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Why do consumers buy recycled shoes? An amalgamation of the theory of reasoned action and the theory of planned behaviour

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The footwear industry's transition to a circular economy is an essential for sustainable development. The emerging recycled shoe production may lead to sustainable consumption in the footwear industry. Consumers are now more cognizant of the negative effects of their shopping choices. We studied the factors influencing consumers' intentions of buying recycled shoes. We applied the theory of reasoned action (TRA) and the theory of planned behaviour (TPB). As this is an emerging trend, there is a dearth of sufficient literature regarding sustainable recycled shoe purchase behaviour. We aimed to fill this broad gap with this empirical research. We found that perceived environmental knowledge, subjective norms, sustainable label awareness, and shoe choice motives influenced attitude, and attitude, word of mouth, and environmental consciousness shaped purchase intentions. Sustainable label awareness, shoe surplus, and purchase intentions affected purchase behaviour. The study is beneficial for policymakers and managers of companies for making decisions related to footwear product positioning and targeting.

KEYWORDS

circular economy, sustainable shoes purchase, consumer behaviour, sustainable label awareness, sustainable consumption, theory of reasoned action (TRA), theory of planned behaviour (TPB)

Introduction

The awareness and consumption of sustainable products has penetrated the consumer mindset (Carrington et al., 2014). The fashion cycles and democratization of fashion has become a topic of great debate (Atik et al., 2022). As 'fast fashion' leads to higher consumption converting to higher wastage, there is a need for more sustainable practices leading towards achieving sustainable development goals. Apparel also includes footwear, which is made with a greater amount of plastic and releases microplastics from shoe sole fragments. These microplastics from shoe fragments are 57-229 μm in size and have been found to directly affect plant growth and photosynthesis activity (Lee et al., 2022). This study also found that such fragments from shoe soles can impair soil and suggested using materials having less harmful environmental effects. This polluting effect of shoes has been completely overlooked over the years (Horton, 2022). Long-term solutions as

suggested by [Ikram \(2022\)](#) include changing the production materials to reduce resource consumption. The immediate solution to this has been found in the circular economy concept, i.e., using recycled footwear as it leads to less waste. There is a research gap in emerging economies studying the concept of sustainable footwear and the circular economy ([Dwivedi et al., 2022](#)).

Sustainability issues

The footwear industry contributes around 1.4% of global greenhouse gas (GHG) emissions, whereas the air travel industry contributes around 2.5% of emissions. It takes around 40 years for a shoe to start decomposing in a landfill. The major carbon emission is during the stage of material processing and manufacturing in the lifecycle of a shoe. The environmental issues include high energy consumption, water consumption, chemical consumption, waste generation, and CO₂ emissions. The plastic pollution caused by shoe soles has been completely overlooked along with other sources such as artificial sports pitches and plastic used in construction ([Horton, 2022](#)). It has been found that shoes contain high concentrations of hazardous substances exceeding recommended sustainability limits for synthetic shoes ([Herva et al., 2011](#)). The chemicals used in production of plastic shoe soles have serious effects on aquatic organisms due to microplastic toxicity ([Kim et al., 2022](#)).

The circular economy and circular fashion

Sustainability has been defined as the “balanced integration of economic performance, social inclusiveness, and environment resilience” ([Geissdoerfer et al., 2017](#)). Companies tend to use sustainable and circular interchangeably in their reports, which may be because some firms consider the circular economy (CE) as a condition for sustainability ([Dragomir and Dumitru, 2022](#)). The CE consists of the complete product life cycle and includes all stakeholders in the value chain ([Ghisellini et al., 2016](#)). This system is commercial in nature and focuses on being regenerative by intent and design. To implement the CE concept in the footwear sector, recycling can be the best near-term solution. Also, recycled shoe manufacturers and retailers must collaborate effectively and on a larger scale for higher market penetration ([D’Adamo et al., 2022](#)). This will enhance the consumer acceptance of recycled shoes.

Circular fashion is considered as one of the solutions to fast fashion and is a subset of the CE, which includes not just the 3Rs (reduce, reuse, and recycle), but the integration of upstream and downstream processes into a coherent framework for action. [Dragomir and Dumitru \(2022\)](#) found that a sustainable business model in the apparel sector begins with design (technological innovations) and involves chemical processes with stringent

international standards, certificates, and audits, that provide information regarding the raw materials used, like cotton, and the use of natural resources, like water. It also found that consumers’ actions and attitude enhanced the reuse and recycling in the CE. Transformation of pre-owned goods into raw material for new production cycles in the shoe industry leads to a successful circular business model. Also, the consumption of resources like water and electricity must be reduced to the lowest possible level ([Bubicz et al., 2021](#)). As the intrinsic character of circularity is natural resource preservation and avoidance of waste ([da Costa Fernandes et al., 2020](#)), the most important steps in the circular model are to reduce consumption ([Provin et al., 2021](#)), and promote recycling and reuse. Considering all these factors and issues related to the footwear industry we designed this research to find answers to the subsequent research questions and solve managerial and policy-making issues.

RQ1 : What are the factors influencing purchase intentions of recycled shoes leading to purchase behaviour?

RQ2 : Which factors play a role in consumers’ purchase behaviour of recycled shoes?

To answer the above research questions, we focused on: 1) synthesizing existing studies on recycled shoes and related work, 2) developing comprehensive research models of recycled shoe buying behaviour, and 3) empirically analyzing this model. This study provides the constructs that determine intention to purchase, and also, the conversion of intention to actual purchase behaviour by giving empirical evidence.

The manuscript contributes to the theory in several ways. It examines previously unexplored areas such as the relationship between shoe surplus and purchase intention, and shoe choice relative to attitude. It grounds predictions with existing theories like the theory of planned behaviour and the theory of reasoned action. Also, we have significantly re-conceptualized the shoe surplus variable and shoe choice motive. While building and expanding this theory, we have also tested previously identified relationships to validate them in the context of our study.

The remaining article is structured as follows: the next section explains the gap between purchase intention and purchase behaviour in a green consumer behaviour context. Thereafter, the synthesis of literature with the application of the theory of reasoned action and the theory of planned behaviour in the context of sustainable consumer behaviour. Thereafter, we constructed the hypotheses by taking prior research into consideration. Next, we present the methodology used and data collection procedures. Subsequently, we present the results of measurement model and structural model with hypothesis testing. Then the following sections include discussion, theoretical and practical implications, limitations of study, and future research direction.

This study is among the first to investigate recycled product consumer behaviour in the context of footwear. A recent review

article on the circular economy and fashion (Abdelmeguid et al., 2022) has also focused on soft aspects like consumer attitudes. Our study has differentiating features such as the use of constructs from well-defined theories like theory of reasoned action (TRA) and the theory of planned behaviour (TPB). Also, to increase the comprehensiveness of the study we have also included relevant constructs such as shoe choice motives derived from food choice motives, and shoe surplus derived from food surplus from adjacent field such as sustainable food consumption behaviour. We also included the recently trending construct of word of mouth.

Literature and theoretical review

Purchase intention and purchase behaviour

In an environmental setting, various theories have been used by researchers in previous studies. Ibrahim and Al-Ajlouni (2018) used a kind of justice theory, i.e., deontic justice theory in the context of sustainable consumption. They used structural equation modelling to analyze the data and found that green products were conceptualized in the form of different level of correctness. There is a gap between intention and behaviour in several studies, and Carrington et al. (2014) found that the ethical intention-behaviour gap had four interrelated factors: 1) prioritization of ethical concerns; 2) formation of plans/habits; 3) willingness to commit and sacrifice; and 4) modes of shopping behaviour. Some studies also focussed on the attitude-behaviour gap in the sustainable consumption of recycled products (Park and Lin, 2020). In a study on new energy vehicle consumption, Lin and Shi (2022) found that perceived behavioural control and reduction in policy effectiveness influenced the intention-behaviour gap.

In various segments of research fields such as health, online retail, ethical behaviour, and entrepreneurial studies, behavioural intention is found to directly influence the actual purchase behaviour. Han (2020) developed a new theory called the theory of green purchase behaviour using mixed methods based on psychometric approaches in the context of hospitality. He used both qualitative and quantitative methods and entirely met the key criteria suggested by Ajzen (1991). Stakeholder theory was applied by Le and Ikram (2022) in a study on sustainable innovation in the SME sector in Vietnam. Stimulus organism response theory, cognition-affect-behaviour theory of attitude and value-belief-norm theory were used by some researchers (Pan et al., 2021) to study the influence of green packaging in a sustainable packaging context. In the context of remanufactured products, Wang S et al. (2018) used the theory of planned behaviour in China and extended it by using two additional variables, consumer familiarity and ambiguity tolerance. Sheoran and

Kumar (2022) used TPB and the consumption cycle by linking sets of constructs and presented the antecedents of behavioural intentions of consumers. In a study on green consumption, Lin and Niu (2018) used exploratory factor analysis to extract trait factors from Taiwanese consumers. Dong et al. (2022) used TPB to understand agricultural technology adoption in China, and Xu et al. (2022) used TPB to measure green purchase behaviour of Chinese consumers.

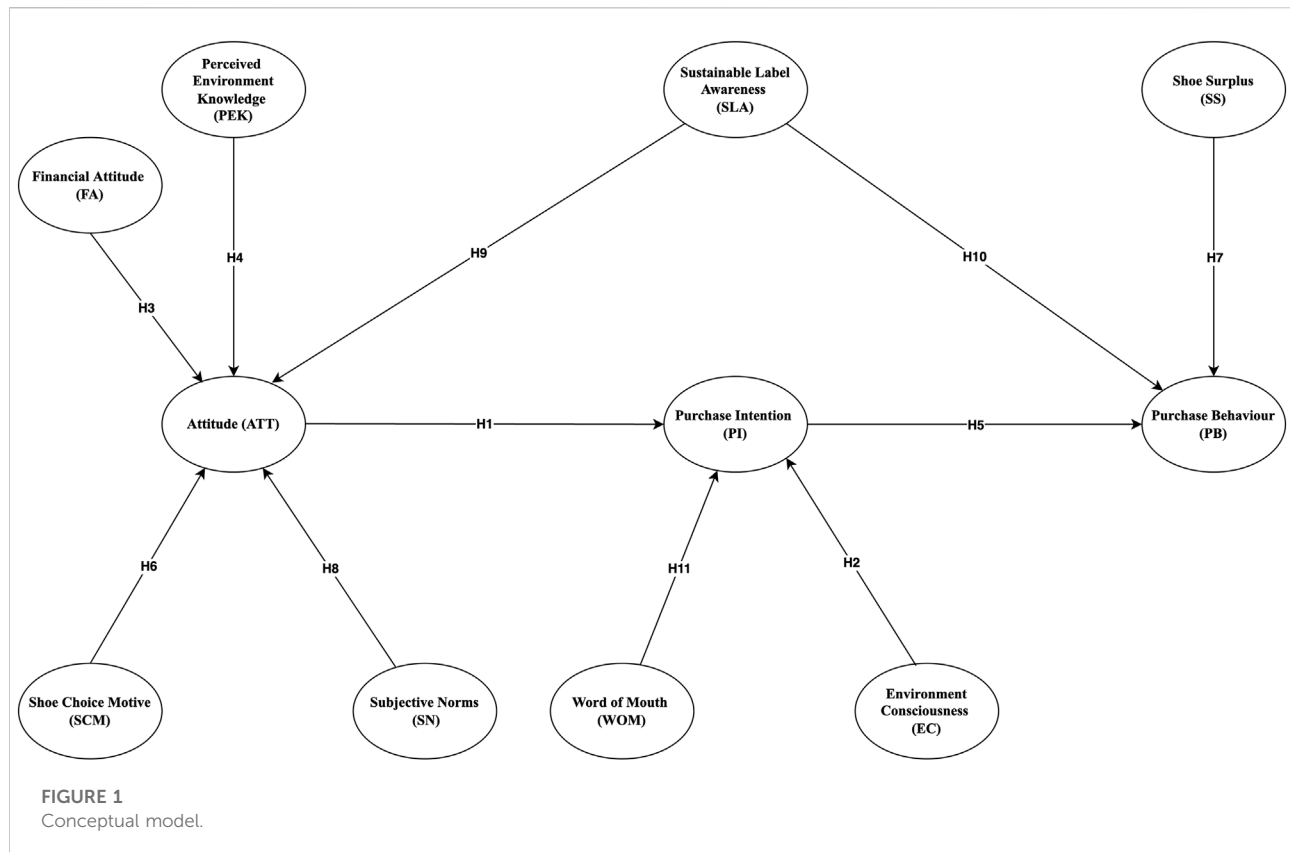
The theory of reasoned action

TRA posits that a person's behaviour is determined by their intentions to perform actual behaviour (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980). In the beginning, TRA was used for volitional behaviour (controlled behaviour of individual) or independent behaviour of an individual without the need of any specific skills, cooperation of others, or abilities. However, this was found to be creating a false dichotomy as general behaviour was neither fully volitional nor non-volitional but somewhere between them (Liska, 1984).

The theory of reasoned action and theory of planned behaviour were developed within the framework of the attitude-behaviour model and to modify the inconsistencies found by various iterations by many researchers including Wicker (1969) among others. It was found that the actual behaviour of an individual was only weakly predicted by attitude. This shortcoming in the literature led researchers to develop subsequent models in the 1960s by integrating several constructs with the attitude and behaviour model. The TRA (Fishbein and Ajzen, 1975) added subjective norms and behaviour constructs other than attitude and behavioural intention to overcome bivariate inconsistency. It is not a necessary condition that favourable attitudes towards behaviour will result in an actual behaviour if there is no group persuasion or coercion around the person from its close social circle or the other way round. Therefore, subjective norms as a construct inserted into the model to fill this gap. Fishbein and Ajzen (1975) favoured subjective norms as they captured the impact of social influence on behaviour, whereas attitude explained personal influences on behaviour. Also, the attitude and subjective norms influenced behaviour through a mediating link, which is the intention to perform behaviour. The intention was captured by motivational factors, which influenced individual behaviour and showed the actions an individual was willing to take (Ajzen, 1991).

The theory of planned behaviour

We took purchase behaviour, behavioural intention, attitude, and subjective norm as the basic building blocks of our model from TRA and TPB. To understand consumer



behaviour in a green context, the TPB given by [Ajzen \(1991\)](#) has been widely used in several contexts and has led to evaluation of predictive power of attitudes, norms, perceived control, and intentions on behaviour. The TPB states that attitudes are positive or negative assessments of self-performance of a definite behaviour. Subjective norms represent the view of group pressures of close individuals to act in a distinct manner. Perceived behavioural control represents the perceived difficulty or ease of acting in a specific way. Intentions are the internal confirmation to act in a distinct way and behaviour is the final action towards the intention, from smaller decisions to the larger decision. In the TPB, the outcome is the behaviour that results in purchase of a product. The conceptual model is presented in [Figure 1](#). In previous literature, both the TRA and TPB have been used in the sustainability context of apparel and food ([Aktas et al., 2018](#); [Rausch and Kopplin, 2021](#)) as depicted in the [Table 1](#).

Attitude

Attitude is the evaluation of certain specific behaviour ([Choo et al., 2016](#)). In a study by [Wang S et al. \(2018\)](#) on

remanufactured products (like recycled shoes), it was found that the attitude towards remanufactured products was positively related to the intention to purchase remanufactured products. Therefore, we hypothesize that:

H1 : Attitude towards recycled shoe has a positive impact on purchase intention.

Environmental concern

Environmental concern (EC) is also sometimes referred to as ecological effect, and reflects the concern and attachment (emotion) of an individual towards environmental issues, threats, and protection. It is also the sense of responsibility towards the environment and involvement in its protection. It focuses on the affective analysis of environment issues by individuals. Some complex approaches towards environmental concern have divided it into egoistic (self-concerned), altruistic (concern for others) and biospheric (concern for biosphere). In past studies EC of an individual influenced PI towards sustainable products; and also the attitude towards them ([Chaturvedi et al., 2020](#)). In a study by [Wang J et al. \(2018\)](#), it was hypothesized that EC did not

TABLE 1 Previous literature using TRA and TPB.

Title and reference	Theory used	Context	Findings
“Consumer familiarity, ambiguity tolerance, and purchase behavior toward remanufactured products: The implications for remanufacturers.” (Wang S, et al., 2018)	TPB and two additional variables (consumer familiarity and ambiguity tolerance)	Remanufactured products	Consumer familiarity influences attitude, ambiguity tolerance affects attitude and purchase intention. Attitude and perceived behavioural control influence purchase intention. Subjective norms did not influence purchase intention. Purchase intention influenced purchase behaviour.
“Conceptualisation of sustainable consumer behaviour: converging the theory of planned behaviour and consumption cycle.” (Sheoran and Kumar, 2022)	TPB and consumption cycle	Sustainable electronic products	Perceived control behaviour and subjective norms influenced sustainable consumer behaviour. Females, mid income consumers and young consumers were more sustainable.
“The sustainability-age dilemma: A theory of (un) planned behaviour via influencers.” (Johnstone and Lindh, 2018)	TPB	Influencers and social structure	Age was directly related to sustainability awareness in millennials and influencers directly affected sustainability awareness.
“A Theory of Planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains.” (Giampietri et al., 2018)	TPB	Food supply chains. (Using convenience sampling) ($p < 10\%$)	Attitude, subjective norms, trust, and perceived behavioural control (PCB) directly influenced intentions, and PCB also influenced behaviour with 10% significance value along with fair trade and rural residence.
“Using the theory of planned behaviour to predict intentions to purchase sustainable housing.” (Judge et al., 2019)	TPB	Sustainable Housing	Attitudes, subjective norms, perceived behavioural control and green consumer identity were directly related to intentions to purchase.
“Bridge the gap: Consumers’ purchase intention and behavior regarding sustainable clothing.” (Rausch and Kopplin, 2021)	TRA and TPB	Sustainable Clothing	PEK and EC influenced attitude and PI. SNs did not influence PI, but PI influenced PB. Attitude influenced PI.

influence intention however this hypothesis was rejected as the variable were significantly related.

H2 : The higher the environmental concern, the higher the purchase intention towards recycled shoes.

Financial attitude

Financial attitude (FA) is the reflection of an individual response to the concept of saving money (Lim and Teo, 1997). In the sustainability literature, financial attitude has been classified within the environmental category (Biasini et al., 2021). Financial attitude has been found to have less impact on wastage behaviour of consumers (Visschers et al., 2016). It was found that a high level of compulsive consumption was directly linked to financial attitude (Barbić et al., 2019). Previous findings confirmed that the self-control of an individual was also related to their financial attitude (Rey-Ares et al., 2021). Footwear consumption was found to be constrained by high prices (Baier et al., 2020). Perceived value was closely related to financial attitude, and it influenced purchase intentions of recycled clothing (Chaturvedi et al., 2020). Based on the literature, we framed the following hypothesis:

H3 : Financial attitude has direct influence on attitude.

Perceived environmental knowledge

Apart from the core variables in TRA and TPB, researchers have also used numerous constructs related to the environmental knowledge of the consumers. Perceived environmental knowledge (PEK) can be considered as “knowledge of facts, concepts, and relationships concerning the natural environment and its major ecosystem” by an individual. In the sustainable behavioural intentions of a person, PEK is a crucial prerequisite in the literature. PEK is the status of a person’s knowledge about the environment, its challenges, and the realization towards the consequences of human intervention in the habitat. The existing literature confirmed that PEK significantly affected attitude (Bhuiyan et al., 2018). In the exploratory studies, individuals with higher environmental knowledge were found to be highly involved in eco-conscious consumption. Therefore, the consumers with higher environmental knowledge were probably involved in sustainable consumption. The environmentally aware individuals tended to feel a greater responsibility towards sustainable consumption and development, and therefore can evaluate the impact of conventional products on the environment. PEK was found to influence purchasing attitudes towards sustainable products, but the study of Taufique (2022) found no direct influence on green consumer behaviour. Several studies in the sustainability context have applied TRA and TPB to evaluate purchase intention and

purchase behaviour of consumers (Giampietri et al., 2018; Johnstone and Lindh, 2018; Judge et al., 2019; Rausch and Kopplin, 2021). Therefore, we posited the following hypothesis:

H4 : Perceived environmental knowledge has a positive impact on attitude.

H5 : The higher the purchase intention for recycled shoes, the higher the actual purchase behaviour.

Shoe choice motives

Shoe choice motives and footwear preferences are related to the moral aspects of a personal shopping choice and in turn influence purchase decisions. We have adopted this construct from the food waste literature (de Boer et al., 2007). The shoe choice motive may be a function of green attitude as well. Therefore, we intended to test the following hypothesis:

H6 : Shoe choice motive has a positive impact on attitude.

Shoe surplus

In financial planning as well as shopping, consumers tend to plan their purchase and the quantity of apparel. Buyers sometimes indulge in compulsive shopping which leads to surplus apparel and footwear. This in turn influences purchase behaviour. The higher the surplus buying behaviour of a person, the higher the waste they may generate. Therefore, we propose the hypothesis that shoe surplus has a positive impact on purchasing behaviour of recycled shoes:

H7 : Shoe surplus has a positive impact on purchase behaviour

Subjective norms

Subjective norms can be defined as the perceived social pressure from others on performing or not performing a given behaviour (Wang J, et al., 2018). The TPB and TRA include subjective norms as factors dealing with measuring social influence in the consumers mind (Choo et al., 2016). The need for social approval and the impact of expectations is felt directly by consumers from people close to them whose opinion are important (Ajzen, 1991). This antecedent is generally taken as unidimensional, but Minton et al. (2018) argued that SNs can also be studied as two dimensional, on the macro level and the micro level. We have taken "Subjective Norms" as unidimensional. In earlier studies, Choo et al. (2016), Chaturvedi et al. (2020), and Wang J et al. (2018) found that subjective norms directly influenced intentions. A study on

remanufactured products did not find that SNs were positively related to intentions (Wang S, et al., 2018), whereas a study by (Minton et al., 2018) found that subjective norms were directly related to sustainable attitudes in the USA and France, but not in Japan. Therefore, we posit that:

H8 : The higher the subjective norms, the higher the attitude towards recycled shoes.

Sustainable label awareness (ecolabel knowledge)

It has been found that ecolabels or sustainable labels directly influence purchase intentions (Nguyen-Viet, 2022). The ecolabel consciousness has been found to influence environmental consciousness (Gaspar Ferreira and Fernandes, 2022). We have taken four items of sustainable label awareness from Taufique et al. (2017) measuring awareness towards different aspects of sustainable labels towards footwear. Poor labelling has been found to reduce consumers attitudes (Pham et al., 2019). Therefore, we framed the following hypotheses:

H9 : Sustainable label awareness has a direct influence on attitude.

H10 : Sustainable label awareness has a direct influence on purchase behaviour.

Word of mouth

Word of mouth information is generally considered more trustworthy than other forms of product information like advertising (Filiari, 2015). It is a personal evaluation of products and services used or experienced by individuals and experts (Li and Jaharuddin, 2021). Word of mouth (WOM) has been found to moderate the relationship between purchase intentions and purchase behaviour (Li and Jaharuddin, 2021). Around 90% of word of mouth occurred offline (Prendergast et al., 2010). It has been studied extensively in the context of electronic word of mouth in consumer behaviour studies and in green hotel booking (Kumari and Sangeetha, 2022). We hypothesized that:

H11 : Word of mouth has a positive impact on purchase intentions.

Methods

Data collection

We developed an online questionnaire using Google forms to collect data from respondents. It was circulated using

TABLE 2 Construct, items, references, loading and VIF.

Item	Construct	References (s)	FL	VIF
	Perceived environmental knowledge (PEK)	Ellen et al. (1997)		
PEK 1	I know how to behave sustainably		0.886	2.627
PEK 2	I understand how to protect the environment in the long-term		0.903	3.030
PEK 3	I know how I could lower the ecological harm with my behavior		0.875	2.449
PEK 4	I understand how I could reduce the negative environmental consequences of my		0.820	2.012
	Environmental concern (EC)	Dunlap et al. (2000), Lee (2008)		
EC1	I am concerned about the environmental development		0.849	2.364
EC2	I am concerned about the long-term consequences of unsustainable behavior		0.867	2.587
EC3	I often think about the potential negative development of the environmental situation		0.834	1.984
EC4	I am concerned that humanity will cause a lasting damage towards the environment		0.835	2.065
	Attitude (ATT)	Ling-Yee (1997), Chan (2001), Park and Lin (2020)		
ATT1	Generally, I have a favorable attitude towards the sustainable version of Shoes		0.865	2.345
ATT2	I am positive minded towards buying recycled Shoes		0.885	2.706
ATT3	I tend to buy recycled apparels as it helps circular economy		0.838	2.079
ATT4	I like the idea of buying recycled Shoes instead of conventional Shoes to contribute to environmental protection		0.866	2.317
	Subjective norm (SN)	Vermeir and Verbeke (2008)		
SN1	My friends expect me to buy recycled Shoes		0.906	2.673
SN2	People who are important to me expect me to buy sustainable Shoes		0.937	3.629
SN3	My family expects me to buy sustainable Shoes		0.924	3.381
	Purchase intention (PI)	Kumar et al. (2017), Park and Lin (2020)		
PI1	I consider purchasing sustainable Shoes		0.889	3.092
PI2	I intend to buy sustainable Shoes instead of conventional Shoes in the future		0.913	3.667
PI3	I might possibly buy sustainable Shoes in the future		0.891	3.088
PI4	I would consider to buy sustainable Shoes if I happen to see them in a(n) (online) store		0.882	2.877
	Purchase behaviour (PB)	Schlegelmilch et al. (1996), Lee (2008)		
PB1	I choose to buy exclusively sustainable Shoes		0.873	2.525
PB2	I buy sustainable Shoes instead of conventional Shoes if the quality is comparable		0.864	2.361
PB3	I purchase sustainable Shoes even if they are more expensive than conventional Shoes		0.844	2.229
PB4	When buying Shoes, I pay attention that they are sustainable		0.864	2.410
	Shoes Surplus (SS)	Stefan et al. (2013), Stancu et al. (2016)		
SS1	It is my nature to buy a lot of Shoes to show variety		0.893	2.680
SS2	I have a tendency to buy a few more Shoes than I need		0.901	2.647
SS3	I generally don't wear most of my Shoes		0.766	1.390
	Financial Attitudes (FA)	Scholderer et al. (2004)		
FA1	I check prices even on small fashion accessories		0.892	2.275
FA2	I notice when products I regularly buy change prices		0.856	1.897
FA3	I compare prices between similar Shoes to get the best value for money		0.886	2.201
	Shoe Choice Motives (SCM)	de Boer et al. (2007)		
SCM1	I am curious about new fashion		0.887	2.256
SCM2	I like to vary my Shoes		0.841	1.798
SCM3	I like to try latest fashion		0.897	2.282
	Sustainable Label Awareness (SLA)	Taufique et al. (2017)		
SLA1	I know the meaning of the term sustainable Shoes		0.880	2.737
SLA2	I know the meaning of the term sustainable labelled Shoes		0.867	2.622
SLA3	I know the meaning of the term recycled Shoes		0.829	2.063
SLA4	I usually pay attention to information about sustainable labelled Shoes		0.818	1.687

(Continued on following page)

TABLE 2 (Continued) Construct, items, references, loading and VIF.

Item	Construct	References (s)	FL	VIF
	Word of Mouth (WOM)	Ng et al. (2011)		
WOM1	I say positive things about the Recycled shoes to my friends		0.897	2.494
WOM2	I recommend recycled shoes to someone who seeks my advice		0.934	3.420
WOM3	I encourage friends and relatives to purchase recycled shoes		0.889	2.552

FL, factor loadings (all values are above 0.706); VIF (variance inflation factor) values range between 1.390 and 3.667

TABLE 3 Descriptive statistics ($n = 268$).

Demographic/Characteristics	Specifications	Counts	Percentage proportion (in %)
Age	18–28 years	203	76
	29–38 years	41	15
	39–48 years	13	5
	Above 49 years	11	4
Gender	Female	75	28
	Male	192	71.6
	Not disclosed	1	0.4
Annual Income	<5 Lakh	190	70.9
	5 to 10 Lakh	33	12.3
	10 to 15 Lakh	20	7.5
	More than 15 lakhs	25	9.3
Education	Intermediate	18	6.7
	Graduate	74	27.6
	Post-Graduate	176	65.7
Occupation	Private Sector	60	22.4
	Government Sector	42	15.7
	Student	162	60.4
	Home maker	4	1.5
Area of Residence	Urban	216	80.6
	Rural	52	19.4

various online platforms such as email, WhatsApp, Facebook, and LinkedIn. The form was circulated among residents of different states in India to get a wider more generalizable audience. A pre-test was conducted to check the wording, clarity in the sentences, completeness, structure, and suitability of measurement items. This was done with the help of 30 experienced participants. The constructs and items are shown in Table 2. The reliability and validity of the variable were also checked, as we did not find any broadly similar study in the context of recycled shoes. The questionnaire was divided into two parts. The first section requested the demographic profile of the respondents including gender, age, annual income, educational qualification, occupation, and residential area (urban or rural). All constructs were measured using a five-point

Likert scale (1 = strongly disagree to 5 = strongly agree). All the items were borrowed from previous literature and modified to the context of shoe. As the literature in footwear purchase behaviour as well as recycled shoe purchases is deficient, we borrowed items from green purchase behaviour and literature related to sustainable behaviour.

In demographics, more than 71% of the respondents were male whereas 28% were female. Most respondents belonged to the 18–28 years of age group constituting 76% of the population; 29–38 years (15%); 39 to 48 (5%) and above 49 years (4%), among the total respondent ($n = 268$). Only 29% had an annual income of more than Rs 5 lakh, implying that most of our respondents were young individuals with low to medium income. Also, most of the participants lived in urban areas and were students as shown in Table 3.

TABLE 4 Assessment of convergent validity and internal consistency reliability.

Latent variable	Indicators	Cronbach's α	rho_A	CR	AVE
ATT	4	0.887	0.888	0.922	0.746
EC	4	0.868	0.868	0.910	0.717
FA	3	0.852	0.853	0.910	0.771
PB	4	0.884	0.885	0.920	0.742
PEK	4	0.894	0.901	0.926	0.759
PI	4	0.916	0.917	0.941	0.799
SCM	3	0.847	0.851	0.908	0.766
SLA	4	0.847	0.851	0.908	0.766
SN	3	0.912	0.914	0.945	0.850
SS	3	0.912	0.914	0.945	0.850
WOM	3	0.892	0.895	0.933	0.823

Results

Measurement model

We used Smart PLS 3 to analyze the PLS-SEM model. Following the guidelines of Hair et al. (2019), we used a two-step approach wherein we first tested the measurement model and then the structural model. The algorithm was run on the software with a path-weighting scheme, with a maximum of 300 iterations and using a stop criterion of 10.7. The measurement model evaluation was started by verifying the outer loading of the construct and deleting any construct loading less than the threshold of 0.708 (Ringle et al., 2015; Hair et al., 2019). As all the factor loadings were above the minimum threshold criteria none of the constructs were deleted. As all the indicators survived in the first iteration, we checked construct reliability and validity using values of composite of reliability (CR), average variance extracted (AVE), and Cronbach's alpha as a conservative indicator of internal consistency reliability. All values exhibited acceptable values as per the condition laid down by Ringle et al. (2015) and Hair et al. (2019). The results are shown in Table 4.

We evaluated the collected data using Smart PLS 3 as it involved complex relationships (Ringle et al., 2015). As per Hair et al. (2017), factor loading, AVE, and composite reliability were used to test convergent validity. We measured the constructs reflectively as explained in the methodology section. In reflectively measured constructs, all items had a loading greater than 0.70, suggesting indicator reliability was achieved. Composite reliability values above 0.70 were considered "satisfactory to good." The model's composite reliability values were 0.801 and above for all reflective constructs, satisfying the internal consistency reliability. Average variance extracted (AVE) measuring the convergent validity should be 0.50 or above. The AVE values of all constructs were greater than

0.604 suggesting convergent validity was ensured. For establishing discriminant validity cross loading, the Fornell-Larcker criterion (Fornell and Larcker, 1981), cross loadings and HTMT (Henseler et al., 2015) values were checked. Cross loadings and the Fornell-Larcker table are given in the Appendix, and the HTMT values are displayed in Table 5. Under HTMT, all pairings except for PEK and EC passed the conservative threshold of 0.85 while PEK and EC were just above the liberal threshold of 0.90 as suggested by Henseler et al. (2015) as the PEK and EC are conceptually similar constructs (Hair et al., 2019). We further checked the HTMT values by running bootstrapping at a confidence interval of 97.5% and the value of PEK and EC were below the threshold of 1.0; therefore, discriminant validity was achieved (Henseler et al., 2015; Hair et al., 2019).

Structural model

Structural measurement bootstrapping was done using 5,000 samples at 95% confidence interval. First, the VIF values were checked, which ranged from 1.390 to 3.667. Then, t-statistics and p-values, effect size (f^2) and the confidence interval bias-corrected were measured. The Table 6 gives the details of these measurements. The effect size of 0.35, 0.15 and 0.02 represented a large, medium, and small effect size. According to the analysis, 10 out of 11 hypotheses were supported. The effect size of the dependent variable explained how they related to the independent variables and affected the model's strength.

The R squared values were 0.616 for attitude, 0.541 for purchase behaviour and 0.671 for purchase intention (R squared adjusted: attitude-0.609; purchase behaviour-0.536; purchase intention-0.668). Based on the R squared values, subjective norms, shoe choice motive, financial attitude and perceived environmental knowledge explained 61.6% of the

TABLE 5 The heterotrait-monotrait ratio (HTMT) for discriminant validity assessment.

	ATT	EC	FA	PB	PEK	PI	SCM	SLA	SN	SS	WOM
ATT											
EC	0.585										
FA	0.507	0.469									
PB	0.648	0.412	0.362								
PEK	0.641	0.918	0.458	0.430							
PI	0.804	0.669	0.489	0.504	0.697						
SCM	0.521	0.334	0.694	0.446	0.404	0.439					
SLA	0.703	0.564	0.488	0.768	0.629	0.620	0.377				
SN	0.680	0.289	0.263	0.701	0.316	0.488	0.334	0.510			
SS	0.264	0.049	0.427	0.454	0.078	0.153	0.673	0.240	0.349		
WOM	0.753	0.535	0.562	0.631	0.558	0.802	0.473	0.657	0.505	0.329	

TABLE 6 Hypothesis testing.

	Path	β	t-value (p-value)	Confidence intervals (bias-corrected, 95%)	S. Dev.	Path coefficients (effect size f^2)
H1	ATT → PI	0.349	5.119 (0.000)***	[0.234, 0.458]	0.068	0.349 (0.185)
H2	EC → PI	0.239	4.822 (0.000)***	[0.161, 0.325]	0.050	0.239 (0.123)
H3	FA → ATT	0.080	1.334 (0.182)*	[-0.019, 0.182]	0.060	0.080 (0.010)
H4	PEK → ATT	0.263	4.660 (0.000)***	[0.171, 0.356]	0.057	0.263 (0.118)
H5	PI → PB	0.103	1.763 (0.078)**	[0.011, 0.201]	0.058	0.103 (0.016)
H6	SCM → ATT	0.127	2.053 (0.040)****	[0.027, 0.231]	0.062	0.127 (0.026)
H7	SS → PB	0.251	5.615 (0.000)***	[0.180, 0.326]	0.045	0.251 (0.132)
H8	SN → ATT	0.371	7.322(0.000)***	[0.286, 0.451]	0.051	0.371 (0.271)
H9	SLA → ATT	0.233	3.338 (0.001)****	[0.118, 0.346]	0.070	0.233 (0.080)
H10	SLA → PB	0.579	10.987 (0.000)***	[0.492, 0.664]	0.053	0.579 (0.494)
H11	WOM → PI	0.380	4.918 (0.000)***	[0.254, 0.511]	0.077	0.380 (0.232)

*Not supported; **supported at 10%; ***supported at 1%;****supported at 5%.

overall variance of attitude. The R squared value of purchase intention explained 66.8% of the overall variance of attitude, word of mouth and environmental concern. Further, sustainable label awareness, purchase intention and shoe surplus explained 53.6% of the overall variance of purchase behaviour. All the values were in the moderate range. The Q squared values were calculated using blindfolding by taking an omission distance of 7 to assess the predictive accuracy and relevance of the model. According to prior studies, the predictive accuracy and relevance is adequate if the Q squared values are more than 0 (Hair et al., 2017) and when near to 1, it indicates high relevance. The Q squared value of attitude was 0.450; purchase behaviour was 0.395 and purchase intention was 0.529; therefore, the model had achieved significant predictive relevance. The results also indicated that attitude and purchase intention fostered purchase behaviour towards recycled shoes.

Results

The structural path as shown in Figure 2 and Table 6 depicts the positive relation between attitude (ATT) and PI ($\beta = 0.349$, $t = 5.119$, $p < 0.000$) inferring that hypothesis H1 was retained. Next, the EC path was positive and statistically significant on PI ($\beta = 0.239$, $t = 4.822$, $p < 0.000$) indicating H2 was supported. Financial attitude did not have a significant effect on attitude ($\beta = -0.019$, $t = 1.334$, $p < 0.182$) and H3 was the only hypothesis not found significant. The PEK path was positive and statistically significant on ATT ($\beta = 0.263$, $t = 4.660$, $p < 0.000$) inferring that the hypothesis, H4, was retained. PI was positive and significant at the 95% confidence interval with ($\beta = 0.103$, $t = 1.763$, $p < 0.078$) and, therefore, H5 was also supported with a rather liberal 7.8% p value. The results showed that the SCM had a positive and significant influence on attitude with ($\beta = 0.127$, $t = 2.053$, $p < 0.040$) and therefore H6 was retained. Moreover, the results

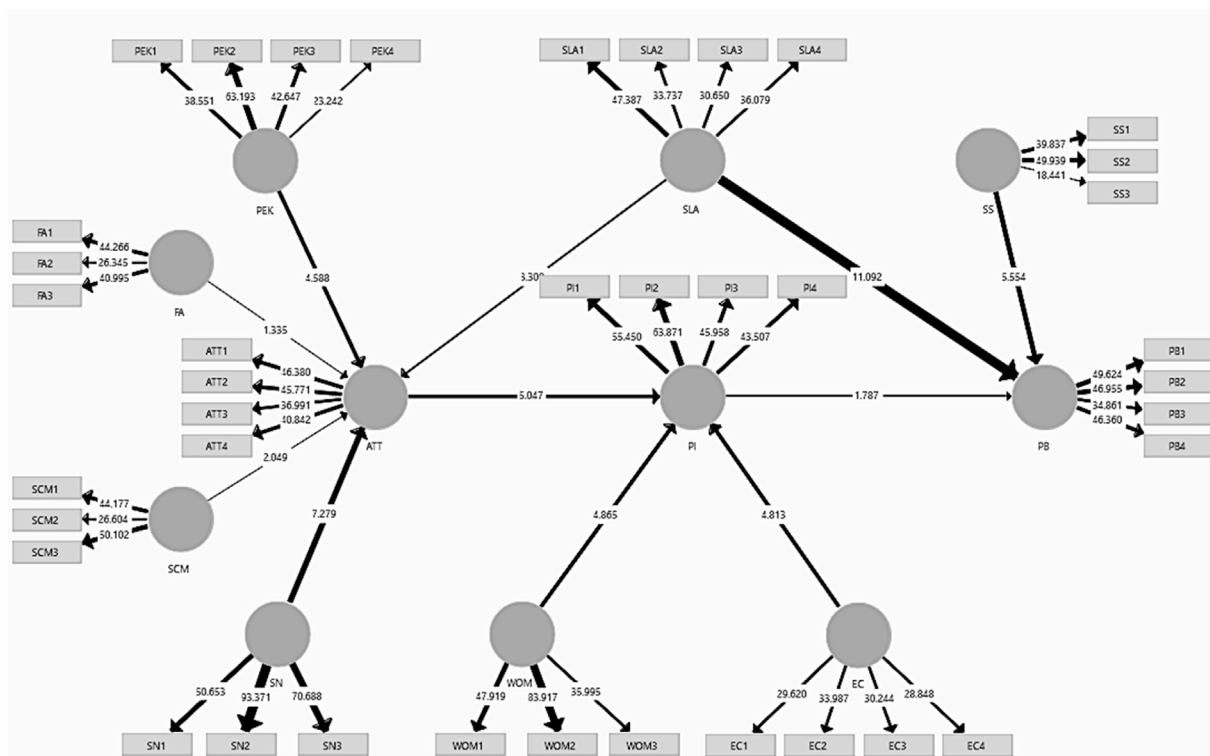


FIGURE 2 Structural model.

confirmed that shoe surplus (SS) positively and significantly influenced PB ($\beta = 0.251, t = 5.615, p < 0.000$), denoting that H7 was maintained. Subjective norms (SN) positively and significantly influenced attitude with ($\beta = 0.371, t = 7.322, p < 0.000$), thus supporting H8. In addition, results showed that sustainable label awareness (SLA) positively and significantly influences attitude ($\beta = 0.233, t = 3.338, p < 0.001$) and PB ($\beta = 0.579, t = 10.987, p < 0.000$) respectively, signifying that H9 and H10 were supported. Furthermore, WOM significantly influenced PI with ($\beta = 0.380, t = 4.918, p < 0.000$) and therefore H11 was supported.

Discussion

The study extends TRA and TPB with sustainable behaviour constructs such as perceived environmental knowledge, environmental consciousness, sustainable label awareness, and shoe surplus and some aspects related to recent behavioural constructs like word of mouth and shoe choice motives. The purchase intention and purchase behaviour gap were visible as the *p*-value was above 5% for PI and PB relationship but below 10%, which shows that the gap is narrow and must be studied further. Financial attitude was not found to significantly

influence attitude and was the only hypothesis that was not proven.

The green purchase behaviour is well covered by prior literature with theories like TRA and TPB, but research on recycled footwear is scarce. To contribute to the literature, we employed main elements from TRA and TPB with other variables from relevant theories in order to provide a holistic model framework, which determined purchase behaviour towards recycled shoes. The antecedents to attitude, purchase intention and purchase behaviour for recycled shoe were identified. We extended the TRA and TPB models by using thoroughly established constructs from sustainability studies (i.e., perceived environment knowledge, sustainable label awareness and environment concerns) and a few novel constructs from prior exploratory findings (shoe surplus, shoe choice motive, financial attitude, word of mouth). To the best of our knowledge, this is one of the first studies to explain purchase behaviour, purchase intention, and attitude in the context of recycled shoes. The results showed that the objectives of the study were achieved. The first research question regarding the factors influencing purchase intention of recycled shoes leading to purchase behaviour was resolved successfully. The factors successfully influencing purchase intention were attitude, environmental consciousness and word of mouth. Further

purchase behaviour was influenced by these factors in coherence with purchase intentions. The purchase of recycled footwear was also influenced by shoe surplus and sustainable label awareness.

In line with previous findings (Wang S, et al., 2018), attitude was found to directly influence purchase intention of recycled shoes. Other hypotheses, like EC influencing PI and PEK influencing attitude were proved in line with prior literature (Bhuian et al., 2018; Chaturvedi et al., 2020). The new relations like shoe choice motivations influencing attitude, shoe surplus influencing purchasing behaviour and sustainable label awareness influencing both attitude and purchase behaviour were in line with literature from subsequent distantly related literature (de Boer et al., 2007; Pham et al., 2019; Nguyen-Viet, 2022). Word of mouth was found to directly influence purchase intentions as earlier studied by Kumari and Sangeetha (2022) and subjective norms influenced attitude as in the case of Minton et al. (2018) who found that subjective norms directly influenced sustainable attitudes in the USA and France. The relationship between purchase intention and purchase behaviour was not as strong as shown in Aktas et al. (2018) and Rausch and Kopplin (2021), suggesting a gap between the intention of a consumer to purchase recycled shoes and their actually purchasing the shoes. This suggests that some consumers may have the intention to purchase, but may not buy.

In summary, sustainable label awareness had the strongest impact on the purchase behaviour of recycled shoes ($\beta = 0.579$, $t = 10.987$, $p < 0.01$) and a reasonable impact on the attitudes of consumers ($\beta = 0.233$, $t = 3.338$, $p < 0.01$). The study provides interesting insights as the purchase intention to purchase behaviour relationship was supported at $p < 0.1$. Three factors of purchase intention, four factors of attitude and three factors of purchase behaviour were identified. The hypotheses derived from TRA were changed into the context of recycled shoe purchase behaviour. The findings are mostly in accord with the prior literature of green purchase behaviour, referring to a lack of directly related studies in the context of recycled shoes.

Conclusions

Based on the TRA and TPB, this study established the factors leading to recycled shoe purchase intentions. We simultaneously investigated factors that translated into the actual purchasing of green environment-friendly products. The findings are essential for mitigating sustainability issues, promoting the circular economy and sustainable consumption. The study supports the following conclusions.

Companies involved in branding, selling and promoting footwear must focus more on the product labels, which have been found to be the main influencers of the attitudes of consumers towards buying recycled shoes. They may employ strategies like displaying sustainable labels verified by global or national agencies in their advertisements to establish themselves

as a sustainable brand in the minds of consumers. Also, these sustainable labels must be presented on the packaging of the shoes and if possible, on the sole of the shoe itself. In particular, for the shoe industry, shoe choice motivation directly influences the attitude of consumers. This means customers who are more fashion friendly and like to try new apparel to stay up to date are likely to have favourable attitudes towards purchasing recycled shoes. The desire for a shoe surplus directly influenced the purchase behaviour of some consumers. Customers who like to have multiple pairs of shoes to provide variety in their dress are more likely to buy recycled shoes.

Companies should focus on word of mouth and drive their promotional activities through this format as it has been found to directly influence purchase intentions. The subjective norms influenced the attitudes of consumers. Therefore, companies should venture into activities with their active and loyal customer base to increase social pressure among their friends and colleagues. Managers may create positive dialogues among consumers by sharing the benefits of using recycled shoes. This will create awareness about the products and their environmentally friendly qualities among consumers. Further, companies should focus more on consumers perceived environment knowledge. PEK has a direct influence on the attitudes of consumers and, therefore, their intention to purchase. In particular, the promotional activities should consider PEK of consumers and disassociate itself as a proponent of a particular environmental issue during marketing to create a positive impact. The individuals with higher environmental concern and perceived environment knowledge had better attitude and higher intention to purchase recycled shoes. The targeting of such individuals may be carried out during promotional campaigns.

For policymakers, environmental consciousness and perceived environmental knowledge has a direct effect on purchase intentions and attitudes of consumers, respectively. This implies that active campaigns of public awareness towards environmentally friendly products will promote sustainable consumption among customers. The government should make policies to promote the production of recycled shoes and create regulatory guidelines for shoe retailers to show sustainable labels at prominent places in their stores. It should work to create awareness about sustainable labels so that consumers are able to differentiate among recycled green shoes and normal shoes.

The study provides significant implications for academics as well as industry personnel. As the industry is transitioning towards greener, sustainable products, the need for determining factors required for creating marketing strategies, designing shoes, and targeting consumers is needed. The study established new relationships unexplored in the literature for academics. The new relationships between shoe surplus and purchase intention and between shoe choice motivation and attitude were significant. We also found that sustainable label

awareness was the strongest link to purchase behaviour. Therefore, the labels should declare the sustainability content of the product. Also, subjective norms and word of mouth which is a social phenomenon and depends on conversations within the consumer's circle of friends and family, highly influenced the attitude and purchase intention of green recycled shoes.

The manuscript contributes to the theory in several ways. By examining previously unexplored relationships like shoe surplus to purchase intention and shoe choice motivation to attitude, it grounded the predictions with existing theories like the theory of planned behaviour and theory of reasoned action. Also, we significantly re-conceptualized the variable shoe surplus and shoe choice motivations. While performing these theory building and expanding tasks, we also tested previously identified relationships.

Limitations and future directions

We examined recycled shoe purchase behaviour as an example of sustainable products due to the industrial shift towards such footwear products in the apparel industry. Our study used elements from TRA and TPB, excluding perceived behavioural control, which may or may not have had a substantial meaningful impact on explaining the relationships between key constructs. There is a gap in the relationship between PB and PI as opposed to other relationships, which were accepted with moderate to very high evidence with respect to the *p*-value and *t*-value. The relationship between PI and PB has shown weak evidence in the support of the hypotheses. Further, SN has been linked to purchase intention in prior studies, but here we have linked it to attitude and therefore further modified the basic model of TRA and TPB. The study has a substantial population of students and young individuals, which may have different opinion from other sections of society; but, it has also been found that the younger generation is more concerned towards environment (Diddi et al., 2019). Future studies may focus more on older customers and adults to determine if they have similar concerns about the environment.

The study was conducted in India and some constructs like sustainable label awareness, perceived environment knowledge and environment concern might be perceived differently in different cultures. As there was no specific reference to any brand of recycled shoes, some constructs could have appeared different to respondents, which may have influenced the results. There were some methodological limitations as well, which need to be discussed. First, statistical conclusions were limited to a

single geographic location and the survey was distributed through online social media platforms and was self-administered. Future research should be carried out in different contexts to further establish the relationships. Future studies may also include perceived behavioural control in the model, and the mediating and moderating roles of sustainable label awareness may be explored.

Data availability statement

The raw data supporting the conclusion of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study in accordance with the national legislation and the institutional requirements.

Author contributions

SY: Writing—original draft, preparation, software, data collection, conceptualization, methodology, data curation, visualization. SK: Review and editing, supervision. PR: Review and editing.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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References

- Abdelmeguid, A., Afy-Shararah, M., and Salonitis, K. (2022). Investigating the challenges of applying the principles of the circular economy in the fashion industry: A systematic review. *Sustain. Prod. Consum.* 32, 505–518. doi:10.1016/j.spc.2022.05.009
- Ajzen, I., and Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. New Jersey: Englewood Cliffs: Prentice Hall.
- Ajzen, I. (1991). The theory of planned behavior. *Organ. Behav. Hum. Decis. process.* 50 (2), 179–211. doi:10.1016/0749-5978(91)90020-t
- Aktas, E., Sahin, H., Topaloglu, Z., Oledinma, A., Huda, A. K. S., Irani, Z., et al. (2018). A consumer behavioural approach to food waste. *J. Enterp. Inf. Manag.* 31 (5), 658–673. Emerald Group Holdings Ltd. doi:10.1108/jeim-03-2018-0051
- Atik, D., Cavusoglu, L., Ozdamar Ertekin, Z., and Firat, A. F. (2022). Fashion, consumer markets, and democratization. *J. Consumer Behav.* n/a. John Wiley & Sons, Ltd, 1135–1148. doi:10.1002/cb.2061
- Baier, D., Rausch, T. M., and Wagner, T. F. (2020). The drivers of sustainable apparel and sportswear consumption: A segmented kano perspective. *Sustainability* 12 (7), 2788. doi:10.3390/su12072788
- Barbić, D., Lučić, A., and Chen, J. M. (2019). Measuring responsible financial consumption behaviour. *Int. J. Consum. Stud.* 43 (1), 102–112. doi:10.1111/ijcs.12489
- Bhuiyan, S. N., Sharma, S. K., Butt, I., and Ahmed, Z. U. (2018). Antecedents and pro-environmental consumer behavior (PECB): The moderating role of religiosity. *J. Consum. Mark.* 35 (3), 287–299. Emerald Publishing Limited. doi:10.1108/jcm-02-2017-2076
- Biasini, B., Rosi, A., Giopp, F., Turgut, R., Scazzina, F., and Menozzi, D. (2021). Understanding, promoting and predicting sustainable diets: A systematic review. *Trends Food Sci. Technol.* 111, 191–207. doi:10.1016/j.tifs.2021.02.062
- Bubicz, M. E., Dias Barbosa-Póvoa, A. P. F., and Carvalho, A. (2021). Social sustainability management in the apparel supply chains. *J. Clean. Prod.* 280, 124214. doi:10.1016/j.jclepro.2020.124214
- Carrington, M. J., Neville, B. A., and Whitwell, G. J. (2014). Lost in translation: Exploring the ethical consumer intention-behavior gap. *J. Bus. Res.* 67 (1), 2759–2767. doi:10.1016/j.jbusres.2012.09.022
- Chan, R. Y. K. (2001). Determinants of Chinese consumers' green purchase behavior. *Psychol. Mark.* 18 (4), 389–413. doi:10.1002/mar.1013
- Chaturvedi, P., Kulshreshtha, K., and Tripathi, V. (2020). Investigating the determinants of behavioral intentions of generation Z for recycled clothing: An evidence from a developing economy. *Young Consum.* 21 (4), 403–417. Emerald Group Holdings Ltd. doi:10.1108/yc-03-2020-1110
- Choo, H., Ahn, K., and Petrick, F. J. (2016). An integrated model of festival revisit intentions. *Int. J. Contemp. Hosp. Manag.* 28 (4), 818–838. Emerald Group Publishing Limited. doi:10.1108/ijchm-09-2014-0448
- D'Adamo, I., Lupi, G., Morone, P., and Settembre-Blundo, D. (2022). Towards the circular economy in the fashion industry: The second-hand market as a best practice of sustainable responsibility for businesses and consumers. *Environ. Sci. Pollut. Res.* 29, 46620–46633. doi:10.1007/s11356-022-19255-2
- de Boer, J., Hoogland, C. T., and Boersema, J. J. (2007). Towards more sustainable food choices: Value priorities and motivational orientations. *Food Qual. Prefer.* 18 (7), 985–996. doi:10.1016/j.foodqual.2007.04.002
- Diddi, S., Yan, R. N., Bloodhart, B., Bajtelsmit, V., and McShane, K. (2019). Exploring young adult consumers' sustainable clothing consumption intention-behavior gap: A behavioral reasoning theory perspective. *Sustain. Prod. Consum.* 18, 200–209. Elsevier B.V. doi:10.1016/j.spc.2019.02.009
- Dong, H., Wang, H., and Han, J. (2022). Understanding ecological agricultural technology adoption in China using an integrated technology acceptance model—theory of planned behavior model. *Front. Environ. Sci.* 10, 927668. doi:10.3389/fenvs.2022.927668
- Dragomir, V. D., and Dumitru, M. (2022). Practical solutions for circular business models in the fashion industry. *Clean. Logist. Supply Chain* 4, 100040. Elsevier BV. doi:10.1016/j.clscn.2022.100040
- Dunlap, R. E., van Liere, K. D., Mertig, A. G., and Jones, R. E. (2000). New trends in measuring environmental attitudes: Measuring endorsement of the new ecological paradigm: A revised nep scale. *J. Soc. Issues* 56 (3), 425–442. John Wiley & Sons, Ltd. doi:10.1111/0022-4537.00176
- Dwivedi, A., Moktadir, M. A., Chiappetta Jabbar, C. J., and de Carvalho, D. E. (2022). Integrating the circular economy and industry 4.0 for sustainable development: Implications for responsible footwear production in a big data-driven world. *Technol. Forecast. Soc. Change* 175, 121335. doi:10.1016/j.techfore.2021.121335
- Ellen, P., Eroglu, D., and Webb, D. (1997). *Consumer judgments in a changing information environment: How consumers respond to 'green marketing' claims*. Atlanta, Georgia: Georgia State University.
- da Costa Fernandes, S., Pigosso, D. C. A., McAlloone, T. C., and Rozenfeld, H. (2020). Towards product-service system oriented to circular economy: A systematic review of value proposition design approaches. *J. Clean. Prod.* 257, 120507. doi:10.1016/j.jclepro.2020.120507
- Filieri, R. (2015). What makes online reviews helpful? A diagnosticity-adoption framework to explain informational and normative influences in e-WOM. *J. Bus. Res.* 68 (6), 1261–1270. doi:10.1016/j.jbusres.2014.11.006
- Fishbein, M., and Ajzen, I. (1975). *Beliefs, attitude, intention and behavior: An introduction to theory and research*, Boston, Massachusetts, United States: Addison-Wesley.
- Fornell, C., and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* 18, 39. doi:10.2307/3151312
- Gaspar Ferreira, A., and Fernandes, M. E. (2022). Sustainable advertising or ecolabels: Which is the best for your brand and for consumers' environmental consciousness? *J. Mark. Theory Pract.* 30 (1), 20–36. Routledge. doi:10.1080/10696679.2021.1882864
- Geissdoerfer, M., Savaget, P., Bocken, N. M. P., and Hultink, E. J. (2017). The Circular Economy – a new sustainability paradigm? *J. Clean. Prod.* 143, 757–768. doi:10.1016/j.jclepro.2016.12.048
- Ghisellini, P., Cialani, C., and Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. *J. Clean. Prod.* 114, 11–32. Elsevier Ltd. doi:10.1016/j.jclepro.2015.09.007
- Giampietri, E., Verneau, F., del Giudice, T., Carfora, V., and Finco, A. (2018). A Theory of Planned behaviour perspective for investigating the role of trust in consumer purchasing decision related to short food supply chains. *Food Qual. Prefer.* 64, 160–166. Elsevier Ltd. doi:10.1016/j.foodqual.2017.09.012
- Hair, J. F., Risher, J. J., Sarstedt, M., and Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* 31 (1), 2–24. doi:10.1108/ebrev-11-2018-0203
- Hair, J., Hollingsworth, C. L., Randolph, A. B., and Chong, A. Y. L. (2017). An updated and expanded assessment of PLS-SEM in information systems research. *Industrial Manag. Data Syst.* 117 (3), 442–458. doi:10.1108/imds-04-2016-0130
- Han, H. (2020). Theory of green purchase behavior (tgp): A new theory for sustainable consumption of green hotel and green restaurant products. *Bus. Strategy Environ.* 29 (6), 2815–2828. John Wiley and Sons Ltd. doi:10.1002/bse.2545
- Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* 43 (1), 115–135. doi:10.1007/s11747-014-0403-8
- Herva, M., Álvarez, A., and Roca, E. (2011). Sustainable and safe design of footwear integrating ecological footprint and risk criteria. *J. Hazard. Mater.* 192 (3), 1876–1881. doi:10.1016/j.jhazmat.2011.07.028
- Horton, A. A. (2022). Plastic pollution: When do we know enough? *J. Hazard. Mater.* 422, 126885. doi:10.1016/j.jhazmat.2021.126885
- Ibrahim, H., and Al-Ajlouni, M. M. Q. (2018). Sustainable consumption: Insights from the protection motivation (PMT), deontic justice (DJT) and construal level (CLT) theories. *Emerald Group Holdings Ltd.* 56 (3), 610–633. doi:10.1108/MD-05-2016-0323
- Ikram, M. (2022). Transition toward green economy: Technological Innovation's role in the fashion industry. *Curr. Opin. Green Sustain. Chem.* 37, 100657. doi:10.1016/j.cogsc.2022.100657
- Johnstone, L., and Lindh, C. (2018). The sustainability-age dilemma: A theory of (un)planned behaviour via influencers. *J. Consum. Behav.* 17 (1), e127–e139. John Wiley and Sons Ltd. doi:10.1002/cb.1693
- Judge, M., Warren-Myers, G., and Paladino, A. (2019). Using the theory of planned behaviour to predict intentions to purchase sustainable housing. *J. Clean. Prod.* 215, 259–267. Elsevier Ltd. doi:10.1016/j.jclepro.2019.01.029
- Kim, L., Kim, D., Kim, S. A., Kim, H., Lee, T.-Y., and An, Y.-J. (2022). Are your shoes safe for the environment? – toxicity screening of leachates from microplastic fragments of shoe soles using freshwater organisms. *J. Hazard. Mater.* 421, 126779. doi:10.1016/j.jhazmat.2021.126779

- Kumar, B., Manrai, A. K., and Manrai, L. A. (2017). Purchasing behaviour for environmentally sustainable products: A conceptual framework and empirical study. *J. Retail. Consumer Serv.* 34, 1–9. doi:10.1016/j.jretconser.2016.09.004
- Kumari, P., and Sangeetha, R. (2022). How does electronic word of mouth impact green hotel booking intention? *Serv. Mark. Q.* 43 (2), 146–165. doi:10.1080/15332969.2021.1987609
- Le, T. T., and Ikram, M. (2022). Do sustainability innovation and firm competitiveness help improve firm performance? Evidence from the SME sector in vietnam. *Sustain. Prod. Consum.* 29, 588–599. doi:10.1016/j.spc.2021.11.008
- Lee, K. (2008). “Opportunities for green marketing: Young consumers”. *Mark. Intell. Plan.* 26 (6), 573–586. doi:10.1108/02634500810902839
- Lee, T.-Y., Kim, L., Kim, D., An, S., and An, Y.-J. (2022). Microplastics from shoe sole fragments cause oxidative stress in a plant (*Vigna radiata*) and impair soil environment. *J. Hazard. Mater.* 429, 128306. doi:10.1016/j.jhazmat.2022.128306
- Li, S., and Jaharuddin, N. S. (2021). “Influences of background factors on consumers’ purchase intention in China’s organic food market: Assessing moderating role of word-of-mouth (WOM),” in *Cogent business & management*. Editor W. Sroka (Cogent OA), 8, 1876296. doi:10.1080/0965254X.2018.1447984
- Lim, V. K. G., and Teo, T. S. H. (1997). Sex, money and financial hardship: An empirical study of attitudes towards money among undergraduates in Singapore. *J. Econ. Psychol.* 18 (4), 369–386. doi:10.1016/s0167-4870(97)00013-5
- Lin, B., and Shi, L. (2022). Identify and bridge the intention-behavior gap in new energy vehicles consumption: Based on a new measurement method. *Sustain. Prod. Consum.* 31, 432–447. doi:10.1016/j.spc.2022.03.015
- Lin, S. T., and Niu, H. J. (2018). Green consumption: Environmental knowledge, environmental consciousness, social norms, and purchasing behavior. *Bus. Strategy Environ.* 27 (8), 1679–1688. John Wiley and Sons Ltd. doi:10.1002/bse.2233
- Ling-Yee, L. (1997). Effect of collectivist orientation and ecological attitude on actual environmental commitment. *J. Int. Consumer Mark.* 9 (4), 31–53. Routledge. doi:10.1300/j046v09n04_03
- Liska, A. E. (1984). A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. *Soc. Psychol. Q.* 47, 61–74. JSTOR. doi:10.2307/3033889
- Minton, E. A., Spielmann, N., Kahle, L. R., and Kim, C.-H. (2018). The subjective norms of sustainable consumption: A cross-cultural exploration. *J. Bus. Res.* 82, 400–408. doi:10.1016/j.jbusres.2016.12.031
- Ng, S., David, M. E., and Dagger, T. S. (2011). Generating positive word-of-mouth in the service experience. *Manag. Serv. Qual. An Int. J.* 21 (2), 133–151. Emerald Group Publishing Limited. doi:10.1108/09604521111113438
- Nguyen-Viet, B. (2022). Understanding the influence of eco-label, and green advertising on green purchase intention: The mediating role of green brand equity. *J. Food Prod. Mark.* 28 (2), 87–103. Routledge. doi:10.1080/10454446.2022.2043212
- Pan, C., Lei, Y., Wu, J., and Wang, Y. (2021). The influence of green packaging on consumers’ green purchase intention in the context of online-to-offline commerce. *J. Syst. Inf. Technol.* 23 (2), 133–153. Emerald Group Holdings Ltd. doi:10.1108/jsit-11-2019-0242
- Park, H. J., and Lin, L. M. (2020). Exploring attitude-behavior gap in sustainable consumption: Comparison of recycled and upcycled fashion products. *J. Bus. Res.* 117, 623–628. doi:10.1016/j.jbusres.2018.08.025
- Pham, T. H., Nguyen, T. N., Phan, T. T. H., and Nguyen, N. T. (2019). Evaluating the purchase behaviour of organic food by young consumers in an emerging market economy. *J. Strategic Mark.* 27 (6), 540–556. doi:10.1080/0965254X.2018.1447984
- Prendergast, G., Ko, D., and Siu Yin, V. Y. (2010). Online word of mouth and consumer purchase intentions. *Int. J. Advert.* 29 (5), 687–708. Routledge. doi:10.2501/s0265048710201427
- Provin, A. P., de Aguiar Dutra, A. R., Cristina Aguiar, I., de Sousa e, S. G., and Cubas, E. A. L. V. (2021). Circular economy for fashion industry: Use of waste from the food industry for the production of biotextiles. *Technol. Forecast. Soc. Change* 169, 120858. doi:10.1016/j.techfore.2021.120858
- Rausch, T. M., and Kopplin, C. S. (2021). Bridge the gap: Consumers’ purchase intention and behavior regarding sustainable clothing. *J. Clean. Prod.* 278, 123882. Elsevier Ltd. doi:10.1016/j.jclepro.2020.123882
- Rey-Ares, L., Fernández-López, S., Castro-González, S., and Rodeiro-Pazos, D. (2021). Does self-control constitute a driver of millennials’ financial behaviors and attitudes? *J. Behav. Exp. Econ.* 93, 101702. Elsevier Inc. doi:10.1016/j.socec.2021.101702
- Ringle, C., da Silva, D., and Bido, D. (2015). *Structural equation modeling with the SmartPLS*. São Paulo, SP, Brazil.
- Schlegelmilch, B. B., Bohlen, G. M., and Diamantopoulos, A. (1996). The link between green purchasing decisions and measures of environmental consciousness. *Eur. J. Mark.* 30 (5), 35–55. MCB UP Ltd. doi:10.1108/03090569610118740
- Scholderer, J., Brunso, K., Bredahl, L., and Grunert, K. G. (2004). Cross-cultural validity of the food-related lifestyles instrument (FRL) within Western Europe. *Appetite* 42 (2), 197–211. doi:10.1016/j.appet.2003.11.005
- Sheoran, M., and Kumar, D. (2022). Conceptualisation of sustainable consumer behaviour: Converging the theory of planned behaviour and consumption cycle. *Qual. Res. Organ. Manag. An Int. J.* 17 (1), 103–135. Emerald Group Holdings Ltd. doi:10.1108/qrom-05-2020-1940
- Stancu, V., Haugaard, P., and Lähteenmäki, L. (2016). Determinants of consumer food waste behaviour: Two routes to food waste. *Appetite* 96, 7–17. doi:10.1016/j.appet.2015.08.025
- Stefan, V., van Herpen, E., Tudoran, A. A., and Lähteenmäki, L. (2013). Avoiding food waste by Romanian consumers: The importance of planning and shopping routines. *Food Qual. Prefer.* 28 (1), 375–381. doi:10.1016/j.foodqual.2012.11.001
- Taufique, K. M. R. (2022). Integrating environmental values and emotion in green marketing communications inducing sustainable consumer behaviour. *J. Mark. Commun.* 28 (3), 272–290. Routledge. doi:10.1080/13527266.2020.1866645
- Taufique, K. M. R., Vocino, A., and Polonsky, M. J. (2017). The influence of eco-label knowledge and trust on pro-environmental consumer behaviour in an emerging market. *J. Strategic Mark.* 25 (7), 511–529. Routledge. doi:10.1080/0965254x.2016.1240219
- Vermeir, I., and Verbeke, W. (2008). Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. *Ecol. Econ.* 64 (3), 542–553. doi:10.1016/j.ecolecon.2007.03.007
- Visschers, V. H. M., Wickli, N., and Siegrist, M. (2016). Sorting out food waste behaviour: A survey on the motivators and barriers of self-reported amounts of food waste in households. *J. Environ. Psychol.* 45, 66–78. Academic Press. doi:10.1016/j.jenvp.2015.11.007
- Wang J. J., Wang, S., Wang, Y., Li, J., and Zhao, D. (2018). Extending the theory of planned behavior to understand consumers’ intentions to visit green hotels in the Chinese context. *Int. J. Contemp. Hosp. Manag.* 30 (8), 2810–2825. Emerald Publishing Limited. doi:10.1108/ijchm-04-2017-0223
- Wang S. S., Wang, J., Yang, F., Wang, Y., and Li, J. (2018). Consumer familiarity, ambiguity tolerance, and purchase behavior toward remanufactured products: The implications for remanufacturers. *Bus. Strategy Environ.* 27 (8), 1741–1750. John Wiley and Sons Ltd. doi:10.1002/bse.2240
- Wicker, A. W. (1969). Attitudes versus actions: The relationship of verbal and overt behavioral responses to attitude objects. *J. Soc. Issues* 25 (4), 41–78. John Wiley & Sons, Ltd. doi:10.1111/j.1540-4560.1969.tb00619.x
- Xu, Y., Du, J., Khan, M. A. S., Jin, S., Altaf, M., Anwar, F., et al. (2022). Effects of subjective norms and environmental mechanism on green purchase behavior: An extended model of theory of planned behavior. *Front. Environ. Sci.* 10. Frontiers Media S.A. doi:10.3389/fenvs.2022.779629

Appendix

TABLE A1 Fornell-Larcker criteria.

	ATT	EC	FA	PB	PEK	PI	SCM	SLA	SN	SS	WOM
ATT	0.864										
EC	0.514	0.847									
FA	0.442	0.403	0.878								
PB	0.575	0.364	0.314	0.861							
PEK	0.575	0.808	0.399	0.383	0.871						
PI	0.726	0.597	0.432	0.457	0.631	0.894					
SCM	0.452	0.285	0.588	0.388	0.351	0.386	0.875				
SLA	0.624	0.486	0.416	0.687	0.550	0.554	0.325	0.849			
SN	0.611	0.258	0.230	0.625	0.288	0.447	0.296	0.464	0.922		
SS	0.224	0.020	0.353	0.383	0.064	0.133	0.560	0.204	0.299	0.856	
WOM	0.670	0.471	0.490	0.560	0.501	0.726	0.412	0.583	0.454	0.279	0.907