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What drives Generation Z to choose green apparel? Unraveling the impact of environmental knowledge, altruism and perceived innovativeness

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ABSTRACT

This study proposes to determine the influence of 'Environmental Knowledge' (EK), 'Altruism' (Atr), 'Consumer Confidence' (CC) and constructs of 'Theory of Planned Behaviour' (TPB) like Attitude" (Atd), 'Subjective Norm' (Sub) and 'Perceived behavioural control' (Pbhc) on consumers' intention to purchase 'Green Apparel Products' (GAPI). Moreover, the moderating effect of 'Perceived Innovativeness' (PInn) on the relationship between 'Attitude' (Atd), 'Subjective Norm' (Sub), 'Perceived behavioural control' (Pbhc), 'EK', 'Atr' and 'CC' was studied. To test the research model and hypothesis, a survey of 349 Generation Z consumers (18–26 years) was conducted. Cronbach's alpha and a 'Confirmatory Factor Analysis' (CFA) were used to determine the scale's reliability and validity. 'Structural Equation Modelling' (SEM) validated the given model and hypotheses. In this research, six hypotheses were tested, and it was found that three hypotheses showed a direct relationship. Specifically, the result of SEM showed that 'Atd', 'Sub' and 'CC' were positively related to GAPI. Also, six hypotheses were formulated testing the moderating role of 'PInn'. The results established that 'PInn' moderated the relationship between 'Atd', 'Sub', 'CC' and 'GAPI' significantly. This research provides a novel framework to explore the relationship between the 'EK', 'Atr' and 'CC' and Generation Z consumer's 'GAPI'.

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Environmental knowledge; altruism; consumer confidence; perceived behavioural control; green apparel; perceived innovativeness

1. Introduction

Technology, consumption patterns and rising population are considered the driving forces of environmental degradation (Gao et al. 2024; Hertwich and Peters 2009; Thoresen 2010). The root cause of the deterioration of the environment is polluting production processes (WTO Report on Environment Degradation). Unsustainable production and consumption are the primary causes of the ongoing degradation of the global ecosystem (The United Nations, Agenda 21, Chapter 4). This has forced organisations to uniquely position themselves by focusing on sustainable development. Sustainable Development is a development that meets the needs of the present without compromising the ability of the future generation to meet their own needs (Mensah, Wieck, and Rudloff 2024). Principle 8 of the United Nations Conference on Environment and Development at Rio de Janeiro in the year 1992 clearly stated, 'To achieve sustainable development and higher quality of life for all people, states should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies'. Moreover, a new sustainable development strategy entitled 'Transforming our World: The 2030 Agenda for Sustainable Development' was endorsed at the United Nations Summit on Sustainable Development in New York with the goal of safeguarding the environment. Sustainable consumption and production were prioritised as Objective 12 of the 2030 Agenda. The goal of the summit was to find ways to reduce, reuse and recycle waste, as well as raise awareness among the general public about the importance of doing so.

Dynamic individual consumption behaviour is necessary for a sustainable future (Jackson 2005; Salem et al. 2022; Schiaroli, Dangelico, and Fraccascia 2024; Tewari et al. 2022) which played a crucial role in triggering the Green Revolution. The UN defined Sustainable Consumption as 'doing more and better with less, increasing net welfare gains from economic activities by reducing resource use, degradation and pollution along the whole life cycle while increasing the quality of life'. Consumers who are mindful of the damage they are causing to the environment because of their purchasing habits are willing to spend additional money on sustainable products A. Kumar et al. (2018). Similarly, Prakash and Pathak (2017) addressed the positive association between consumer knowledge of environmental matters and behaviour. Motivating consumers to buy green products is a step in the direction of sustainable consumption, as determined by Paul, Modi, and Patel (2016). The significance of educating people about sustainable consumption so they can make informed purchasing decisions was highlighted in a UNDP report titled 'Here and Now' (Thoresen 2010). Therefore, an integral aspect of any curriculum aimed at fostering long-term sustainability must include education in responsible consuming practices.

Sustainable consumption can be used in various terminologies such as green consumption, environmentally responsible, environment friendly, or socially responsible

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consumption, which refers to buying eco-friendly products (Ghaffar and Islam 2024; Nguyen et al. 2019). The fashion and textile industry has also seen this paradigm shift to green clothing. Green clothing, organic clothing and eco-fashion are used interchangeably. It is defined as 'clothing that is designed for long lifetime use; it is produced in an ethical production system, perhaps even locally; it causes little or no environmental impact, and it makes use of eco-labeled or recycled materials' (Niinimaki 2010). It can also be defined as 'fashionable clothes that incorporate fair trade principles with sweatshop-free labor conditions while not harming the environment or workers by using biodegradable and organic cotton' (Joergens and Barnes 2006).

Sustainable clothing manufactured from environmentally friendly materials has not been seen as trendy Cho, Gupta, and Kim (2015). The authors also discovered that one's consumption of fashion has a favourable and significant effect on whether one engages in sustainable consumption of clothing. Consumers who are interested in fashion and open to new information about clothing products are more likely to be curious about ethical purchase of eco-garments (Gam 2011), and green apparel products (Joshi and Srivastava 2019; Khare, Sadachar, and Manchiraju 2020; Nguyen et al. 2019). The literature on green clothing is not sufficient, particularly from an empirical perspective specific to green apparel purchasing behaviour among Generation Z. To fill this gap, this study focuses on examining the impact of three components of TPB ('Atd', 'Sub' and 'Pbhc') and three supportive constructs ('EK', 'Atr' and 'CC') on Generation Z consumers' 'GAPI'.

Hence, this study positioned altruism and consumer confidence as essential factors, along with environmental knowledge. Literature defines altruism as the 'selfless concern for others and the environment'. It encourages individuals to support eco-friendly products as a way of contributing to societal well-being (Reimers, Magnuson, and Chao 2017; Yadav 2016); another factor, consumer confidence, the assurance consumers feel in their purchase decisions has a positive influence on green buying intent (Han et al. 2022). These two constructs will provide a comprehensive understanding of Generation Z's intentions to buy green apparel. In literature, trust and customer confidence are sometimes used synonymously. Therefore, a distinction is needed, as suggested by Han et al. (2022) and Jørgensen, Pedersen, and Skard (2022), which highlights that consumer confidence reflects the consumer's internal ability to make informed decisions and choices, while trust aligns with the customer's external belief in competence, accuracy and integrity of a product, service, brand or sellers.

Further, Generation Z represents a suitable demographic to study green purchasing behaviour on account of its considerable environmental awareness and consumption patterns. Contrary to the previous generation, this generational cohort is more likely to consider sustainability while making purchase decisions, and it views eco-friendly products as an integral part of a socially responsible lifestyle (Djafarova and Foots 2022).

Moreover, researchers are increasingly using TPB (Ajzen 1991) to characterise a wide range of relationships pertaining to environmentally responsible consumer behaviour by creating links between the cognitive variables ('Atd', 'Sub' and 'Pbhc') and behavioural intention. However, there lacks literary evidence in explaining the connections between Atd, Sub, Pbhc, EK and Atr as they relate to the propensity of Generation Z consumers 'GAPI'. The relevance of "CC" in Generation Z consumers' 'GAPI' is typically neglected in the literature, despite the fact that many prior studies have focused primarily on studying numerous antecedents to purchasing green apparel. Also, the moderating role of 'PInn' on the relation between 'Atd', 'Sub', 'Pbhc', 'EK', 'Atr', 'CC' and GAPI is missing. This study sets out to answer the following research questions in an effort to fill in the knowledge gaps exposed by a thorough examination of the relevant literature:

RQ1: How do the determinants of TPB – 'Atd', 'Sub' and 'Pbhc' influences 'GAPI'?

RQ2: How do 'EK', 'Atr' and 'CC' influences 'GAPI'?

RQ3: How does 'PInn' impacts the strength of the relationship between 3(a) Atd' and 'GAPI'; 3(b) 'Sub' and 'GAPI' will be stronger; 3(c) 'Pbhc' and 'GAPI'; 3(d) 'EK' and 'GAPI'; 3(e) 'Atr' and 'GAPI' and 3(f) 'CC' and 'GAPI'.

Based on the above discussions, this study offers dyadic contributions to the existing literature on green clothing. First, from the theoretical perspective, the study utilised the Theory of Planned Behaviour (TPB) to explore the relationships between Environmental Knowledge (EK), Altruism (Atr) and Consumer Confidence (CC). Further, the moderating role of Perceived Innovativeness (PInn) in green apparel purchases, specifically for Generation Z consumers, is also ascertained. Second, there exist limited empirical studies focusing on the green clothing purchase intentions of Generation Z – a cohort characterised by unique buying behaviour and environmental consciousness reflecting distinct motivations and inhibitions (Masserini, Bini, and Difonzo 2024). The majority of studies in green apparel focus on Millennials and Generation X, leaving gaps in insights into purchasing intentions, social norms and perceived behavioural control at the nascent stage (Joshi and Srivastava 2019; N. Kumar, Garg, and Singh 2022). Therefore, this research is uniquely positioned to address these theoretical and empirical perspectives by examining Generation Z consumers' green apparel purchase intentions.

The paper will proceed as described below. Section 2 follows theoretical foundation, a conceptual framework, a detailed explanation of the study's constructs, and an outline of its hypotheses. In section 3, the research methodology is discussed. The analysis of primary results is presented in section 4, and their interpretation is provided in section 5. The paper's final section discusses the implications along with the paper's shortcomings and recommendations for future research.

2. Theoretical and conceptual framework

The framework of the research study is grounded in established theories of consumer behaviour to explore the Green Apparel Purchase Intention of Gen Z. The Theory of Planned Behaviour (TPB) forms the main theoretical lens for analysing

customer intentions. Moreover, various constructs like Attitude (Atd), Subjective Norm (Sub) and Perceived Behavioural Control (Pbhc) are better explained using TPB (Ajzen 1991; Nguyen et al. 2019). This theory is used in various research areas including entrepreneurial intention of students (Boubker 2024); intention of tomato growers towards pesticides (Pirmoghni et al. 2024) and intention towards artificial intelligence (Sanusi, Ayanwale, and Tolorunleke 2024).

2.1. Attitude (Atd)′ and subjective norm (Sub)

Attitude is defined as an individual's favourable or unfavourable assessment towards a particular behaviour. Previous research studies show that attitude has a significant relationship with the intention (Echchad and Ghaith 2022; Patel, Trivedi, and Yagnik 2020; Sun, Li, and Wang 2022). Moreover, it is observed through analysis of existing literature that 'Atd' significantly impacts the consumers' 'GAPI'. Moreover, as per Varshneya, Pandey, and Das (2017), customer attitude towards organic clothing results is found important. Another study by Rausch and Kopplin (2021) analysed the significant impact of sustainable clothing on intention. Thus, we propose that -

Besides attitude, it is another significant construct which impacts behavioural intentions. Paul, Modi, and Patel (2016) analysed 'sub' as societal pressure to do task. Yang et al. (2024) discussed that the biosphere and altruistic values are major determinants impacting subjective perception of individuals. Moreover, Roh, Seok, and Kim (2022) assessed the intentions towards organic food on the basis of theory of consumption value.

H1: 'Atd' positively influences Generation Z consumers' GAPI'.

H2: 'Sub' positively influences Generation Z consumers' 'GAPI'.

2.2. Perceived behavioural control (Pbhc)

Ajzen (1991) defined 'Pbhc' as 'perceived ease or difficulty of performing the behavior'. The construct of 'Pbhc' serves as an antecedent of 'control beliefs', and the higher the 'Pbhc', the more strongly an individual intend to engage in the behaviour (Lopez, Mahdzan, and Rahman 2024). It is based on what you have learned and the challenges you expect to face (Ajzen 1991). Two categories of 'Pbhc' exist: (a) the individual's sense of control over external personal conditions and situations like time and money, and (b) the individual's perception of control over internal personal resources like the requisite skill and confidence (Ajzen 1991; Kidwell and Jewell 2003).

Previous research has shown that 'Pbhc' directly affects 'GAPI' (Maichum, Parichatnon, and Peng 2016; Paul, Modi, and Patel 2016). 'Pbhc' was discovered to affect consumers' 'GAPI significantly'. Joshi and Srivastava (2019) proposed a research model to investigate the impact of six antecedents on consumers" green apparel purchase intention, one being "Pbhc". The research indicates that "Pbhc" has a favourable effect on buyers. For Vietnamese urban young adults, Nguyen et al. (2019) highlighted that a higher 'Pbhc' would lead to more 'GAPI', and they found that the 'Pbhc' was substantially associated with 'GAPI'. According to research by Kumar, Garg, and Singh (2022), customers' 'GAPI' are significantly affected by 'Pbhc'. Kumar, Garg, and Singh (2022) addressed that 'Pbhc' has a substantial influence on 'GAPI'. Hence, this study postulates the following hypotheses.

H3: 'Pbhc' positively influences Generation Z consumers' 'GAPI'.

2.3. Supportive constructs

2.3.1. Environmental knowledge (EK)

Miah et al. (2024) defines EK as 'the factual information that individuals have about the environment, its ecology, and the influence of human actions on the environment/ecology'. EK can be analysed as subjective knowledge (perceived knowledge) or objective knowledge (actual knowledge) (Vicente-Molina, Ferna'ndez-Sa'inz, and Izagirre-Olaizola 2013).

Consumers' knowledge is considered a critical factor in a person's decision-making process (Zhang and Lang 2018). It has two dimensions – Familiarity (accumulated consumer experience) and product knowledge (sum of product class information and rules stored in memory) (Philippe and Ngobo 1999). Product familiarity is defined as how familiar, formed, or aware a person is about a product (Josiassen et al. 2008) and the degree of knowledge a person has about a product as well as the level to which the product will fulfill its promise (Lin and Zhen 2005). Product knowledge influences 'Atd' (Lin and Chen 2006) and significantly affects purchase intention (Afzali and Ahmed 2016; Bettman and Park 1980). Consumers who have greater EK show more significant environmental concern (Kim and Damhorst 1998). Arcury (1990) established that increased knowledge about the environment changes environmental 'Atd' and found that EK is consistently and positively related to environmental 'Atd'.

Studies have documented the observation that consumers' purchase intention is affected by environmental knowledge. Consumers who are more knowledgeable and experienced about sustainable fashion items have more favourable purchasing intentions (Khare and Kautish 2022). Khare and Kautish (2022) studied how past behaviour, knowledge and peer pressure affected perceptions of the advantages of wearing green clothing. The analysis of the extant literature highlights that the higher is EK, the higher the possibility of consumers' purchase intention for green products (Lee et al. 2012; Vicente-Molina, Ferna'ndez-Sa'inz, and Izagirre-Olaizola 2013). Khare and Kautish (2022) focused on the impact of 'EK' on consumers' 'GAPI' and they found that the relationship is significant.

However, to date, the influence of 'EK' has still not been tested for Generation Z consumers. Hence, this study postulates the following hypothesis:

H4: 'EK' positively influences Generation Z consumers' 'GAPI'.

2.3.2. Altruism (Atr)

Atr is a condition where consumers protect the environment influenced by the intensity of moral obligation (Pastor et al. 2024; Schwartz 1968, 1977). Hoffman, Thornton, and Manis (1978) defined ATR as 'a helping or sharing behaviour that promotes the welfare of others without conscious regard for one's interest'. Moral obligation is generated by the activation of the individual's cognitive structure of norms and values (Schwartz and Shalom 1977). Motivating yourself to help others is altruistic since your actions can have a spillover effect on the world around you (Powers and Hopkins 2006; Reimers, Magnuson, and Chao 2017). Green Atr can be defined as the desire of consumers to help the environment and others without expecting anything in return. It originates from people's sense of self-imposed responsibility to do the right thing regardless of what other people think. To fill this gap, this study hypothesised that:

H5: 'Atr' positively influences Generation Z consumers' 'GAPI'.

2.3.3. Consumer confidence (CC)

Siegrist, Earle, and Gutscher (2003) defined confidence as 'the belief that future events will occur as expected'. Bearden, Hardesty, and Rose (2001) defined consumer self-confidence as 'the extent to which an individual feels capable and assured with respect to his or her marketplace decisions and behaviors'. The ability to grasp CC is essential when trying to predict customer purchases (Benhabib and Spiegel 2019). Confidence in a product, brand, or one's decision-making abilities is at the heart of the concept of consumer confidence (Flanagan et al. 2005). Confidence is one of the positive factors of buying intent, as stated by Howard (1969). While consumer confidence has been widely utilised in economic research, its application to behavioural studies has been more limited. According to research by Choshaly and Tih (2015), customers are more likely to intend to buy eco-labelled products if they have faith in the label. Similarly, Liobikienė, Mandravickaitė, and Bernatonienė (2016) revealed that consumers' confidence in green products was a significant factor in buying green. Consumer confidence is positively correlated with green buying intent, according to research by Han et al. (2022). According to the available literature, the influence of consumer confidence on green clothes has not yet been investigated. Given the novelty of eco-friendly clothes in the context of this study, young consumers' purchasing decisions will be heavily influenced by their perceptions of consumer confidence. Because of this, we have included 'CC' as a key component of the whole theoretical framework. Thus, we hypothesised that:

H6: 'CC' positively influences Generation Z consumers' 'GAPI'.

2.4. The moderating role of perceived innovativeness (Plnn)

Businesses across geographies are coming up with creative answers to recurring sustainability problems. Thus, it is important to examine sustainable purchasing behaviour in conjunction with innovation, as the two concepts are inextricably linked (Jaiswal and Kant 2018). Innovative consumers are those who prefer to try new things rather than stick with what they have always done in terms of their product preferences and purchasing behaviours (Jørgensen, Pedersen, and Skard 2022). Fu and Elliott (2013) identify that 'Perceived product innovativeness reflects the degree to which a new product is viewed as possessing new and unique attributes and features as compared to other products in the category from a consumer's perspective'. When new high-tech items show much originality, consumers tend to favour them over established alternatives (Huang, Teo, and Zhou 2020).

Choe, Kim, and Hwang (2021) investigated the hypothesis that the correlation between Atd, SubN, Pbhc and BI would change if consumers had a favourable impression of the level of innovation in the product. This study asserts, based on the aforementioned empirical findings, that the degree to which customers perceive green apparel to be creative can amplify the influence of identified predictors on customers' GAPI. Therefore, we hypothesised that:

H7: The relationship between Atd' and 'GAPI' is moderated by 'Plnn'

H8: The relationship between "Sub' and 'GAPI' is moderated by 'Plnn'

H9: The relationship between Pbhc' and 'GAPI' is moderated by 'Plnn'

H10: The relationship between EK' and 'GAPI' is moderated by 'Plnn'

H11: The relationship among 'Atr' and 'GAPI' is moderated by 'Plnn'

H12: The relationship between CC' and 'GAPI' is moderated by 'Plnn'

The research model is depicted in Figure 1, showing above stated hypotheses.

3. Research methodology

The research methodology consists of research instruments and measurement items, data collection and profile of respondents, and data analysis. Following a thorough assessment of the literature on the 'TPB' constructs, 'EK', 'Atr' and 'CC' with respect to green apparel 'GAPI', a questionnaire with a seven-point Likert scale and 30 items are created, as seen in Figure 1. The validity and reliability of survey findings are then confirmed. An online survey is administered, EFA (Exploratory Factor Analysis)

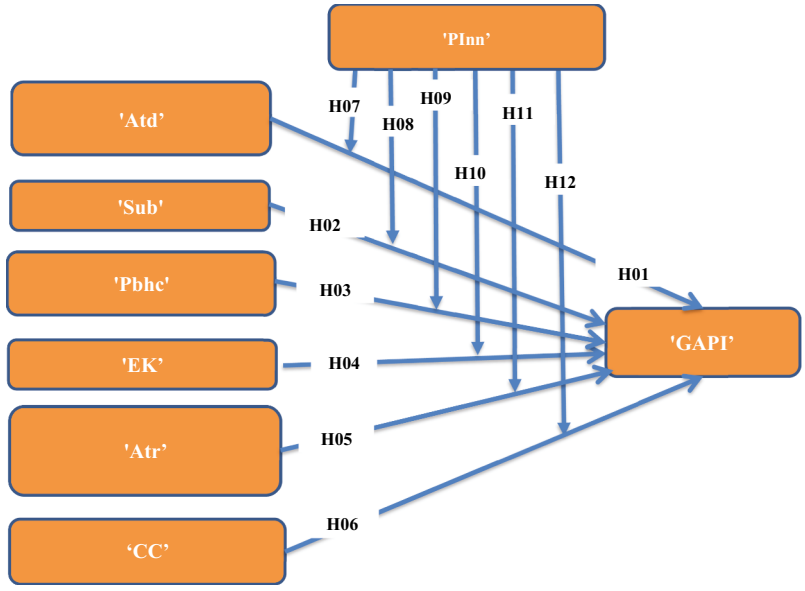


Figure 1. The proposed model.

and SEM (Structural Equation Model) were used in testing the hypothesis to investigate the link between variables.

3.1. Measures and questionnaire development

The questions for this self-reported online survey were broken up into two parts. In the first section, we focus on the demographics of the respondents (Gender, Age, Educational level). The second section is concerned with questions on green apparel products. A 30-item questionnaire with eight constructs was utilised to gather the data. The study uses seven primary constructs – 'Atd', 'Sub', 'Pbhc', 'EK', 'Atr', 'CC', 'PInn' and 'GAPI' from already validated scales but was modified according to the objective of the study. One indicated 'strongly disagree', and seven indicated 'strongly agree' on the seven-point Likert scale that was used to evaluate constructs. The measurement items of all the constructs are mentioned in Table 1.

Table 1. Constructs and measurement items.

Construct	Measurement Items	Source
'EK'	(1) 'I am aware of green consumption practices'	Teng, Lu, and Huang (2018)
	(2) 'I understand the interlinkage of human beings with the ecosystem'.	
	(3) 'I know how the apparel sector is impacted by natural resources and ecosystem'	
	(4) 'I understand the need of sustainable development in apparel sector'	
	(5) 'I understand how apparel operations impact the entire ecosystem'	
'Atr'	(1) 'I like actions that helps individuals or society more than me'	Tewari et al. (2022).
	(2) 'I prefer well-being of others'	
	(3) 'I understand that requirement of others is pretty important'	
	(4) 'I believe that social responsibility is of utmost importance'	
	(5) 'I believe that sustainable clothing helps in getting sustainability'.	
'CC'	(1) 'I am aware how to assess the green clothing information'	D'Souza et al. (2022)
	(2) 'I am pretty confident to research for green clothing'	
	(3) 'I prefer buying from manufacturer who adopt sustainable practices'	
'Atd'	(1) 'I recommend to others the purchase of green apparels'	Wu and Chen (2014); Nguyen et al. (2019)
	(2) 'I understand the benefits of purchasing green apparels'.	
	(3) 'I feel delighted by using green clothing'	
	(4) 'Purchasing green apparels gives me satisfaction'	
'Sub'	(1) 'people make me feel that green apparel products are required'	Ko and Jin (2017);Wu and Chen (2014)
	(2) 'I am motivated to fulfill people expectations by using green apparels'	
	(3) 'I feel that people prefer individuals who buy green apparels'	
	(4) 'Social trends and society values facilitates adoption of green apparels'	
'Pbhc'	(1) 'I believe I can purchase green apparel products'.	Bong and Jin (2017); Maichum, Parichatnon, and Peng (2016)
	(2) 'I can easily locate stores for buying green apparels'	
	(3) 'I considered myself capable enough to purchase green apparels'	
'GAPI'	(1) 'I intend to buy green apparel in the future'.	Tewari et al. (2022).
	(2) 'I predict that I will buy green apparel in the future'.	
	(3) 'I hope to buy green clothing soon'.	
'PInn'	(1) 'Green apparels are technologically new and innovative'.	Ruiz-Alba et al. (2022)
	(2) 'Green apparels are technologically advanced'.	
	(3) 'The technology of Green apparel allows me to receive the best benefits'.	
	(4) 'I am confident that Green apparel will be at the forefront of the future market'.	

A table presenting constructs, their corresponding measurement items, and sources.

3.2. Data collection and profile of respondents

Initial plans for a closed-ended, structured questionnaire were drawn up using pre-validated scales with some minor adjustments in wordings, sequencing, etc. Prior to the actual fieldwork, pre-testing, and pilot testing were conducted. The first version of the questionnaire was evaluated and examined by five experts working in the field of eco-friendly clothes. Based on their feedback, a few existing minor issues associated with the language and order of the questions were fixed. The reliability of the instruments was then tested in a pilot study with 55 participants. After all the study's goals had been met, a final questionnaire was administered, and information was gathered by contacting retailers in Ghaziabad and Lucknow (in India) who stock environmentally friendly clothing to compile a list of Generation Z shoppers who have purchased these items. Ghaziabad and Lucknow are in Uttar Pradesh, the most densely populated state of India. Moreover, Lucknow, the capital of Uttar Pradesh, has a large frequency of Generation Z people, who form a pivotal segment of green apparel usage. Moreover, Ghaziabad, part of the Delhi-NCR Region, has the major presence of Generation Z consumers, which also constitutes a critical segment of green apparel.

We assured respondents that any data they provide will be utilised exclusively for research. Generation Z Consumer data will not be shared with outside parties. Subsequently, we attempted to reach out to these customers multiple times using their preferred internet medium (Email, WhatsApp, Telegram). Data was collected and a purposeful sampling strategy was used to locate and contact respondents who made purchases of environmentally friendly clothes during that time. However, to avoid biasness, after selecting. The advantage of purposive sampling is selecting the right respondents for data collection purposes. Moreover, using this sampling technique, respondents are more likely to have adequate knowledge related to research objectives, enhancing the probability of getting relevant information. In the context of similar studies, Taljaard, Sonnenberg, and Jacobs (2018) used purposive sampling to investigate factors affecting males' motivation towards buying eco-friendly apparel in South Africa. Moreover, Pedro Pereira Luzio and Lemke (2013) used purposive sampling to analyse consumer demands for green products.

The period of data collection was between July and October 2023. There was a total of 380 people who were sent a link to the survey, and 365 people who actually took the survey, for a response rate of 96.05%. A total of 349 responses were included in the study after invalid or missing data was removed. For collecting the data, ethical approval was taken from the ethical committee of IMS Ghaziabad-B School, India. According to Kline (2011), 'the sample size for SEM should be 10:1', meaning that there should be at least 10 responses for each item. The minimum number of replies needed for the study was 300 because there were 30 items.

4. Data analysis and findings

4.1. Demographic characteristics

Amongst the 349 respondents, 61.5% are males and 38.5% are female. The age range of the participants in this study was 18 to 26 (Djafarova and Foots 2022). Sixty-two percent of those who answered the survey were between the age of 24 and 26, with the next largest group being between the ages of 21 and 23. Around 49% of those who answered the survey had postgraduate degrees, whereas only about a quarter (25%) had graduate degrees.

4.2. Measurement model

SPSS AMOS was used to compute the measurement model and test the hypothesis using the maximum likelihood estimation approach with covariance-based structural equation modelling. To evaluate the effectiveness of the measurement model, confirmatory factor analysis (CFA) was used. First, the CFA findings demonstrate a superb fit—$\chi2 = 1027.282$, $\chi2/pdf = 2.846$, $CFI = 0.937$, $TLI = 0.924$, $IFI = 0.937$, $RMSEA = 0.063$, $SRMR = 0.0394$—which is as per Hu and Bentler (1999).

The reliability test looked at the level of consistency as well as their homogeneity and dimensionality. Table 2 displays the factor loading values, CR value, AVE value and Cronbach's alpha. Convergent validity was established because all item factor loadings and AVE were greater than 0.6 and 0.5, respectively, as recommended by Fornell and Larcker (1981). Table 3 shows construct's discriminant validity. Comparisons were made between the squared multiple correlations between measurements and AVE to determine the discriminant validity of all constructs; AVE was shown to be more significant for each construct item. Discriminant validity was evaluated using the maximum shared squared variance (MSV) and average shared squared variance (ASV) (Hair et al. 2014). Because the square root of AVE was more significant than the correlation value between the reflective components, the model met the discriminant validity criterion (Fornell and Larcker 1981).

The common method bias was investigated using Harman's single-factor test. It was shown that the one component explained 23.796% of the overall variation, ruling out the possibility of bias. The total variation should be less than 50%, as suggested by Podsakoff et al. (2003).

Homoscedasticity, multicollinearity, normal distribution and linear relationships are the four underlying assumptions of multivariate analysis. The initial step in identifying the normality of the data was to utilise the skewness and kurtosis indices. The normality of the data was determined since both the skewness and the kurtosis values were within the allowable parameters. As the VIF values were less than 3, multicollinearity is unlikely to have been an issue. The conventional residual scatter plot was analysed to establish homoscedasticity. It was found that the residuals were strewn about diagonally. It is proof of homoscedasticity.

4.3. Structural model and testing of hypothesis

The concept and convergent validity were then evaluated using confirmatory factor analysis (CFA) (Hair et al. 2014). Single-factor models without measurement errors are considered to be the null model ($\chi2 = 460.026$, $df = 265$) (Hair et al. 2014), and this model is statistically significant at the 0.000 level. The value of $\chi2/pdf = 1.735$ for the normed chi-square was within the allowable range. There was a high level of agreement between the data and the model, as

Table 2. Measurement model: reliability and validity.

Notation	Factor Loading	Cronbach's Alpha	CR	AVE	MSV
'EK'					
EK1	0.774	0.920	0.92	0.7	0.582
EK2	0.88				
EK3	0.846				
EK4	0.847				
EK5	0.83				
'Atr'					
Atr1	0.893	0.935	0.958	0.821	0.815
Atr2	0.887				
Atr3	0.892				
Atr4	0.898				
Atr5	0.961				
'CC'					
CC1	0.870	0.926	0.927	0.808	0.730
CC2	0.933				
CC3	0.893				
'Atd'					
Atd1	0.849	0.896	0.947	0.817	0.815
Atd2	0.941				
Atd3	0.938				
Atd4	0.885				
'Sub's					
Sub1	0.769	0.853	0.852	0.657	0.657
Sub2	0.829				
Sub3	0.833				
'Pbhc'					
Pbhc1	0.846	0.890	0.937	0.833	0.815
Pbhc2	0.975				
Pbhc3	0.912				
'GAPI'					
GAPI1	0.783	0.857	0.83	0.62	0.648
GAPI2	0.763				
GAPI3	0.816				
'PInn'					
PInn1	0.903	0.947	0.947	0.817	0.788
PInn2	0.932				
PInn3	0.892				
PInn4	0.888				

A table presenting the reliability and validity of the measurement model, including factor loadings, Cronbach's Alpha (CA), Composite Reliability (CR), Average Variance Extracted (AVE) and Maximum Shared Variance (MSV).

Table 3. Correlation between the constructs.

	'Atd'	'Sub'	'Pbh'	'EK'	'Atr'	'CC'	'GAPI'	'PInn'
'Atd'	**0.904**							
'Sub'	0.784***	**0.811**						
'Pbh'	0.887***	0.810***	**0.912**					
'EK'	0.763***	0.697***	0.647***	**0.837**				
'Atr'	0.830***	0.762***	0.903***	0.655***	**0.906**			
'CC'	0.755***	0.697***	0.854***	0.550***	0.814***	**0.899**		
'GAPI'	0.805***	0.670***	0.754***	0.669***	0.736***	0.804***	**0.831**	
'PInn'	0.714***	0.727***	0.871***	0.519***	0.887***	0.850***	0.718***	**0.904**

Significance at: ***$p < 0.001$.

A table presenting the correlation matrix between the constructs, with significance levels indicated. Diagonal elements represent the square root of the Average Variance Extracted (AVE), while off-diagonal elements show the correlation coefficients.

indicated by the statistics (Hair et al. 2014) – 'goodness-of-fit index (GFI) = 0.861; incremental fit index (IFI) = 0.942; non-normed fit index (NNFI)/Tucker-Lewis index (TLI) = 0.928; comparative fit index (CFI) = 0.942'. The current model showed an RMSEA of 0.063, which is an excellent fit for the data. An RMSEA value below 0.08 is desirable.

Six hypotheses were proposed, showing a link between the factors in the model. Atd ($\beta = 0.534$, $t = 3.138$, $p < .01$), Sub ($\beta = 0.176$, $t = 1.960$, $p < .05$) and CC ($\beta = 0.741$, $t = 7.427$, $p < .001$) positively influences GAPI.

4.4. Moderating role of perceived innovativeness

To examine moderating factors, we utilised PROCESS Macros 4.1 for SPSS 22.0. In particular, we looked at how 'PInn' influenced the connection between 'Atd's, 'Sub', 'Pbh', 'EK', 'Atr', 'CC' and 'GAPI' using Model 1 of the PROCESS Macros for first-stage moderation. Results in Table 4 show that PInn positively moderates the association between 'Atd' and 'GAPI' 'Sub' and 'GAPI' and 'CC' and 'GAPI'.

Table 4. Moderation results.

	Coeff	se	t	p	LLCI	ULCI	Moderation
Atd x PInn	0.1457	0.0727	2.0034	0.0459	0.2887	0.0027	Yes
Sub x PInn	0.1801	0.0722	2.4943	0.0131	0.3222	0.0381	Yes
Pbh x PInn	−0.0033	0.0150	−0.2221	0.8243	−0.0328	0.0261	No
EK x PInn	−0.0064	0.0121	−0.5289	0.5955	−0.0302	0.0173	No
Atr x PInn	−0.1323	0.0716	−1.8476	0.0655	−0.2731	0.0085	No
CC x PInn	0.0442	0.0209	2.1083	0.0357	0.0854	0.0030	Yes

A table presenting the moderation results of various constructs interacting with perceived innovativeness (PInn). The columns include Coefficients (Coeff), Standard Error (se), t-values (t), *p*-values (p), Lower-Level Confidence Interval (LLCI), Upper-Level Confidence Interval (ULCI) and whether moderation is significant (Yes/No).

5. Discussion

The present study tested the appropriateness of the Theory of Planned Behaviour (TPB) in explaining consumers' intention to purchase green clothes. If consumers believe their activities can have a positive effect on the environment, they are more likely to engage in greener garment purchasing intentions. These consumers also tend to favour eco-friendly clothing since they are convinced that their purchasing practices have a significant impact on the environment.

The result shows that Atd influences consumers' purchase intention towards green apparel products significantly, i.e. H1 is supported. The result is in line with the result of Echchad and Ghaith (2022); Patel, Trivedi, and Yagnik (2020); Sun, Li, and Wang (2022). This shows that when consumers are motivated, then they are motivated to purchase it (Kumar et al. 2023). The result also indicated that H2 is supported. This implies that 'Sub' positively affects consumers' purchase intention towards green apparel products. The findings are consistent with Zheng and Chi (2015), who posited that social pressure and willingness to comply with such pressure positively influences the purchase intention of consumers. Our finding also reveals that people important to consumers purchase green apparel products, and the purchase intention of consumers towards green apparel products is positive. The result of this study is found to be in line with Joshi and Srivastava (2019), who found that social information positively influences the purchase intention of young consumers. Our findings are also consistent with Nguyen et al. (2019) and La Rosa and Johnson Jorgensen (2021). So, the result clearly demonstrates that the higher the 'Sub', the stronger the consumer's intention to purchase green apparel products. The intention to buy sustainable clothing was found to be influenced by family and friends. This is a result of how noticeable sustainable clothing is when worn by relatives and friends. People with higher levels of social consciousness are said to be more environmentally conscious, more engaged in recycling, and more likely to buy eco-friendly clothing. Brand ambassadors can further help to advocate its importance and maximise its usage. Appreciating the people who use green apparel on social media platforms (with their prior consent) can encourage others to advance its usage. Moreover, group discounts can be offered to catch the interest of the people and maximise green apparel sales.

The research found that CC significantly impacts the 'GAPIs' of customers in Generation Z. This gives support to H6. This illustrates that consumers' propensity to buy is influenced favourably by their level of confidence in the new technology, product, or brand, i.e. how competent and assured they feel in making judgements and acting in the market (Bearden, Hardesty, and Rose 2001). In other words, the level of confidence Generation Z consumers have in environmentally responsible garments is a direct result of their judgements of the safety and environmental friendliness of those products. The findings corroborated the assertions made by Choshaly and Tih (2015), D'Souza et al. (2022), Han et al. (2022) and Liobikienė, Mandravickaitė, and Bernatonienė (2016).

This research contributes to existing literature by exploring the moderating role of 'PInn' in shaping the purchasing decisions of Generation Z with regard to sustainable fashion. Results showed that 'PInn' moderated the effect of 'Atd', 'Sub' and 'CC' on Generation Z consumers' propensity to purchase eco-friendly garments. As a result, Hypotheses 7, 8 and 12 are supported. The possibility that consumers with heavy environmental responsibilities will purchase eco-friendly apparel if they are convinced of the product's cutting-edge design. This result is consistent with Choe, Kim, and Hwang (2021) and Fu and Elliott (2013), which showed that 'PInn' can be used as a moderator influencing 'GAPI'.

5.1. Theoretical implications

This study has the following implications. Firstly, this paper adds to the growing body of research and presents TPB as a best-fit theory for research related to green apparel products. This research fills the gap in the current literature, which is mainly concerned with green products. It has examined the role of 'Atd', 'Sub', 'Pbh', 'EK', 'Atr' and 'CC' on Generation Z consumers' 'GAPI'. The results of this study can provide a systematic and detailed view into Generation Z consumers" intention to purchase green apparel using this integrated model. Secondly, Generation Z shoppers lack confidence in their decision to buy eco-friendly clothing. It was discovered that the information consumers take in and their level of confidence in a product are major factors in the consumers' decisions to make a buy. This contribution enriches literature. In addition, this research contributes to the current body of literature by establishing new links between previously established theoretical frameworks. In particular, the current study makes a novel attempt in investigating the moderating impact of 'PInn' on the connection between 'Atd', 'Sub', 'Pbh', 'EK', 'Atr', 'CC' and 'GAPI' and one of the few studies to investigate the effect of personal innovativeness on consumers' green product purchase intention. There is a dearth of research in the existing literature on the moderating effect of 'PInn' on the intention to purchase eco-friendly garments. As a result, our

research aimed to help fill that gap. Therefore, 'PInn' should be employed as part of the marketing mix for eco-friendly clothing brands to encourage consumers to make purchases. The traditional TPB approach considers that attitude is impacted by rational decision-making; the presented study extends the theoretical framework by including the environmental knowledge dimension, which plays a significant role in transforming pro-environmental situations. Besides this, incorporating altruism induces a moral perspective to behaviour, which signifies customers' intentions to serve society and conserve the environment rather than only self-benefits. Additionally, it is inferred that due to the high cost of green apparel, some customers are unable to purchase it. Therefore, companies are suggested to produce cost-effective products. Also, AI-integrated e-commerce platforms can be developed to enhance customer experience. It is equally important to analyse ethical considerations that are crucial in improving sustainability. Moreover, it is seen that environmental knowledge impacts rational decision-making towards purchasing green apparel.

5.2. Practical implications

The presented research study has the following practical implications:

(a) Marketing campaigns must be started to sensitise Gen Z about sustainability aspects and the importance of adopting green apparel. It can be done using various methods, including video teasers, creative infographics, news channels, social media and content marketing.
(b) Organisations need to invest in high-tech advanced technologies to bring green innovative product designs appealing to Gen Z.
(c) Certifications for attaining sustainability in green apparel, such as B Corp certification and the Global Reporting Initiative (GRI) are needed to bring transparency among customers. Greenwashing is a serious concern, where customers suspect the companies' statements towards sustainability. This problem can be eliminated using third-party certifications that can provide reliable results.
(d) Brands must advertise their products using eco-labelling techniques and advanced technologies like blockchain to ensure traceability and transparency throughout the value chain. Moreover, organisations can develop gamification online platforms, where the customers can be asked to watch content related to sustainability; accordingly, points can be earned, which can be used as discounts for buying green apparel.
(e) Marketing campaigns must be designed to enhance ethical and responsibility aspects to a greater level, thus facilitating the customer to purchase green apparel, resulting in reduced environmental issues. Sustainable influences can be hired to disseminate the importance of green apparel in today's market landscape and help maximise sales, thus overcoming ecological challenges.
(f) To make the shopping experience interactive, digital technologies, like augmented reality, can be used; using this, customers can feel delighted, and it can help enhance their attitude towards buying green apparel.
(g) Satisfied customers can be asked to share their experience using green apparel and can get discounts for recommendations.
(h) Many people refrain from using green apparel because of its high cost. Therefore, managers must optimise the production processes and reduce costs to provide green apparel at affordable prices.

6. Limitations and directions of future research

It is essential to keep the study's limitations in mind when interpreting the results. To begin, the focus of this research is entirely on the intentions of customers to purchase environmentally friendly apparel. Post-purchase actions were not considered in this analysis. Future research can build on this one by concentrating on both pre- and post-purchase consumer attitudes and behaviours, including satisfaction, loyalty, positive experiences and repeat purchases. Second, an online poll was used to compile the study's data. Data collection over the Internet is widespread, but it also raises the possibility of mistakes. Additional methods of data gathering should be used in future research to overcome this restriction. Thirdly, demographic information about consumers and their intentions to buy green cosmetics is not considered in this study. Examining how demographic data acts as a moderator or control variable can be the focus of future research.

On top of that, the study solely considers the intentions of Generation Z consumers. The result may be different for different customers. This study highlights the need for future research to focus on diverse generations of consumers to get a more precise answer. Lastly, the focus of the research was on Generation Z consumers, which makes the generalisability of the study's findings debatable. Future studies can use probability sampling techniques for enhanced generalisability of the study.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data availability statement

Authors agree to make data and materials supporting the results or analyses presented in their paper available upon reasonable request.

Ethical statement

This study received ethical approval from the IMS Ghaziabad Ethical Review Committee. No ethical concerns were noted. Written informed consent was obtained from all participants via signed forms, following the principles of the Declaration of Helsinki.

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