

Who are sustainably minded apparel shoppers? An investigation to the influencing factors of sustainable apparel consumption

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Abstract:

Purpose Consumers' environmental behaviours are not only the result of their positive attitudes towards environments, but also different reasons and motivations exist. Thus, the purpose of this paper is to find out important factors affecting sustainable apparel buying behaviour. Applying the theory of planned behaviour (TPB), this study further examines how knowledge about sustainable apparel, perceived money availability, and perceived accessibility to the store influence sustainable apparel consumption.

Design/methodology/approach Using a purposive college student sample, 235 usable responses were collected to answer the questions. An exploratory factor analysis with principal component analysis was first performed followed by confirmatory factor analysis, and a structural equation modelling analysis.

Findings Results revealed that the TPB was successfully applied in the context of sustainable apparel buying behaviour. Furthermore, it was found that consumers' perceived money availability and perceived store accessibility are important factors that affect control beliefs and sustainable consumption.

Research limitations/implications This study found the needs of educating college students for contexts of environmental apparel and textiles issues.

Originality/value Even though previous literature often found the gap between the behavioural intentions and the actual behaviour, this study found the respondents of this study walk their talk. This study successfully applied the TPB to explain consumers' sustainable apparel buying behaviour.

Keywords: consumption | theory of planned behavior | control beliefs | sustainable apparel

Article:

Introduction

Environmentally friendly consumerism has widened from the exceptional fashion to the mainstream trends in the US society (Han and Yoon, 2015). Researchers have studied to understand this social change by investigating the effects of various aspects, such as environmental knowledge, on consumers' environmental behaviours. Nowadays, consumers are more conscious about environment-related issues (Lee, 2011). Additionally, environmental behaviours have been encouraged not only because of the short-term welfare of an individual, but also because of the long-term well-being for a society and across the nations. However, consumers' environmental behaviours are not always the result of their positive attitudes towards environments. Their actual environmentally friendly behaviours are sometimes contradicted by their attitudes towards the behaviour or behavioural intentions. This means that people, who have positive attitudes about sustainable products and say that they plan to purchase them, may not actually buy them. Also, consumers often do not want to spend a lot of money on buying sustainable products, although their expectations about sustainable products or companies are growing higher (Bezençon and Etemad-Sajadi, 2015; Kim et al., 2014). Thus, more research is needed to explain this gap between consumers' minds and their actual buying behaviours.

Environmentally friendly consumption, referred to as sustainable consumption, has often been explained by the theory of planned behaviour (TPB) in many contexts, such as food buying behaviours or business ethics (Wiese et al., 2012). Sustainable consumption is often resulted from planned decision making, not by hedonic reasons. Thus, previous researchers could explain sustainable consumption behaviour soundly based on the TPB (Carrington et al., 2010). For example, the theory has been applied in food buying behaviour widely based on the increasing demand for organic food and an increasing interest in the significant health and nutrition issues in individual's lives. In apparel and textiles research, consumers' sustainable apparel consumption has also been studied (Sadachar et al., 2016), however, there has been scant research about sustainable apparel consumption based on the TPB.

Research questions and purpose of the study

In the current US society, consumers are mostly satisfied with their apparel purchases based on their apparel needs (e.g. fashionable or comfort needs) and are looking for the next level of consumption purposes. For example, environmental issues have become critical nowadays and consumers seek for more sustainable products, such as environmentally friendly apparel or eco-designed and packaged goods (Magnier and Crié, 2015). However, people also have a tendency to seek, buy, and dispose of products based on their personal interests derived from hedonic needs, not environmental related purposes (Joung, 2014). The US market share regarding green products has been growing rapidly with the US consumers seeking sustainable business practices and products/services (Ko and Jin, 2017; Miller and Washington, 2014). Therefore, it is important to understand the US consumers' behaviours so we can encourage them to make smarter decisions in order to obtain both personal and environmental needs.

To further investigate the study, four research questions are asked to develop the theoretical framework for the study:

RQ1. Do consumers have knowledge about environmental apparel and textiles issues?

- RQ2.* What will influence consumers' sustainable apparel buying intentions and actual buying behaviour?
- RQ3.* Can the TPB be applied to consumers' sustainable apparel buying behaviour?
- RQ4.* Does perceived money availability and perceived store accessibility influence consumers' perceived behavioural control?

Based on the research questions and the extensive literature review, the purpose of this study is to investigate the effects of consumers' environmental knowledge, general environmental attitudes, and environmental apparel attitudes on their sustainable apparel purchase intentions. Also, this study is designed to examine how their subjective norms and perceived behavioural control influence sustainable apparel buying intentions and actual buying behaviour based on the TPB. Furthermore, control beliefs (i.e. perceived money availability and perceived store accessibility) are used as antecedents of consumers' perceived behavioural control.

Literature review

TPB

The TPB is an extension of the theory of reasoned action (TRA), developed because of the original theory's limitations (Ajzen, 1991). The constructs of the TRA include attitudes about the behaviour (e.g. behavioural or normative attitudes) and subjective norm (e.g. importance of others' opinions) as predictors of behavioural intentions, and behavioural intentions as a predictor of actual behaviour (Fishbein and Ajzen, 2011). Attitudes about the behaviour consist of beliefs about a particular behaviour. For example, affective attitudes towards behaviour can be either positive or negative emotional attitudes. Second, subjective norms represent the person's beliefs that specific individuals (e.g. family, friends, or significant others) think he/she should or should not do the behaviour and his/her motivation to comply with these specific individuals (Fishbein and Ajzen, 2011). However, this theory neglected incomplete volitional control of consumers, which often influences their intentions to behave and their actual behaviour. The TPB includes this behavioural control as an antecedent of behaviour intentions and actual behaviour (Ajzen, 1991).

Applying the TPB, researchers studied attitudes, subjective norms and behavioural control as predictors of environmentally sustainable and ethical consumer behaviours including consumption of organic foods and purchasing behaviour of fair-trade apparel (Halepete et al., 2009). These beliefs are found to be influential constructs for the intention to purchase green-related products (Vermeir and Verbeke, 2008). The TPB also suggests that influence of society experts and information in the media are important in pressuring individuals to act more environmentally responsible. Furthermore, regarding perceived behavioural control, individuals who previously made green friendly purchase options will tend to choose the same products as long as they are satisfied with the products (Salazar et al., 2013).

What is sustainable apparel?

Environmental issues in the context of textiles and apparel have been explored for a very long time, while consumer demand for environmental friendly products also continues to increase (Brosdahl and Carpenter, 2010). Current environmental issues and interests have encouraged discussion with regards to the effects of environmental consciousness on apparel consumption

(Lee, 2011). Consumers' understanding of sustainable apparel are often vague (Cervellon and Carey, 2011). Thus, they can believe that sustainable apparel is just one made of expensive, organic, natural fibres. This misunderstanding may cause low involvement of consumers' sustainable apparel consumption. Also, consumers may not even know they are making sustainable apparel purchases because of their ignorance of the sustainable concept itself. According to Kim and Damhorst (1998), sustainable apparel can be explained by various classifications. First, sustainable apparel can be apparel made from recycled material, made of organically grown natural fibres, and made of special fabrics that need cooler washing temperature or less ironing, which leads to sustainable handling processes. Also, apparel with low impact or no dye processing, or with environmentally friendly labelling or packaging techniques are labelled as sustainable apparel. Interestingly, second-hand apparel can also be considered sustainable apparel because it is related to resource conservation. Last but not least, apparel which an individual can wear over a longer time period than fashion apparel is considered sustainable.

Who are the sustainably minded consumers?

Sustainably minded consumers can be defined as those individuals who are concerned about environmental issues and imply them in their purchasing behaviour (Carrington et al., 2010). Sustainable consumption can be considered as one of the socially responsible behaviours. These socially conscious consumers, including environmentally friendly consumers, feel that they can help to solve the environmental problems. For example, they think they can help to reduce pollution by their sustainable buying behaviour (Dean and McMullen, 2007). Also, sustainable consumers strongly believe that current environmental issues are worsening and causing serious problems related to the security of the world. Sustainably minded consumerism is reflected in social movements to balance between environmental and economic primacies (Carrington et al., 2010). For example, Earth Day or various resource saving campaigns make consumers' environmental awareness higher (Butler and Francis, 1997). The interests of environmental concerns in a society also influence apparel industries. Environmental consumerism can now be applied to apparel consumption behaviour (e.g. apparel acquisition, using, or discarding) (Kim and Damhorst, 1998). Specifically, young consumers (e.g. Millennials) have positive attitudes towards sustainable consumption and environmental and social awareness (Pomarici and Vecchio, 2014). In addition, young consumers, as a growing consumer segment, tend to make sustainable consumption, which is likely to continue as young consumers take their habits into their older age (Vermeir and Verbeke, 2008).

Apparel and textiles environmental knowledge

Knowledge about the specific content, referring to apparel and textiles knowledge in this study, can be a powerful influence on consumer behaviour (Blackwell et al., 2006). Environmental knowledge can be defined as "factual information that individuals have about the environment, the ecology of the planet, and the influence of human actions on the environment/ecology" (Arcury and Johnson, 1987, p. 32). Researchers have expected that individuals with higher environmental knowledge are more likely to be concerned about environmental issues, and more likely to make environmentally friendly consumption (Kim and Damhorst, 1998; Sampson, 2009). Yet, people often have limited knowledge of environmental issues and contexts (Kozar and Connell, 2013). Also, college students do not have sufficient environmental knowledge to have positive attitudes

towards environmental issues. Researchers found the need for education on environmental knowledge because it also affects individuals' environmental behaviour (Kim and Damhorst, 1998). Moreover, individuals with higher levels of environmental concerns and those with strong belief about their contributions to solving environmental problems had more knowledge of environmental issues.

Consumers' knowledge is a significant aspect to explain the gap between consumers' buying intention and their actual buying behaviour (Brosdahl and Carpenter, 2010). An example is that consumers may have no knowledge about environmental issues and sustainable consumption, so they cannot make sustainable consumptions even though they have positive attitudes towards environmental issues. Interestingly, environmentally minded consumers do not always walk their talk as Carrington et al. (2010) said because of their lack of knowledge. Thus, a gap exists between what consumers say they will do and how they actually behave.

Environmental apparel and textiles knowledge has been measured by questions with regards to the processing of fibres, recycling of fibres, or regulatory policies (Kim and Damhorst, 1998). In total, 11 statements were used as the items to measure the knowledge; some of the questions are as follows: chemical pollutants are produced during processing of natural fibres such as cotton – False; air pollution can occur during some common dye processes of textiles – True; fibres such as wool cannot be commercially recycled – False; special finishes on fabrics may create a problem for recycling – True; the use of larger quantities of natural fibres will significantly decrease energy consumption – False. These questions were screened by experts in various areas, such as textile science and social psychology, and were confirmed to be measurements of environmental apparel and textiles knowledge. In the study, these questions are modified to measure college students' environmental apparel knowledge.

General and apparel environmental attitudes

A relationship between attitudes towards sustainable consumption, and actual apparel acquisition and discard behaviour has been found in one of the earliest research studies about socially responsible apparel consumption (Stephens, 1985). However, Stephens (1985) also found that consumers' awareness of sustainable apparel products was less general than that of other sustainable products, such as soft drink cans with environmental packaging. According to Butler and Francis (1997), attitudes towards environmental behaviour can be put into two categories in the apparel context: general environmental attitudes and apparel environmental attitudes. General environmental attitudes include consumers' evaluation of environmental attitudes of government, manufacturers, and commercial advertising. These general environmental attitudes can be linked in a more content-specific manner, such as environmental apparel. Thus, in this study, environmental apparel attitudes are related to how much individuals consider resource conservation when they purchase apparel (Kozar and Connell, 2013). Another significant finding from previous research was apparel disposal methods, such as donations to charities, are influenced by an environmental attitude when the individual is environmentally oriented (Joung and Park-Poaps, 2013). The relationship between firms' sustainable apparel advertisements and environmental concern has also been studied (Kim et al., 1997).

Perceived behavioural control

According to Ajzen (1991), beliefs of individuals are the key factors to determine their attitudes, subjective norms, and perceived behavioural control. Furthermore, these beliefs can influence individuals' behaviours and performances. Specifically, control beliefs are related to perceived power to perform certain behaviour. These control beliefs are significant concepts to understand consumers' perceptions and abilities. Thus, this study focusses on investigating the roles of control beliefs on perceived behavioural control, and in turn, how it influences behavioural intentions and actual behaviour.

Consumers' perceived behavioural control towards environmental behaviours and sustainable apparel consumption can be changed by economic situations (e.g. recessions) or can be different by individuals' personal characteristics (e.g. personal values and lifestyles) (Fuentes, 2015). However, there was a lack of explanation on why and how consumers' perceived behavioural control differs. Thus, more research is needed to explain how a consumer perceives his/her behavioural control differently. Control belief is the individual's perception of essential resources to perform the behaviour (Ajzen, 1991). Consumers can perceive either presence or absence of the requisite resources to accomplish certain behaviour. Thus, money or store location can be used as the subjects of these pivotal resources to perform behaviour.

Perceived money availability

The gap between perceived behavioural control and its antecedents is not only determined by the consumers' cognitive evaluations about the behaviour (Carrington et al., 2010), but also by actual behavioural control power or situational contexts. For example, their situational behavioural control, such as money availability or store accessibility, can explain perceived behavioural control more accurately. First, consumers' money availability can be their actual behavioural control beliefs which can make them eligible to buy what they want. Thus, money availability was often tested as a predictor of consumers' actual buying behaviour. According to Belk (1975), momentary conditions include consumers' momentary situation. Sustainable apparel is often thought as expensive products; therefore money availability plays a significant role to encourage consumers to make an actual purchase (Carrington et al., 2010). For example, when consumers have an intention to purchase a sustainable product but they do not have money, they are not able to purchase that product. Therefore, this study examines the effect of perceived money availability on the perceived behavioural control of sustainable apparel buying behaviour.

Perceived store accessibility

Physical surroundings are also related to consumers' buying decisions (Swoboda et al., 2013). Store accessibility is an important factor influencing consumer purchasing behaviour (Ball et al., 2006). Convenience of the store location often affects consumers' buying behaviour. For example, when the store carrying a product consumers want to buy, consumers can easily purchase those products compared to those people who do not have easy access to the store carrying sustainable apparel products. Also, as Fishbein and Ajzen (2011) suggested, the stability of intentions between time of measurement and performance of the behaviour often has an effect on the gap between behavioural intentions and actual behaviour. One interesting finding from a previous study is that consumers perceive the accessibility not only by actual distance, but also by attractiveness of the

store (Ball et al., 2006). While actual distance of the store influences the actual shopping behaviour, this study suggests that consumers' perceived accessibility to the store carrying sustainable apparel products will influence consumers' perceived behavioural control, and in turn, influencing buying intention and actual behaviour.

The conceptual framework

The overall purpose of this research is to apply the TPB to explain consumers' sustainable apparel buying behaviour process. Thus, the conceptual framework is developed to investigate how consumers' environmental apparel knowledge, general and apparel environmental attitudes, as well as subjective norms and perceived behavioural control influence their intentions to purchase sustainable apparel products. Furthermore, how consumers' intentions to purchase sustainable apparel affect apparel buying behaviour is projected in the framework. Also, money availability and perceived accessibility to the store carrying sustainable apparel are used as antecedents of perceived behavioural control since these perceived money availability and perceived store accessibility can explain the control beliefs (see Figure 1).

Hypotheses development

Previous studies generally expected that consumers with higher environmental knowledge would be concerned more about the environmental issues than consumers who did not have environmental knowledge (Brodsahl and Carpenter, 2010). This study used a

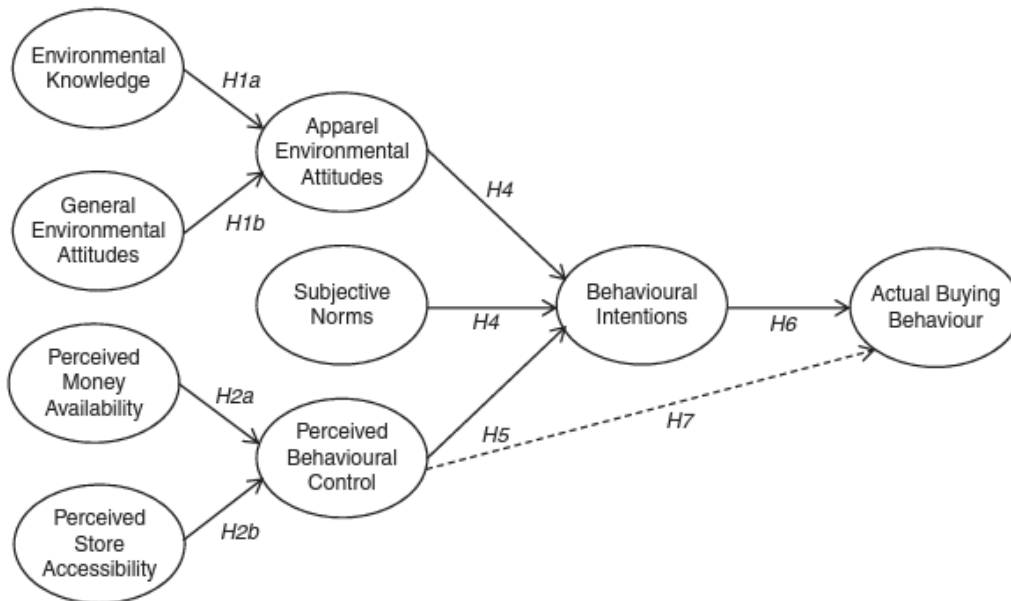


Figure 1. The proposed theoretical framework

purposive sample of college students because they may have more opportunities to learn about environmental issues and may be more aware of the environmental problems and solutions based on educational supports. Also, their knowledge can be related to their attitudes towards sustainable apparel products. Thus, it is expected that college students who have environmental apparel knowledge may have stronger attitudes towards environmental apparel issues. Therefore:

H1a. Apparel environmental knowledge will positively influence consumers' apparel environmental attitudes.

Also, attitudes towards general socially responsible consumption, including attitudes towards sustainable consumption, often influence consumers' attitudes about socially responsible apparel consumption and their apparel discard behaviour (Kozar and Connell, 2013). This means that general environmental attitudes often extend to attitudes towards specific product consumption behaviour, such as apparel buying and disposal behaviour. Thus:

H1b. General environmental attitudes will positively influence consumers' apparel environmental attitudes.

Second, despite their environmental intentions, sustainably minded consumers do not always purchase sustainable products (Carrington et al., 2010). This can be explained by consumers' perception about their control over the certain behaviour. Thus, it is important to investigate what the antecedents of perceived behavioural control are, and how this perceived behavioural control will be influenced by other reasons or situations. Environmental products are often more expensive compared to non-environmental products. Therefore, perceived money availability may influence consumers' perceived behavioural control in the sustainable apparel purchase context. Also, people may think that the stores who carry sustainable apparel products are not near the places they live. This may be the reason that people feel they have less control over the behaviour and hesitate to actually purchase sustainable apparel products. Thus:

H2a. Perceived money availability will positively influence perceived behavioural control of sustainable apparel consumers.

H2b. Perceived accessibility to the store carrying sustainable apparel will positively influence perceived behavioural control of sustainable apparel consumers.

Consumers who have positive attitudes towards certain behaviour are more likely to behave in that manner. Based on the assumptions from the previous hypotheses, consumer intentions to buy sustainable apparel can be predicted by their apparel environmental attitudes. Also, consumers' behavioural intentions are influenced by subjective norms and perceived behavioural control (Park and Ha, 2012). Thus, it is expected that apparel environmental attitudes, subjective norms, and perceived behavioural control influence sustainable apparel buying intentions. Therefore:

H3. Environmental apparel attitudes will positively influence consumers' sustainable apparel buying intentions.

H4. Subjective norms will positively influence consumers' sustainable apparel buying intentions.

H5. Perceived behavioural control will positively influence consumers' sustainable apparel buying intentions.

Furthermore, the relationship between behavioural intentions and the actual behaviour can be predicted. Fishbein and Ajzen (2011) found that behavioural intentions are the direct antecedents

of the actual behaviour. In turn, consumers' intentions to purchase sustainable apparel will be related to their actual sustainable apparel buying behaviour. Thus:

H6. Consumers' environmental behaviour intentions will positively influence consumers' actual sustainable apparel consumption.

The direct effect of perceived behavioural control on the actual behaviour is also proposed in the TPB (Ajzen, 1991). When perceptions of control over certain behaviours are accurate, the direct effect of perceived behavioural control is significant. Based on this assumption, this study also predicts that perceptions of control over sustainable apparel buying behaviour directly influence actual sustainable apparel buying behaviour. Therefore:

H7. Perceived behavioural control will positively influence consumers' actual sustainable apparel consumption.

Methodology

Participants and data collection

Using a survey method, this study employed a quantitative research design. The participants for this study were 235 college students who attend a south-eastern university. The students voluntarily participated in the survey. The questionnaire consists of three sections. The first section includes questions about environmental apparel knowledge, general environmental attitudes, apparel environmental attitudes, behavioural intentions, and perceived accessibility to the stores which carry environmentally friendly apparel products. The second section consists of questions regarding perceived behavioural control, perceived money availability, and actual buying behaviour of environmentally friendly apparel products. The last section includes questions about the sample's demographic information.

Instrument development

Existing five-point Likert-type scales (1=strongly disagree to 5=strongly agree) were used to measure each variable except the scale for environmental apparel product knowledge. First, the scale to measure environmental apparel product knowledge was revised based on actual environmental apparel knowledge questions developed by Kim and Damhorst (1998). One question was "Air pollution can occur during some common dye processes of textiles (True)". Five true or false questions about environmental apparel knowledge were revised as five-point Likert-type scales. Second, the scales to measure general environmental attitudes and environmental apparel attitudes were adopted from Stephens (1985). Three items were used to measure general environmental attitudes and four items were used to measure environmental apparel attitudes. For example, a general environmental attitudes related question was "I become angry when I think about the harm being done to plant and animal life by pollution". The measure of environmental apparel attitudes included the question "People should consider resource conservation when they buy clothes". Third, the scale, including three items, to measure subjective norms was adopted from Ajzen and Fishbein (1980). One example item was "People, who are important to me, think that I should buy sustainable apparel products". Fourth, perceived behavioural control was

measured by the scale, including four items, developed by Sparks et al. (1992). For example, the question was “For me, to purchase sustainable apparel would be very easy”. Fifth, the scales to measure sustainable apparel buying intentions and actual sustainable apparel buying behaviour were adopted from Ajzen and Fishbein (1980), and were revised based on Kim and Damhorst (1998). Five items were used to measure sustainable apparel buying intentions (e.g. “I intend to purchase apparel made from recycled material in the near future”). Actual sustainable apparel buying behaviour was measured by five questions, such as “I purchased apparel made from recycled material in last 6 months”.

Perceived money availability and perceived accessibility to the store carrying sustainable apparel products were two additional constructs in the conceptual framework. These two constructs were tested as antecedents of perceived behavioural control of sustainable apparel consumers. Perceived money availability was measured by the scale, including three items, developed by Beatty and Ferrell (1998). An example of a question was “I feel I can afford to make any sustainable apparel purchases if I want”. The scale developed by Ajzen (1991) was modified to measure perceived accessibility to the store carrying sustainable apparel. There were three questions to ask perceived accessibility and one example was “I feel that locations of the apparel stores, carrying sustainable apparel products, are close to me”.

To analyse the data, the PASW Statistics 18.0 and structural equation modelling using LISREL 8.8 (Jöreskog and Sörbom, 2006) were used. The PASW Statistics 18.0 was used to conduct a descriptive analysis of demographic information, exploratory factor analysis (EFA) of all constructs of the conceptual model. LISREL 8.8 was used to conduct confirmatory factor analysis (CFA) based on the result of the EFA, and was also used for testing structural equation modelling.

Results

Demographic information

The age of the students ranged from 18 to 36 and the mean age was 20.3. The majority of the sample was female (92 per cent) (see Table I). Regarding ethnicity, the first majority ethnic group was Caucasian/white and the second majority ethnic group was African American. Their years at school were various from freshman to graduate students. However, they were mostly freshman, sophomore, junior, and senior. Almost 41 per cent of participants answered that their monthly incomes were under \$300, and around 18 per cent of participants had monthly incomes between \$300 and \$499.

The results of exploratory factor analyses with principal component analysis

To identify the reliable items for each construct: environmental apparel knowledge; general environmental attitudes; environmental apparel attitudes; perceived behavioural control; subjective norms; sustainable apparel buying intentions; actual sustainable apparel buying behaviour; perceived money availability; and perceived accessibility to the store carrying sustainable apparel, exploratory factor analyses with principal component analysis conducted. Principal component analysis with Varimax rotation was used and items loading greater than 0.4 on a factor were retained. As a result, 27 out of 35 items were retained. General environmental attitudes consisted of three items ($\alpha=0.74$). The reliability of environmental apparel attitudes was

Table I. Demographic characteristics of the respondents

Characteristics	Sample percentage
<i>Age</i>	
Mean	20.3
<i>Gender</i>	
Female	92.0
Male	8.0
<i>Ethnicity</i>	
African American	28.6
Asian or Pacific Islander	9.4
Caucasian/White	54.3
Hispanic/Latino	3.4
Other Ethnic Background	4.3
<i>Year at school</i>	
Freshman	32.9
Sophomore	27.8
Junior	21.8
Senior	15.4
Graduate/Others	2.1
<i>Monthly Income</i>	
Under \$300	41.0
\$300 - \$499	17.9
\$500 - \$749	16.6
\$750 - \$999	7.0
\$1,000 - \$1,299	7.0
\$1,300 and more	9.2

Note: $n = 2351.3$

deemed non-satisfactory with Cronbach's α value of 0.48. Perceived behavioural control is consisted of three items ($\alpha=0.78$). The reliability of subjective norms was deemed satisfactory with Cronbach's α value of 0.82. The reliabilities of sustainable apparel buying intentions, consisted of five items, and actual sustainable apparel buying behaviour, consisted of four items, were deemed satisfactory as well with Cronbach's α values of 0.74 and 0.71, respectively. Additionally, reliabilities of perceived money availability, consisted of three items, and perceived accessibility to the store carrying sustainable apparel, consisted of two items, were deemed satisfactory as well with Cronbach's α values of 0.74 and 0.83, respectively. Yet, environmental apparel knowledge was not a reliable factor, so it could not be used for the analyses (i.e. CFA and structural equation modelling) for the next step. Additionally, environmental apparel knowledge was also eliminated for the further analysis because of its non-satisfactory reliability.

The result of CFA

This study followed the preliminary analysis with the two-step procedure recommended by a number of researchers (e.g. Anderson and Gerbing, 1988; Bollen, 1989; Schumacker and Lomax, 2010) to establish measurement and structural model. CFA was performed via LISREL 8.8 on six 29-item constructs using maximum likelihood estimation in the analysis and the sample covariance matrix as input prior to incorporating the structural restrictions (Jöreskog and Sörbom, 1993).

Regarding the result of CFA, the model fit statistics revealed $\chi^2(209) = 489.81, p < 0.001; \chi^2/df = 2.34; CFI = 0.94; NFI = 0.89; RMSEA = 0.076$, suggesting that the hypothesised structural constructs fit the data well (see Table II).

The result of structural equation modelling

After the measurement model was confirmed, structural equation modelling was then performed to test the hypothesised relationships. The model fit statistics revealed $\chi^2(213) = 528.14, p < 0.001; \chi^2/df = 2.48; CFI = 0.93; NFI = 0.88; RMSEA = 0.080$, suggesting that the hypothesised structural relationships fit the data well. Each hypothesised relationship was examined based on path significance except *H1a, H1b*, and *H3*, *H1a*, environmental apparel knowledge will positively influence consumers' environmental apparel attitudes, and *H1a*, environmental apparel knowledge will positively influence consumers' environmental apparel attitudes, could not be tested since these two variables were not reliable factors. Also, *H3*, environmental apparel knowledge will positively influence consumers' behavioural intentions, could not be tested because of the low reliability of environmental apparel knowledge factor. Instead of *H1* and *H3*, general environmental attitudes replaced the environmental apparel attitudes. Thus, the relationship between general environmental attitudes and behavioural intentions to purchase sustainable apparel was tested. The result revealed that it was significant, $\gamma_{23} = 0.52, p < 0.01$. Thus, the positive relationship between general environmental knowledge and behavioural intentions to purchase sustainable apparel (e.g. apparel made of organic cotton, or second-hand apparel) was found.

H2a, stating that perceived money availability will positively influence perceived behavioural control of sustainable apparel consumers, was supported with $\gamma_{11} = 0.41, p < 0.001$. *H2b*, perceived accessibility to the store carrying sustainable apparel products will positively influence perceived behavioural control of sustainable apparel consumers, was also supported with $\gamma_{12} = 0.37, p < 0.001$.

H4 proposed that subjective norms will positively influence consumers' environmental behaviour intentions and it was supported with $\gamma_{24} = 0.34, p < 0.001$. This shows that consumers are more likely to intend to purchase sustainable products when their significant others (e.g. family or friends) ask them to buy those types of products. *H5*, perceived behavioural control will positively influence consumers' environmental behaviour intention, was also supported with $\beta_{21} = 0.14, p < 0.001$. Consumers will have intentions to buy sustainable apparel when they perceive their control over sustainable apparel buying.

H6 proposed that consumers' sustainable apparel buying intentions will positively influence their actual buying behaviour. The result revealed that it was significant, $\beta_{32} = 0.62, p < 0.001$, so that consumers who have intentions to purchase sustainable apparel are actually buying those products. Thus, *H6* was supported. Last but not least, *H7*, perceived behavioural control will directly influence actual sustainable apparel buying behaviour, was also supported with $\beta_{31} = 0.25, p < 0.001$. This means that consumers who believe that they have strong abilities to control the sustainable apparel buying behaviour are more likely to purchase sustainable apparel products (see [Figure 2](#)).

Table II. Measurement model results

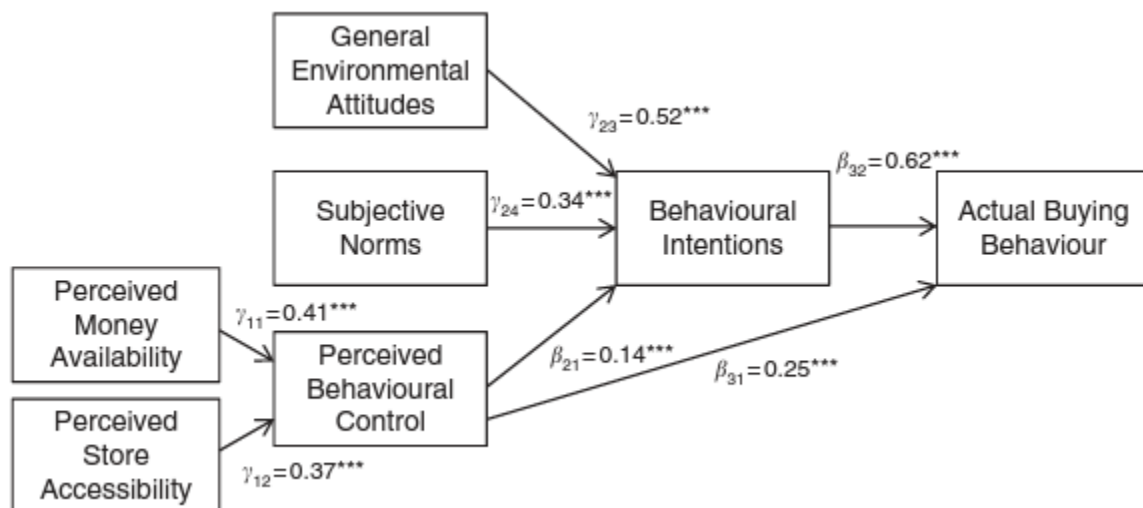
Constructs/Indicators	Standardized factor loading	<i>t</i> value	CR	AVE (%)
ξ_1 (<i>Perceived money average</i>)			0.84	65.24
X_1	1.03 ^a	-		
X_2	0.49	06.12***		
X_3	0.81	8.69***		
ξ_2 (<i>Perceived store accessibility</i>)			0.86	75.13
X_5	0.92 ^a	-		
X_6	0.81	07.90***		
ξ_3 (<i>General environmental attitudes</i>)			0.77	53.47
X_7	0.70 ^a	-		
X_8	0.79	08.09***		
X_9	0.70	08.06***		
ξ_4 (<i>Subjective norms</i>)			0.95	82.78
X_{10}	0.95 ^a	-		
X_{11}	0.80	010.77***		
X_{12}	0.97	15.01***		
η_1 (<i>Perceived behavioral control</i>)			0.86	68.30
y_1	0.90 ^a	-		
y_2	0.95	011.91***		
y_3	0.58	8.8.01***		
η_2 (<i>Behavioral intentions</i>)			0.78	43.15
y_4	0.78 ^a	-		
y_5	0.69	08.57***		
y_6	0.79	012.35***		
y_7	0.53	07.80***		
y_8	0.41	05.74***		
η_3 (<i>Actual behavior</i>)			0.87	64.88
y_9	0.98 ^a	-		
y_{10}	0.64	04.22***		
y_{11}	1.02	10.33***		
y_{12}	0.43	04.36***		

Notes: CR, composite reliability; AVE, average variance extracted. ^aFirst λ path was set to 1, therefore, no SE's or *t* values are given. *** $p \leq 0.001$

Conclusion and implications

This study successfully applied the TPB to explain consumers' sustainable apparel buying behaviour. Suggested relationships among constructs in the TPB were also supported by the findings of this study. These findings are: first, environmental apparel attitudes (e.g. apparel resource conservation concerns), subjective norms (e.g. important people's opinion on buying sustainable apparel), and perceived behavioural control (e.g. perceptions about capabilities to control sustainable apparel buying behaviour) influenced sustainable apparel buying intentions (e.g. intentions to buy apparel made from recycled materials or second-hand apparel) (Carrington et al., 2010). Also, actual sustainable apparel buying behaviour was influenced by buying intentions. Even though previous literature often found the gap between the behavioural intentions and the actual behaviour (Carrington et al., 2010), this study found the respondents of this study walk their talk. Yet, there was no direct effect of consumers' perceptions about their control over the actual sustainable apparel buying behaviour on the actual behaviour. Perceived behavioural control may not be accurate compared to actual behavioural control. Another interesting finding from this study is that environmental apparel knowledge was not a reliable variable, which is different from previous research findings (Sadachar et al., 2016). The reason why the variable itself was not reliable may be because the questions were originally developed by true/false questions and revised to fit a five-point Likert-type scale. Thus, a more rigorous scale to measure the consumers' environmental apparel and textiles knowledge is needed.

This study found the significant effects of perceived money availability on perceived behavioural control. In line with the finding of Carrington et al. (2010), this indicates that individuals are more likely to believe that they can purchase sustainable apparel products when they think more money they have. This implies marketing practitioners to promote that sustainable apparel is not as expensive as consumers think, and also to encourage consumers to perceive more value in the products compared to actual prices. In addition, marketers can create sustainable movement and campaigns educational information regarding green apparel for their customers, so that they can receive educational information and be involve in these events.



Note: *** $p \leq 0.001$

As second-hand clothing is also considered as sustainable clothing, second-hand clothing retailers can emphasise the ethical and sustainable nature of used clothing to promote their products. Also, these retailers can work closely with local communities to provide local services to promote their sustainable products. Furthermore, as our communities can positively be changed with this sustainable practice, apparel retailers can provide educational sessions regarding sustainable consumption and green apparel for local communities.

This study also found the positive influence of perceived store accessibility on perceived behavioural control. Thus, how consumers believe the closeness of the store affects their control beliefs to buy sustainable apparel (Ball et al., 2006). Retailers may consider developing the easy access concept online if it is hard for them to locate near their consumers.

For future research, larger sample size will lead to more rigorous results of both the model fit and hypotheses testing. Based on these various meanings of sustainable apparel, consumers need to broaden their understanding about sustainable apparel. Especially, second-hand apparel, apparel that the one can wear over a long time, or apparel with sustainable labelling may be easy to access and buy nowadays. Also, individuals' perceptions are often far from reality. Therefore, actual behavioural control, actual money availability, and actual sustainable apparel store accessibility can be further applied for future research. Last but not least, the participants were self-reporting on their actual buying behaviour, thus future study on actual buying behaviour (e.g. measure how much they spent to buy green apparel) will provide more precise results related to actual buying behaviour.

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