) through self-administered questionnaires. The green behavioral phenomenon under investigation is easily interpreted by young adults and educated population which leads to respond the survey more appropriately rather than minors and less educated (Chan, 2001; Paul et al., 2016; Kumar et al., 2017). Therefore the respondents were contacted at major retail outlets at different period of times in weekend nearby the leading universities and institutes each of the three major cities of Uttar Pradesh (U.P.) namely Lucknow, Kanpur, and Varanasi, which are also metropolitan regions as well as projected smart cities in the state of U.P. (India), known as Lucknow (the capital of Uttar Pradesh), Kanpur (the commercial capital of Uttar Pradesh), and Varanasi (the religious and heritage capital of India). Moreover respondents were also assured that the information given by them would be kept confidential and would be used for the academic purpose only. Initially such questionnaire was tested through pilot survey among 30 research scholars, consequently few modifications were made in the final survey instrument in order to minimise its complexity

to comprehend for target population.

The total 600 questionnaires were administered using purposive convenient sampling method, out of which only 351 were found to be appropriate for this study. The sample size of 351 was considered to be appropriate and it fits the guidelines suggested by Hair et al. (2015) for applying structural equation modeling (SEM). Moreover the present sample size of 351 with six constructs of 22 items was also considered to be fit and above (351 > 22*15 = 330) the desired level of 10–15 cases per parameter/item recommended by (Hair et al., 2015; Kline, 2015) for SEM. Thus the study is based on metropolitan regions of Utter Pradesh which is the most populated state of India with 19.98 crores population, covers approx. 16.50 percent of the whole population of the country (Census Report, 2011, Government of India) and having the highest number of smart cities projected in the state i.e. 13 out of 100 smart cities of India (Smart Cities Report, 2015, Government of India).

Demographic characteristics of the respondents as follow, 188 (53.6%) male and 163 (46.4%) female were surveyed out of 351 appropriate subjects in the present field study. All the respondents were adults (18 or above) in which the majority of the respondents (57.8%) and (33.9%) were found to be young adults within the age-group of 18–24 and 25–34 respectively followed by age-group of 35–44 (5.4%), 45–54 (2.6%) and above them. While (77.8%) 273 respondents are unmarried out of total 351 respondents and 22.3% are married in the current study. Education wise 41.9% and 45% respondents are graduate and postgraduate respectively, and thus the majority of the respondents (86.9%) were reported either graduate or post graduate in the current study. While occupation wise, mostly respondents belong to students (69.8%) of the total subject by followed by business (9.7%), professional (6.8%), private (6%), public sector employee (4%), and housewife (3.7%) in this study. On the basis of family monthly income 37.6% and 29.6% respondents belong to such income group below INR 25000, and INR 25001–50000 respectively, followed by INR 50001–75000 (13.4%), INR 75001–1 lakh (8%), and above them (11.4%). Therefore such sample profile indicates that they are young adults and highly educated who have a greater understanding of the topic under investigation (Chan, 2001), and thus are more likely to behave sustainably and therefore more likely to purchase ecologically friendly products. Hence they present young educated Indian population, could be treated as the present and future consumers for green marketers.

3.2. The measures

This study used the measurement scales which have been previously validated in available literature. A four items scale for environmental concern drawn from (Lee, 2008). The perceived consumer effectiveness construct with four items taken from (Kim and Choi, 2005; Kim, 2011), while attitude towards green products were comprises of two items based on (Taylor and Todd, 1995; Chan, 2001; Mostafa, 2006; Paul et al., 2016). Perceived environmental knowledge scale with four items was adopted from (Mostafa, 2006), followed by three items of green purchase intention based on (Chan and Lau, 2000; Chan, 2001; Mostafa, 2006). All such items were operationalised taken by a 5-point Likert scale, where 1 denoted strongly disagree, and 5 denoted strongly agree. Finally the construct of green purchasing behaviour with four items were measured by (Lee, 2008) operationalised with 5-point statement ranging from never (1) to always (5), and thus all measured items were referred to Annexure: 1

4. Analysis and results

4.1. Statistical analysis

The proposed research model was analysed using SPSS and AMOS software. A two stage SEM (Structural Equation Modeling) procedure: the measurement model and the structural model were performed using AMOS to test the hypothesized model suggested by Anderson and Gerbing (1988). In first stage, CFA (confirmatory factor analysis) was approached to evaluate the reliability and validity of the measurement model. The structural model assessed the goodness of fit of the model and hypothesis testing to predict the dependence relationship between *exogenous* (predictor variables) and *endogenous* dependent variable in the second stage of the procedure of SEM (Hair et al., 2015; Ho, 2014).

Table 1
Communalities.
Source: *Authors' calculations*.

Communalities					
	Initial	Extraction		Initial	Extraction
EC1	1.000	0.725	PEK2	1.000	0.669
EC2	1.000	0.681	PEK3	1.000	0.657
EC3	1.000	0.690	PEK4	1.000	0.751
EC4	1.000	0.703	PEK5	1.000	0.721
PCE1	1.000	0.707	GPI1	1.000	0.636
PCE2	1.000	0.653	GPI2	1.000	0.764
PCE3	1.000	0.718	GPI3	1.000	0.752
PCE4	1.000	0.720	GPB1	1.000	0.717
AGP1	1.000	0.791	GPB2	1.000	0.802
AGP2	1.000	0.807	GPB3	1.000	0.773
PEK1	1.000	0.694	GPB4	1.000	0.703

Extraction Method: Principal Component Analysis.

4.2. Exploratory Factor Analysis (EFA)

Before applying the measurement model, an EFA was performed using SPSS to identify the underlying factors, as per the guidelines suggested by Gerbing and Anderson (1988). Principal component analysis (PCA) was conducted to extract a set of factors. All the twenty two variables were found with their communalities greater than 0.50 referred to Table 1 Communalities and Table 2: Rotated Component Matrix.

Prior to the final extraction of factors, a Bartlett test of sphericity (3879.451) and KMO measure (0.850) of sampling adequacy confirmed a significant correlation among the variables so as to warrant the application of factor analysis (Hair et al., 2015) as shown in Table 2. Further all factors including independent and dependent variables were entered with Rotation Sums of Squared Loadings showed that six latent constructs having Eigenvalues over "1" reported to 71.968 percent of total variance were extracted after varimax rotation for final study shown in Table 3.

4.3. The measurement model

To validate all the constructs under investigation, CFA was performed using AMOS via maximum likelihood procedure. Prior to this exploratory factor analysis was assessed and the results found to be satisfactory. The Measurement model was assessed by ensuring reliability, convergent and divergent validity. First Assessment of goodness-of-fit("GOF") was made by multiple indicators: The ratio of chi-square and degree of freedom should be below the recommended value of 3 (Kline, 2015). Goodness of Fit Index (GFI) which should exceed 0.90, Adjusted Goodness of Fit Index (AGFI) which exceed more than 0.80, Incremental Fit Index (IFI) which value more than 0.90 shows good fitness of model, Normed Fit Index (NFI) and Comparative Fit Index (CFI) value should exceed more than 0.90 (Hair et al., 2015; Malhotra and Dash, 2014). Root Mean Square Error of Approximation (RMSEA) which is preferable within 0.08 for the adequate model fit (Jackson and Trull, 2001; Morey, 1991). Hence, all the above fit indices were acceptable well the above recommended criteria (Chi square ($\chi 2$)/df = 1.91, GFI = 0.913, AGFI = 0.886, IFI = 0.953, NFI = 0.907, TLI = 0.944, CFI = 0.953, RMSEA = 0.051).

Table 2
Rotated component matrix.
Source: *Authors' calculations.*

Rotated Component Matrix						
	Component					
	1	**2**	**3**	**4**	**5**	**6**
EC1				0.765		
EC2				0.794		
EC3				0.786		
EC4				0.796		
PCE1			0.823			
PCE2			0.792			
PCE3			0.833			
PCE4			0.822			
AGP1						0.799
AGP2						0.860
PEK1	0.759					
PEK2	0.773					
PEK3	0.783					
PEK4	0.852					
PEK5	0.803					
GPI1					0.723	
GPI2					0.835	
GPI3					0.821	
GPB1		0.827				
GPB2		0.883				
GPB3		0.847				
GPB4		0.809				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy					**0.850**	
Bartlett's Test of Sphericity	Approx. Chi-Square				**3879.451**	
	df				231	
	Sig.				0.000	

[a]Rotation converged in 6 iterations.
Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

4.3.1. Reliability and validity of the constructs

Table 4 presents Cronbach's α, Composite reliability (C.R), Standardized factor loadings and Average variance extracted (AVE). The Cronbach's α coefficients were calculated for each of the measured scales, which shows the internal consistency of the construct as a measure of reliability. The alpha values of all the construct ranges from 0.738 to 0.886, which are above the threshold of 0.70, recommended by (Hair et al., 2015; and Malhotra and Dash, 2014).

The validity of the constructs comprises of 'convergent validity' and 'discriminant validity'. While convergent validity was measured via factor loading, composite reliability (C.R), and average variance extracted (AVE). The standardised factor loading of all the scale items ranged from 0.656 to 0.892, which should be greater than 0.50 (Hair et al., 2015). The composite reliability of all the constructs ranged from 0.756 to 0.886, while the value of average variance extracted (AVE) ranged from 0.571 to 0.662 that meet the accepted criterion suggested by (Hair et al., 2015) and hence confirmed convergent validity, referred to Table 4.

Table 4
Standardized factor loadings, composite reliability, average, variance extracted, and cronbach's α.
Source: *Authors' calculations.*

Item		Variable	Factor loading	Composite reliability	AVE	Cronbach's α
EC4	< —	**EC**	0.763	0.868	0.583	0.848
EC3	< —		0.755			
EC2	< —		0.732			
EC1	< —		0.803			
PCE4	< —	**PCE**	0.794	0.854	0.593	0.851
PCE3	< —		0.788			
PCE2	< —		0.718			
PCE1	< —		0.779			
AGP2	< —	**AGP**	0.656	0.756	0.613	0.738
AGP1	< —		0.892			
GPI3	< —	**GPI**	0.807	0.799	0.571	0.792
GPI2	< —		0.776			
GPI1	< —		0.677			
GPB4	< —	**GPB**	0.754	0.886	0.662	0.886
GPB3	< —		0.858			
GPB2	< —		0.869			
GPB1	< —		0.767			
PEK5	< —	**PEK**	0.792	0.885	0.605	0.883
PEK4	< —		0.810			
PEK3	< —		0.748			
PEK2	< —		0.756			
PEK1	< —		0.783			

Table 5
Discriminate validity results of the measurement model.
Source: *Authors' calculations.*

	GPB	**EC**	**PCE**	**AGP**	**PEK**	**GPI**
GPB	**0.814**					
EC	0.295	**0.763**				
PCE	0.119	0.248	**0.770**			
AGP	0.239	0.446	0.303	**0.783**		
PEK	0.318	0.512	0.245	0.281	**0.778**	
GPI	0.345	0.419	0.337	0.529	0.324	**0.755**

Note: Diagonal values show square root of AVE for each construct.

On the hand, Table 5 exhibits discriminant validity of the constructs, where the square root of AVE of each construct was found to be larger than the squared correlation between the constructs and thus confirmed the adequacy of discriminant validity (Hair et al., 2015). Hence all the constructs reported the adequacy of reliability, convergent validity and discriminant validity.

4.4. The structural model

After evaluating the measurement model, the structural model was estimated by analysing the goodness of fit statistics, (Chi square (χ2)/df

Table 3
Total variance explained.
Source: *Authors' calculations.*

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.410	29.134	29.134	6.410	29.134	29.134	3.451	15.688	15.688
2	2.658	12.082	41.216	2.658	12.082	41.216	3.029	13.770	29.458
3	2.346	10.664	51.880	2.346	10.664	51.880	2.835	12.888	42.345
4	1.899	8.630	60.510	1.899	8.630	60.510	2.777	12.624	54.970
5	1.452	6.602	67.112	1.452	6.602	67.112	2.166	9.844	64.814
6	1.068	4.855	71.968	1.068	4.855	71.968	1.574	7.154	71.968

Extraction Method: Principal Component Analysis.

Table 6
Standardized Regression weights and P-values.
Source: *Authors' calculation*.

Hypothesis	Path	Estimate	þ value	Result
H1:	**GPI ——— > GPB**	0.366	***	Supported
H2	**AGP ——— > GPI**	0.381	***	Supported
H3**:**	**EC ——— > AGP**	0.377	***	Supported
H4	**EC ——— > GPI**	0.168	0.027	Supported
H5**:**	**PCE ——— > AGP**	0.199	0.001	Supported
H6**:**	**PCE ——— > GPI**	0.154	0.011	Supported
H7	**PEK ——— > AGP**	0.040	0.571	Rejected
H8:	**PEK ——— > GPI**	0.111	0.096	Rejected

Notes: *Significant at the 0.05 level; ** Significant at the 0.01 level.

= 1.95, GFI = 0.910, AGFI = 0.885, IFI = 0.950, TLI = 0.941, NFI = 0.902 CFI = 0.949, RMSEA = 0.052), which was found to be reasonably fit the data as per the recommended level by Hair et al. (2015). Further the hypothesized model was assessed by path diagram with the help of standardized regression weights (β) and P-values in order to evaluate (predict) the effect of independent variables (predictor variables) on dependent variable in such a model refers to Table 6. Moreover, the Adjusted R^2 of each equation represents the explanatory power of predictor variables on each dependent variable in the proposed research model. It is clear that there are three dependent variables exist in the model, namely GPB, GPI, and AGP. Thus GPI explained 7.9% of the variance of GPB, the measures of AGP, EC, PCE, and PEK collectively explained 25.1% of variance of GPI, while 15.0% of variance of AGP is jointly explained by EC, PCE, and PEK in the proposed model.

4.4.1. The results

The present study is based on the hypothesized model to be investigated the impact of EC, PCE, PEK and AGP on GPI directly and indirectly via the mediating role of AGP as the antecedents of GPI, which in turn further affects the GPB. In other words AGP also acts as the mediating role between EC, PCE, and PEK and GPI. Therefore GPI acts as both endogenous (dependent variable) and further acts as exogenous (predictor variable) of GPB in this proposed research model refers to Fig. 1.

The results of the path analysis shown in Table 6 with the help of coefficients (β) and P-values that the most of the hypothesis (H1–H6) were accepted at ($p < 0.01$ and $p < 0.05$), except for H7 i.e. PEK —— > AGP (β = 0.04) and H8 i.e. PEK —— > GPI (β = 0.111) in the integrative model of the present behavioral study. The study also confirmed that, attitude towards green products is positively and significantly related to green purchase intention (β = 0.381, $p < 0.01$) and found to be the most significant predictors of GPI followed by EC —— > AGP (β = 0.377, $p < 0.01$), PCE —— > AGP (β = 0.199, $p < 0.01$), and EC —— > GPI (β = 0.168, $p < 0.05$). In addition results also revealed that perceived consumer effectiveness was found to be least positive and significant impact on green purchase intention among all the significant predictor variables (β = 0.154, $p < 0.05$) in the present integrative model. Furthermore green purchase intention is also showing a positive and significant impact on green purchase behaviour (β = 0.366, $p < 0.01$). However, the structural equation model analysis shows there is no significant impact of perceived environmental knowledge on both attitude towards green products (β = 0.04, $p > 0.05$) and green purchase intention (β = 0.111, $p > 0.05$) in the hypothesized model.

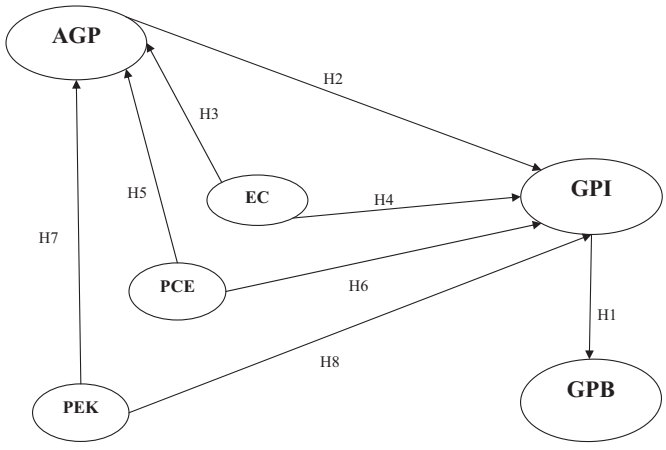

Fig. 1. The Proposed Research Model.
Source: *Authors' calculation*.

5. Discussion and implications

The present study applied the integrated model of green purchasing behaviour based on 'attitude-intention-behaviour' to be assessed the relationship of environmental concern (EC), perceived consumer effectiveness (PCE), attitude towards green products (AGP), and perceived environmental knowledge (PEK) with green purchase intention (GPI) directly and indirectly via the mediating role of AGP as the antecedents of GPI, which in turn examined with green purchasing behaviour (GPB) in order to validate that GPI is the fundamental predictor of GPB in the Indian context. Although a few scholars have scrutinized the factors affecting the antecedents of purchase intentions and purchase behaviour for green products via the mediation role of attitude (Chan, 2001; Lai and Cheng, 2016; Wei et al., 2017), and no such similar studies were found that evaluated the above four cognitive factors as the antecedents of green purchase intention and green purchase behaviour directly and/or indirectly based on 'attitude-intention-behavioral' model of green consumer behaviour in the Indian context. Moreover at prima facie, this empirical paper acknowledged that PCE is tested first time with the purchase intention for green products directly and indirectly via AGP in the indigenous Indian setting. Therefore this empirical paper strives to address such untested relationship by applying SEM in Indian context.

The results of this study supports that most of the hypothesis i.e. six were accepted and found to be consistent with the theoretical background of Asian and Indian context, except *H7* (PEK —— > AGP, β = 0.04, $p > 0.05$) and *H8* (PEK —— > GPI, β = 0.111, $p > 0.05$) which were found to be insignificant in the hypothesized model, however the path of PEK —— > GPI was only significant at (β = 0.111, $p < 0.1$), hence consistent with the findings of (Chan, 2001) and Kumar et al. (2017) in the Asian context.

Therefore the findings concerning to H7 and H8 implies that perhaps there may be a low level of green consumerism and low awareness of environmental related issues among Indian population even in young adult and educated segment of consumers. Still green consumerism is at beginning stage and there is a little availability of green products due to relatively low presence of green marketers in India, comparison to other Asian and western market. Consequently there is a need to encourage green consumerism or concrete environmental awareness among the people at mass promoting through 'environmental education' and green certification programs with the ecologically-related symbols, concepts, and claims, and thus aimed to be educated consumers ultimately to persuade for buying environmental safe products (Mostafa, 2007; Lai and Cheng, 2016; Yadav and Pathak, 2016). Therefore approach of integrated environmental communication can play a vital role to promote and encourage green consumerism among the Indian youth and educated population aimed to be targeted green consumer segment from the strategic perspective of green marketing by policymakers and marketers.

The result also revealed that attitude towards green products (AGP) was emerged as the best predictor of purchase intention for such products followed by EC and PCE. Moreover AGP plays the mediating role

between EC, PCE, and PEK with GPI in the integrative model. Therefore AGP is positively and significantly driven by EC and PCE and found to be direct and indirect effects on GPI in this study as well. Thus such similar results were found to be consistent with the findings of other peers in the Indian context (Paul et al., 2016; Yadav and Pathak, 2016; Kumar et al., 2017). The notion is that more positive attitude towards general green products would lead to higher purchase intention for such products in emerging economies (Lee, 2008; Chan and Chai, 2010).

In addition, environment concern is one of the strongest antecedents of attitude towards green products and green purchase willingness and found to be consistent with previous studies in the domain of green consumer psychology (Mostafa, 2006; Paul et al., 2016; Yadav and Pathak, 2016). Therefore the findings related to environmental concern and attitude towards green products implies that the current young adult and educated generations are serious towards the benign of environmental sustainability, and they feel their responsibility individually to protect the environment by avoiding ecologically damage products in their purchase decision.

On the other hand, perceived consumer effectiveness (PCE) has also found to be positive and significant impact on both: attitude towards green products ($\beta = 0.199$, $p < 0.01$) and purchase intention for such products ($\beta = 0.154$, $p < 0.05$) in the model. Therefore the results validate first time to the best of our knowledge that such individual effectiveness measure effects on GPI directly and indirectly via GPA in the Indian context and hence found to be consistent with the study of (Mostafa, 2006; Tan, 2011; Kang et al., 2013). With this subject matter, Roberts (1996), Straughan and Roberts (1999) confirmed that consumers' perceived effectiveness is the single best predictor of ecologically conscious consumer behaviour. Moreover green consumers are more internally controlled and associated with belief in self towards action oriented rather than collective effectiveness imposed by society and government (Mostafa, 2006). Therefore consumers with high PCE were relatively contrast to social norms as well as government intervention, they believed that they could possibly handle the ecological issues by themselves for their own efforts (Ellen et al., 1991).

Similarly in the current Indian setting, major population are young adult i.e. below the age group of 35 and educated, and believe in self and speedy action oriented, and therefore they are more internally controlled rather than other age and non-educated group of population in taking their decision making towards the environmental sustainability and possibly they would go for higher purchasing for ecological safe products in their regular buying behaviour. The notion is that if consumers perceive that their efforts influence the environment positively, they will certainly go for environmentally friendly behaviour. Therefore the measure of perceived consumer effectiveness should be more emphasized by policymakers and green marketers via integrated marketing communication tools with the message of low waste generation, to avoid using plastic bags, use eco-carry bags, and to prefer sustainable products in their usual shopping behaviour align with the national agenda of 'Swachh Bharat Mission'.

Lastly, the construct of green purchase intention is showing a direct and highly significant influence on purchase behaviour for green products (H1, $\beta = 0.366$, $p < 0.01$). Therefore the finding validates that the expressed willingness is more effective than other behavioral measures in holding consumers' psyche to predict green purchase behaviour (Lai and Cheng, 2016). In other words, consumers are not only concerned with the ecological quality of the product but also about the environmental consequences associated with their purchase decision for such products. Hence the results i.e. purchase intention is a fundamental predictor of purchase behaviour and moreover purchase intention is driven by the measure of attitude which were found to be consistent with the recent studies of green consumer behaviour (Lai and Cheng, 2016; Kumar et al., 2017; Wei et al., 2017).

Finally, the authors expect that the findings of the present model based on 'attitude-intention-behaviour' imparts valuable inputs to academia, policymakers, and marketers to design policies and strategies from the strategic perspective of green marketing in the indigenous Indian setting.

6. Limitations and future research

The results of this empirical study validated the theoretical framework with the topic under investigation on this subject matter. However few limitations were noticed, suggesting some remarks in the possible avenues for future research in the context of green buying behaviour. First the study is limited to the particular geographical area of India i.e. Utter Pradesh. The data were collected from three major metropolitan regions using purposive convenient sampling and the subjects were constituted majorly young adult and educated segment of target population. Therefore the results can not warrant for generalization of the proposed model in the overall Indian context. Nevertheless, the results of this study confirmed that the proposed research model is fitted in most aspects with the findings of scholars from other parts of the country in the indigenous Indian setting (Khare, 2015; Paul et al., 2016; Kumar et al., 2017) and parallel with the findings of emerging market (Chan, 2001; Lai and Cheng, 2016). Next, this study evaluates the construct of purchase behaviour as expressed behaviour for general green products based on cross-sectional approach rather than actual purchase for such products. How such expressed behaviour transformed into actual behaviour is still a matter of further enquiry. Hence, future scholars should adopt longitudinal approach in their studies with focusing on changes in consumers purchase behaviour over time so as to capture actual purchase decision for green products. In addition future researchers may also confirm the underlying relationship of this model using with some other important cognitive measures such as green brand, environmental advertising, and green value, etc. with the measure of green purchase intention and green purchase behaviour so as to present a better description of green consumerism in the Indian and Asian market.

Annexure 1. Questionnaire items

Environmental Concern

EC1: I am worried about the worsening quality of the environment in India
EC2: India's environment is my major concern
EC3: I am emotionally involved in environmental protection issues in India
EC4: I often think about how the environmental quality in India can be improved.

Perceived Consumer Effectiveness

PCE1: Each person's behaviour can have a positive effect on society by signing an appeal in support of promoting the environment.
PCE2: I feel capable of helping solve the environmental problems.
PCE3: I can protect the environment by buying products that are friendly to the environment.
PCE4: I feel I can help solve natural resource problems by conserving water and energy.

Attitude towards Green Products

Environmental Concern
AGP1: I like the idea of purchasing green products.
AGP2: I have a favorable attitude towards purchasing a green version of a product
Perceived Environmental Knowledge
PEK1: I am very knowledgeable about environmental issues
PEK2: I know more about recycling than the average person.
PEK3: I know how to select products and packages that reduce the amount of landfill waste.
PEK4: I understand the environmental phrases and symbols on product package
PEK5: I know that I buy products and packages that are environmentally safe.
Green Purchase Intention
GPI1: I would consider buying products because they are less polluting.
GPI2: I would consider switching to other brands for ecological reasons.
GPI3: I intend to switch to a green version of a product.
Green Purchasing Behaviour
GPB1: When I want to buy a product, I look at the ingredients label to see if it contains things that are environmentally damaging.
GPB2: I prefer green products over non-green products when their product qualities are similar.
GPB3: I choose to buy products that are environmentally-friendly.
GPB4: I buy green products even if they are more expensive than the non-green ones

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