

Apparel disposal in the South African emerging market context: exploring female consumers' motivation and intent to donate post-consumer textile waste

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ABSTRACT

Globally, textile waste is cause for much concern with attention devoted toward waste reduction strategies throughout the value chain, but also more specifically at the end-of-life, when consumers are urged to donate, recycle or resell unwanted apparel. Studies in developed countries have provided much insight surrounding consumers' apparel disposal, but the topic remains understudied in emerging economies. Using a combination of the Theory of Planned Behavior (TPB) and the Norm Activation Theory (NAT), this study explores female consumers' motivation and intention to sustainably dispose of post-consumer textile waste in the South African emerging market context. Adopting a non-probable purposive sampling procedure, 315 females between 18 and 65 years were recruited, as they often fulfil decisive roles in the disposal of unwanted apparel. Scale items derived from prior research were adapted and included in a structured, self-administered web-based questionnaire to collect data. Exploratory and confirmatory factor analysis revealed eight factors, namely awareness of environmental consequences, social norms, personal norms, perceived behavioral control, attitudes as well as their intent to donate, resell and reuse/ recycle apparel. Focusing on donation as respondents' preferred method of disposal, a structural equation model was devised that reveals the underlying motivational factors that contribute to their willingness to donate. The findings offer a meaningful contribution toward current debates surrounding the utility of TPB and NAT to predict intent. The study also delivers a much-needed African perspective on the underpinnings of consumers' apparel donation, which may serve as a basis for waste reduction strategies and direct future investigation.

Keywords: Apparel disposal, donation, emerging economy, pro-environmental intent, Theory of Planned Behavior, Norm Activation Theory

1 Introduction

Recent years have seen the textile and apparel industry under constant scrutiny for being the culprit of various environmental and social concerns (Peña-Vinces et al., 2020; Ribul et al., 2021). The Covid-19 pandemic has amplified these concerns due to growing public awareness of environmental and social injustice in the fashion value chain (McKinsey & Company, 2021). Yet, even before the pandemic, the trajectory of the worldwide fashion industry was labelled as "unsustainable" and "inherently flawed" with overproduction not only resulting in markdowns and major revenue shortfalls (McKinsey & Company, 2021) but also contributing to the industry's overall 4% share of global greenhouse gas emissions (McKinsey & Company, 2020). These emissions stem from initial raw material extraction to end-of-use activities (Ribul et al., 2021), which is exacerbated by the fashion industry's rapid seasonal turnaround. Fueled by inexpensive mass-produced fast fashion that is frequently and easily replaced with the latest trends (Bianchi and Birtwistle, 2012; Peña-Vinces et al., 2020), textile waste has also dramatically increased and represents a key issue because the accumulation of such waste in landfills pose immense public health and environmental challenges (DeVoy et al., 2021; Mor et al., 2006). Textile decomposition is known to involve harmful chemical leachates as well as carbon dioxide and methane emissions that contribute to climate change, water pollution, the destruction of natural habitats, biodiversity loss, and, ultimately, threaten the health and well-being of people (DeVoy et al., 2021). Consequences related to textile waste decomposition have, amongst others, initiated much research and development in more advanced economies to promote closed- and open-loop recycling, upcycling and downcycling, secondhand- and collaborative consumption models to extend the lifespan of garments (Ribul et al., 2021).

Consumers' willingness to engage in sustainable apparel disposal behaviors has received particular interest in a bid to create meaningful progress towards textile waste reduction and fashion circularity (Diddi and Yan, 2019; Joung and Park-Poaps, 2013; Mor et al., 2006). Other than simply discarding unwanted apparel to municipal landfills, consumers can for example choose to resell, reuse and/or recycle (Diddi and Yan, 2019; Joung and Park-Poaps, 2013; Meyer, 2013). Following a more simplistic delineation of terms, recycling and reusing involve the prolonged use of apparel for the same or a different purpose (Stols, 2016). Consumers can also resell unwanted apparel to derive financial and pro-environmental benefits (Joung and Park-Poaps, 2013). A clothing disposal option that however warrants closer scrutiny, particularly in the African context, is donation. For some time, the African continent has served as the final destination for an estimated 70% of clothing donated globally with East Africa alone importing over \$150 million worth of used apparel, predominantly from the US, and Europe (Banik, 2020). Yet, as pointed out by Brooks (2019), when the affluent donate their unwanted apparel to charities, assuming it will be reused, the journey does not end there and the story remains half told. In a recent documentary,

Besser (2021) reports on the tragic consequences surrounding textile waste in Ghana, highlighting the fact that the country has a population of 30 million, with 15 million donated garments from the United States, Europe and Australia reaching its shores every week, thus resulting in mountains of unusable, lower-quality textile waste ending up in landfills.

Against the backdrop of this immense influx of second-hand clothing into Africa, gaining insight into local African communities' disposal of post-consumer textile waste, especially within emerging markets such as South Africa, is important for several reasons. Amongst other, emerging economies such as South Africa, are characterized by rising consumption levels, particularly among the growing middle and higher-income consumer segments (Cavusgil et al., 2018; Kumar and Srivastava, 2020). Increased consumption of newly manufactured apparel is crucial for stimulating growth and job creation in the South African clothing sector, but this will inevitably result in escalated levels of post-consumer textile waste that further exacerbate the already prevalent textile waste overflow in Africa. Given the lack of recycling initiatives and infrastructure on the African continent (Arkorful et al., 2021), local consumers' role in extending the lifespan of a product becomes even more pronounced in the pursuit of fashion circularity (De Ferran et al., 2020; Diddi and Yan, 2019). In this regard, consumers' motives are seen to be key in adopting waste reduction and redistribution practices such as donation and reselling (De Ferran et al., 2020). Such practices could, however, trigger further unintended consequences within the larger African context, simply because the performers are unaware of the journey beyond the act and/or believe they have no control over the consequences and feel no moral obligation to do something about it. Such issues can be addressed via waste reduction strategies and campaigns but must be tailored according to consumer-specific motivations within the local context. Due to the unique composition of local African communities (including population heterogeneity and other contextual intricacies), generalized approaches, particularly those derived from more advanced economies might not gain the desired outcomes. As a first step, it would be important to establish local consumers' preferred method of apparel disposal, particularly in light of the growing controversy surrounding the import of second-hand clothing from abroad. Empirical research conducted abroad found that donation is a preferred redistribution method (De Ferran et al., 2020). Such results have not yet been established locally. Within the limitations and scope of this paper, efforts will therefore be directed toward firstly confirming local consumers' preferred method of apparel disposal, and then mapping the underlying motivation to engage in such behavior so that findings could be of practical value in guiding future waste reduction strategies.

Abroad, several studies have already researched apparel disposal behavior (Bianchi and Birtwistle, 2012; DeVoy et al., 2021; Joung and Park-Poaps, 2013), although less have exclusively focused on donation. In addressing sustainable waste disposal and other pro-environmental behavior, several theories have been applied to determine the underlying factors that contribute to motivation and intention. The most prominent models include a combination of Ajzen's (Ajzen, 1991) Theory of Planned Behavior (TPB) and Schwartz's (Schwartz, 1977) Norm Activation Theory (NAT), which have been extensively used to predict various types of behavior such as recycling involvement (Bamberg and Möser, 2007; Khan et al., 2019), waste separation (Arkorful et al., 2021), sustainable transport choices (Liu et al., 2017) and organic food purchase intentions (Le and Nguyen, 2022). The NAT underscores a pro-social perspective (Schwartz, 1977), whereas the TPB is an extension of the original Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980) that describes behavior as the consequence of self-interest. The TPB proposes that attitudes, social norms and perceived behavioral control are determinants of intention, which in turn predicts actual behavior (Ajzen, 1991). NAT, on the other hand, proposes that personal norms, awareness of consequences that result from behavior, and the degree to which a consumer feels responsible for such consequences culminate in a particular course of action (Schwartz, 1977).

Whether these theories are relevant for explaining waste reduction and apparel disposal behavior in an emerging market such as South Africa has not yet been adequately determined and remains open to debate. TPB, in particular, is criticized for, amongst others, its limited predictive validity and exclusive focus on rational reasoning (Sniehotta et al., 2014). Yet, combined with NAT it remains a popular conceptual approach as evidenced in several recent publications (Arkorful et al., 2021; Chen et al., 2019; Khan et al., 2019; Le and Nguyen, 2022). An important aspect to bear in mind is that these conceptual approaches have mostly evolved in more advanced economies which differ substantially from emerging ones in terms of resource shortages, population heterogeneity, insufficient infrastructure, and sociopolitical turmoil (Kumar and Srivastava, 2020). Since these factors can influence consumers' underlying motivations, existing approaches must be empirically tested in emerging economies to offer a meaningful contribution toward debates surrounding their utility and predictive validity. This research, therefore, joined in on such debates by utilizing a combined TPB and NAT theoretical basis to investigate female consumers' motivation and intention to dispose of unwanted apparel in the South African emerging market context. Despite its relevance, consumers' disposal of apparel remains an understudied topic in the African context, with more attention devoted to the disposal of other substances such as paper, plastic and glass (Department of Environmental Affairs, 2020) and thus warrants further investigation. Female consumers were selected as study participants as they frequently fulfil an important role in households' clothing consumption decisions (Solomon et al., 2012). They also tend to be more aware of environmental and social issues surrounding the purchase, use and disposal of apparel (Cho et al., 2015; Lang et al., 2013).

2 Theoretical background

A broad base of existing literature substantiates the use of TPB and NAT to explain motivational factors that precede pro-environmental intention and behavior (Bamberg and Möser, 2007; Khan et al., 2019; Taljaard et al., 2018). TPB postulates that attitudes, social norms and perceived behavioral control influence intention, and that intention eventually culminates in actual behavior (Ajzen, 1991). NAT on the other hand suggests that personal norms, awareness of consequences, and the extent to which a person feels responsible for such consequences, shape their behavior (Schwartz, 1977). Because NAT infuses an altruistic perspective to the TPB approach, a combined theoretical basis was deemed appropriate for this investigation, particularly concerning donation. Donation is often underpinned by altruistic motivations (De Ferran et al., 2020). Prior to formulating the hypotheses for this study, analysis was conducted to establish study participants' preferred disposal method (i.e. donation, reuse or resell) as this could not be concluded from previous research. The results are reported in the latter part of this paper, but suffice to say that donation was identified as the most preferred apparel disposal method, and hence the study's hypotheses could be refined to reflect a more specific focus on the behavior in question. The following discussion provides an overview of the various construct associations proposed in prior empirical research (Bamberg and Möser, 2007; Botetzagias et al., 2015; Khan et al., 2019; Taljaard et al., 2018; Xu et al., 2020) and then specified in terms of donation.

2.1 *Awareness of consequences related to textile waste and social norms*

As consumers become more aware of environmental problems such as excessive waste, they tend to consider environmental implications and are more willing to act in a pro-environmental manner (Hartley et al., 2015; Khan et al., 2019). Such awareness may develop from an early age: Hartley *et al.* (Hartley et al., 2015) tested the impact of educational intervention on school children and found that these children became more concerned about the environment when they understood the consequences of pollution; and the more concerned they became, the more likely they were to engage in eco-friendly behavior. Other studies found that individuals who know the positive consequences of recycling were more likely to recycle (Khan et al., 2019; Park and Ha, 2014). Kozar and Hiller Connell (2013) also found that when consumers become aware of environmental issues, they develop a sense of responsibility to prevent negative consequences and then engage in eco-friendly behavior. More recently, Le and Nguyen (2022) found that Vietnamese consumers' attitudes were significantly shaped by environmental awareness and knowledge of organic foods. Contrary to the above, a UK based study (Hobson et al., 2018) concludes that providing mobile phone users with additional information about ethical and environmental issues related to their phones would not alter their consumption behavior. In comparing the results, one might argue that the contextual setting and product-specific factors play a role in the salience of awareness of consequences. Closer to the contextual setting of this study, Arkorful et al.'s (2021) study in Ghana, found that awareness of consequences surrounding mask waste separation significantly influenced respondents' ascription of responsibility and social (subjective) norms as well as personal norms. Norms, and specifically social norms, are said to fulfil an important role in African cultures (Essien, 2019).

Social norms refer to reference groups' influence on consumers' engagement in a specific behavior (Armitage and Conner, 2001; Botetzagias et al., 2015; Francis et al., 2004; Khan et al., 2019; Xu et al., 2020). When a social group shares an awareness of environmental problems such as textile waste, members of such a group may feel more obligated to behave in a pro-environmental manner (Park and Ha, 2014) e.g. awareness of the consequences of textile waste may encourage individual group members to seek more sustainable disposal methods. In a combined NAT and TPB model, a consumer's awareness of environmental problems (in conjunction with the underlying ascription of responsibility) is seen to influence the particular social norms he/ she ascribes to (Bamberg and Möser, 2007; Park and Ha, 2014; Wall et al., 2007). Essien (2019) explains that in many traditional African cultures, social norms prohibit people from engaging in behavior that threatens the welfare and wellbeing of others as well as the environment. Moreover, in the Ghanaian study that combined TPB and NAT, a significant association between consumers' awareness of consequences and social norms were evident (Arkorful et al., 2021). Given the above discourse, the following hypothesis was formulated:

Hypothesis 1: Female consumers' awareness of consequences relating to apparel donation has a significant positive relationship with social norms.

2.2 *The association between social norms, personal norms, attitudes and perceived behavioral control*

In merging TPB and NAT, prior studies have adopted slight variations in the specification of construct associations, but among these, compelling evidence suggests that social norms do not influence intention directly,

but rather indirectly via attitudes, personal norms and perceived behavioral control (Bamberg and Möser, 2007; Le and Nguyen, 2022; Park and Ha, 2014). Arkorful et al. (2021) for example found that although awareness of consequences did not have a significant impact on Ghanaian respondents' attitudes, there was a significant relationship between their awareness and social (subjective) norms, and in turn between their social norms and attitudes, thus suggesting that social norms fulfil a mediating role.

In general, attitude is defined as the extent to which a consumer has a favorable or unfavorable feeling towards a particular issue (Tang et al., 2011; Xu et al., 2020). It is argued that social groups influence consumers' attitudes since they are encouraged to adopt appropriate perspectives about what is acceptable within their social networks. Family and friends (i.e. social reference groups) may influence a consumer's beliefs and attitudes regarding several topics (Khan et al., 2019; Lapinski and Rimal, 2005) such as donating unwanted apparel for the sake of the environment and waste reduction (Park and Ha, 2014). The following hypothesis was thus formulated:

Hypothesis 2a: Social norms have a significant positive relationship with a female consumer's attitude toward apparel donation.

In addition to their influence on attitudes, social norms also have a direct impact on personal moral norms. Social norms are based on a fear of social limitations, whereas personal moral norms are based on a consumer's belief about whether engaging in a specific behavior is the right thing to do (Bamberg and Möser, 2007; Botetzagias et al., 2015; Khan et al., 2019). Consumers often feel compelled to behave in a certain way because of norms that are specified by their family, friends and other reference groups. These groups serve as a source of information on what may be considered "acceptable" and therefore, social norms are said to influence personal norms in a direct manner (Bamberg and Möser, 2007). Again, emphasis surrounding the impact of social norms within the African context must be emphasized and in particular its influence on African people's own set of moral obligations toward the greater good (Essien, 2019). Arkorful et al. (2021) validate the significance of social norms in promoting altruistic behavior in their study and attribute it to the communal and collectivist traits of African communities. Recent studies conducted in other emerging and developing contexts (Chen et al., 2019; Le and Nguyen, 2022; Liu et al., 2017) also report on the significant relationship between social norms and personal norms. It was thus hypothesized that:

Hypothesis 2b: Social norms have a significant positive relationship with personal norms surrounding apparel donation.

Empirical evidence also points to the fact that social norms directly influence perceived behavioral control (Bamberg and Möser, 2007). Perceived behavioral control is based on a consumer belief as to whether they have control over a behavior (Ajzen and Fishbein, 1980; Ajzen, 1991), and how easy or difficult it is to perform the behavior (Ajzen, 2002; Khan et al., 2019; Tang et al., 2011). In many African communities, social norms are seen to be a major source of guiding principles that direct the behavior of individuals and communities (Essien, 2019) and may therefore have a significant impact on a person's beliefs surrounding a specific practice. As further explained by Park and Ha (Park and Ha, 2014), social groups may very well influence consumers' perceptions of how easy or difficult it is to engage in behavior such as the donation of unwanted apparel. Social networks may for example share information on charitable organizations to donate to. The following hypothesis was therefore formulated:

Hypothesis 2c: Social norms have a significant positive relationship with a female consumer's perceived behavioral control over apparel donation.

2.3 *The role of attitudes, personal norms and perceived behavioral control in predicting behavioral intention*

According to Ajzen's (Ajzen, 1991) TPB, consumers' behavioral intention is influenced by attitude, social norms and perceived behavioral control. However, research such as conducted by Chen et al. (2019) found that social norms had no direct impact on donors' behavioral intention to donate time and money in online crowdfunding. Personal norms did however have an impact on monetary donations. In combining TPB and NAT, most empirical evidence suggests that social norms are indirect determinants of pro-environmental intention, whereas personal moral norms influence consumers' intention in a more direct manner (Bamberg and Möser, 2007). Studies that have combined NAT and TPB (Arkorful et al., 2021; Le and Nguyen, 2022; Liu et al., 2017) also seem to indicate that attitudes are direct determinants of behavioral intention as postulated in the original TPB (Ajzen, 1991; Armitage and Conner, 2001; Bamberg and Möser, 2007; Botetzagias et al., 2015; Khan et al., 2019; Xu et al., 2020). In their study, Le and Nguyen (2022), for example found that Vietnamese respondents' attitudes were the

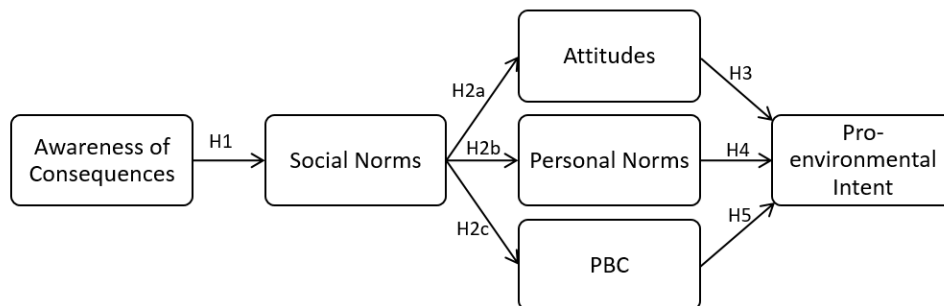
most significant determinant of behavioral intention. Similarly, perceived behavioral control is seen as a direct determinant of behavioral intention as per the original TPB. Taljaard's (Taljaard et al., 2018) results, which were generated in the local South African context, indicate a positive association between consumers' confidence in their own capabilities to engage in pro-environmental initiatives (i.e. perceived behavioral control) and behavioral intention. In their study, Chen et al. (2019) also confirm that perceived behavioral control is positively related to Chinese donors' behavioral intention to donate time and money in online crowdfunding. Moreover, Arkorful et al.'s (2021) findings similarly vouch for a significant positive relationship between respondents' perceived behavioral control and their intention to separate mask waste in Ghana. Hypotheses 3, 4 and 5 were thus formulated as follows:

Hypothesis 3: Attitude toward apparel donation has a significant positive relationship with a female consumer's intention to donate unwanted apparel.

Hypothesis 4: Personal norm has a significant positive relationship with a female consumer's intention to donate unwanted apparel.

Hypothesis 5: Perceived behavioral control has a significant positive relationship with a female consumer's intention to donate unwanted apparel.

In summary, the conceptual framework depicted in Figure 1 provides an overview of the underlying construct associations and the hypotheses formulated for this study. Awareness of consequences is seen as an indirect determinant of behavioral intention but has a direct influence on social norms (Bamberg and Möser, 2007; Park and Ha, 2014). Social norms do not influence intentions directly, but rather indirectly via their impact on attitude, personal norms, and perceived behavioral control (Bamberg and Möser, 2007). Attitudes, personal norms, and perceived behavioral control in turn directly influence pro-environmental intention to donate unwanted apparel. This intention is then viewed as a proximal measure of donation and may, according to the assumptions of TPB lead to eventual behavior (Ajzen, 2002).



Note: PBC = perceived behavioral control

Figure 1: Hypothesized construct associations

3 Method

As explained in previous sections, this cross-sectional study explored the relationship between female consumers' motivation and their behavioral intention to donate apparel. The self-administrated web-based survey questionnaire that was developed to gather quantitative data for this study included three sections. The first section tapped into the demographic profile of the respondents including their age, population group, education, residential status, income, and household status. The second section measured respondents' underlying motivation with four to five items assessing each of the NAT and TPB constructs including respondents' awareness of consequences, social norms, attitude, personal norms and perceived behavioral control. The items were based on existing scales that were adapted by Taljaard (2015) and Sonnenberg (2014) for studies in the local context. The original scales were derived from empirical research conducted by Bamberg and Möser (2007); Wall et al. (2007) and Tonglet et al. (2004). The guidelines for the development of questionnaires that measure TPB constructs, as specified by Francis et al. (2004), as well as Park and Ha (2014), were taken into account. The third section of the questionnaire included items that were focused on respondents' willingness to engage in various apparel disposal options including reselling, recycling/ reusing and donation. The scale items were originally developed by Shim (1995) and further adapted by Meyer (2013) to measure apparel disposal behaviour in the South African context. In both the second and third sections, responses were anchored on a 5-point Likert scale ranging from 1 (strongly

disagree) to 5 (strongly agree). The Qualtrics web-based questionnaire was evaluated by Clothing and Textiles experts to ensure face and content validity. In addition, a pilot study was conducted to confirm that question wording was clear and that errors were eliminated before the final questionnaire was distributed as a link via social media platforms (e.g. WhatsApp, Facebook, LinkedIn, Instagram).

A non-probability purposive sampling approach was used to recruit female consumers, between the age of 18 and 65, residing in the Gauteng province, which is a major metropolitan center in South Africa and thus deemed an appropriate geographical scope for this study. Women are generally seen as principal role players in households' decisions regarding the disposal of apparel (Solomon et al., 2012). Additionally, female consumers seem more likely to engage in pro-environmental behavior (Lang et al., 2013). Prior research (Cho et al., 2015; Meyer, 2013), for example, reveals that women have more compelling attitudes surrounding environmental issues than men. An effort was made to share the social media survey link with a diverse group of females in terms of age, occupation, income, and population group in an attempt to reflect some of the diversity that is found in the larger female population in Gauteng. It is acknowledged that access to social media would curb the demographic profile of the sample to some extent, but an increasing number of consumers are gaining access to social media, especially in urban sectors such as Gauteng.

The final sample (N = 315) consisted of female consumers who resided in various regions of Gauteng. The majority (71%) of the respondents resided in Tshwane, 13% in Johannesburg, 7% in Ekurhuleni, and the remaining 9% in other districts of Gauteng. Most respondents were 21 to 25 years old and predominantly White. A large percentage (65%) had some form of tertiary education and belonged to middle-income levels (54%) and upper-middle-income levels (29%). The respondents' household size mostly consisted of one to two members and the vast majority (89%) were either single or involved in a relationship without children. Non-probability sampling clearly inhibits the generalizability of the study's results, but the sample nonetheless serves the purpose of gaining exploratory insights into the topic at hand. Additionally, this research employed SPSS 27 and AMOS 27 to perform data analyses on the full dataset (N = 315). Firstly, exploratory and confirmatory factor analyses were performed, along with reliability and validity measurements (i.e. composite reliability, convergent validity and discriminant validity). Thereafter, structural equation modelling was used to clarify the hypothesized construct associations.

4 Results and discussion

4.1 Exploratory Factor Analysis (EFA)

EFA was conducted on the data derived from sections two and three of the questionnaires using Varimax rotation with Kaiser Normalization. Kaiser's criteria (i.e., all factors with an eigenvalue >1 should be retained) and the point of inflexion on the scree plot led to the identification of an eight-factor solution. Items that cross-loaded and/or failed to reach a loading > 0.30 for any of the factors were eliminated to obtain an acceptable solution. Items that converged under each factor clearly aligned with the TPB and NAT constructs that formed the underlying theoretical basis for this study. The factors were thus labelled as follows: Factor 1: Awareness of consequences, Factor 2: Social norms, Factor 3: Attitude, Factor 4: Personal norms, Factor 5: Perceived behavioral control, Factor 6: Intention to donate, Factor 7: Intention to resell and Factor 8: Intention to reuse. The factors achieved high Cronbach's Alpha (≥ 0.879), indicating internal consistency of responses. The factor means revealed that the respondents predominantly agreed with items regarding awareness of consequences (M = 3.62), social norms (M = 3.57), attitude (M = 4.07), personal norms (M = 3.68), perceived behavioral control (M = 3.46), as well as intention to donate (M = 4.36), resell (M = 3.84) and reuse (M = 4.05). As can be gathered, the mean for intention to donate (M = 4.36) was higher than those of the other disposal options. It was thus decided to conduct further confirmatory factor analysis and structural equation modelling on the identified motivational factors and the intention to donate since this disposal option seem to be the most preferred.

4.2 Confirmatory Factor Analysis (CFA)

CFA differs from EFA since it is driven by a theoretical expectation about how each item will load onto the hypothesized factors (Brown, 2015). For this study, the latent items and variables that were retained from the EFA were evaluated employing CFA to establish a measurement model with acceptable model fit indices (Blunch, 2008). The latent variable achieved loadings ranging from 0.727 – 0.966, indicating good regression weights and strong relation to the associated constructs (see Table 1).

Table 1: CFA construct and measurement indicators

Construct indicator and associated items		CFA loadings
Factor 1: Awareness of consequences (AW)		AVE = 0.660
AW1	I know that textile dyeing causes water pollution.	0.779
AW2	I know that throwing your clothes away has environmental implications.	0.841
AW3	I know that clothing that ends up in landfills increases greenhouse gases.	0.815
Factor 2: Social norms (SN)		AVE = 0.728
SN1	People who are important to me expect me to dispose of my clothing in an eco-friendly manner.	0.892
SN2	People who are important to me think that I should consider the environmental impact of throwing clothes in the dustbin.	0.730
SN3	People who are important to me expect me to get rid of old clothes in a way that will save the environment.	0.925
Factor 3: Attitude (ATT)		AVE = 0.841
ATT1	For me, throwing clothes away in a pro-environmental manner is wise.	0.929
ATT2	For me, throwing clothes away in a pro-environmental manner is good.	0.966
ATT3	For me, throwing clothes away in a pro-environmental manner is beneficial.	0.852
Factor 4: Personal norms (PN)		AVE = 0.647
PN1	I feel obligated to consider the environment in the manner in which I dispose of old clothing.	0.830
PN2	I feel obligated to recycle clothes, regardless of what others do.	0.815
PN3	My involvement in environmentally responsible disposal activities is important.	0.754
PN4	I feel morally obligated to dispose of old clothes in an environmentally friendly manner.	0.816
Factor 5: Perceived behavioral control (PBC)		AVE = 0.601
PBC1	For me, getting rid of old clothes in an environmentally friendly manner is easy.	0.727
PBC2	Recycling clothes is easy.	0.799
PBC3	I have a lot of options to get rid of old clothes in an environmentally friendly manner.	0.797
PBC4	I am confident that I would be able to recycle my old clothes.	0.776
Factor 6: Intention to donate (BI:Donate)		AVE = 0.789
BI_DONATE1	I would be willing to donate old clothing to be more pro-environmental.	0.868
BI_DONATE2	I would be willing to donate old clothing to reduce environmental consequences.	0.946
BI_DONATE3	I would be willing to donate old clothing to be more sustainable.	0.907
BI_DONATE4	I would be willing to donate old clothing to reduce waste.	0.828

Notes. AVE = Average Variance Extracted

Additional measures of reliability, namely composite reliability (CR), and validity, namely construct validity (i.e. convergent and discriminant) were considered in evaluating the overall model fit (Hair et al., 2014). As can be seen in Table 2, the composite reliability for all variables was > 0.70, ranging between 0.853 and 0.941, indicating internal consistency (Hair et al., 2014). The average variance explained (AVE) can be described as the variance among the constructs and is used to measure the convergent validity. It requires a minimum of 0.50 to be deemed acceptable (Hair et al., 2014). AVE values ranged from 0.601 to 0.841; therefore convergent validity was acceptable (Fornell and Larcker, 1981). In addition, discriminant validity was examined by comparing the square root of AVE with the inter-construct correlations (Hair et al., 2014). Discriminant validity is achieved when the correlations are less than the square root of the associated AVEs. Table 2 indicates that all of the constructs presented discriminant validity.

Table 2: Reliability and Validity analysis

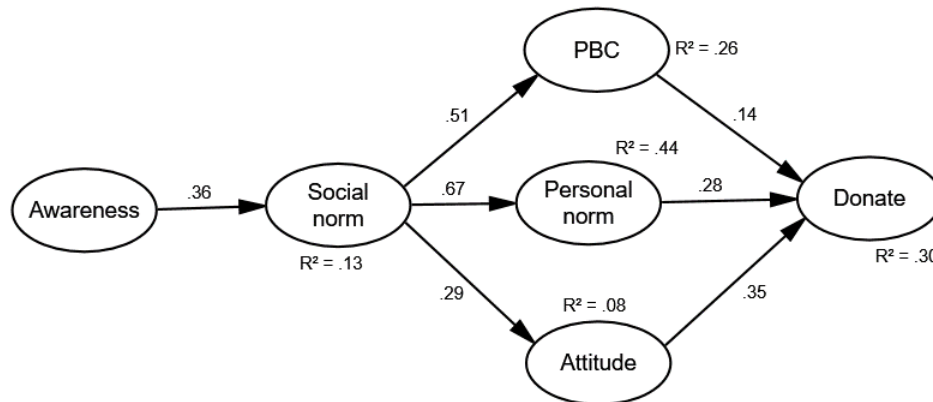
Construct	CR	AVE	AW	SN	ATT	PN	PBC	BI:Donate
Awareness of consequences (AW)	0.853	0.660	0.812					
Social norms (SN)	0.888	0.728	0.318***	0.853				
Attitude (ATT)	0.941	0.841	0.342***	0.258***	0.917			
Personal norms (PN)	0.880	0.647	0.487***	0.639***	0.399***	0.804		
Perceived behavioral control (PBC)	0.858	0.601	0.350***	0.486***	0.151*	0.493***	0.775	
Intention to donate (BI:Donate)	0.937	0.789	0.366***	0.361***	0.463***	0.466***	0.310***	0.888

Notes. CR = composite reliability; AVE = average variance extracted. ***p < 0.001; **p < 0.010; * p < 0.050. Inter-construct correlations are presented in the lower triangle of the matrix; the square root of the AVEs are depicted in bold on the diagonal.

The resulting measurement model had a good fit ($X^2/df = 1.722$, $GFI = 0.919$, $AGFI = 0.893$, $RMSEA = 0.048$, $NFI = 0.939$ AND $CFI = 0.973$) and was therefore deemed appropriate for the purposes of further structural equation modelling.

4.3 Structural Equation Modelling (SEM)

Following the CFA and the specification of a measurement model, the final stage of data analysis for this study involved Structural Equation Modelling (SEM) to test the construct associations specified in the combined TPB and NAT framework. Figure 2 below illustrates the structural model that assessed the construct connotations, as specified in the prior hypothesized model (Figure 1).



Note: PBC = perceived behavioral control

Figure 2: Structural equation model

Based on maximum likelihood estimation, the model's overall fit was good: $X^2/df = 2.140$, $GFI = 0.895$, $AGFI = 0.895$, $RMSEA = 0.060$, $NFI = 0.921$ and $CFI = 0.956$. Social norms explained 8% of attitudes, 44% of personal norms and 26% of perceived behavioral control. The variance explained for social norms was 13%. Perceived behavioral control, personal norms, and attitude explained 30% of the behavioral intention's variance. These values (represented as R^2) are essential measures of a model's predictive accuracy (Hair et al., 2014). In summary, all of the hypotheses were supported (see Table 3 below).

Table 3: Results of the SEM analysis

	Hypotheses	Standardized β (SE)	Supported
H1	Awareness \rightarrow Social norms	0.358*** (0.072)	Yes
H2a	Social Norms \rightarrow Attitudes	0.286*** (0.060)	Yes
H2b	Social Norms \rightarrow Personal norms	0.666*** (0.053)	Yes
H2c	Social Norms \rightarrow Perceived behavioral control	0.510*** (0.059)	Yes
H3	Attitudes \rightarrow BI:Donate	0.351*** (0.043)	Yes
H4	Personal Norms \rightarrow BI:Donate	0.280*** (0.057)	Yes
H5	PBC \rightarrow BI:Donate	0.138** (0.054)	Yes

Notes. *** $p < 0.001$; ** $p < 0.01$. BI = Behavioral Intent

As can be gathered from Table 3, all the hypotheses are supported by the data with path coefficients that are statistically significant and positive, with the majority being significant as $p < 0.001$ and H5 being significant as $p < 0.01$. More specifically, the results indicate a positive relationship between awareness and social norms ($\beta = 0.358$, $p < 0.001$), which supports H1. Additionally, H2a, 2b and 2c are also supported since social norms have a positive influence on attitudes ($\beta = 0.286$, $p < 0.001$), personal norms ($\beta = 0.666$, $p < 0.001$) and perceived behavioral control ($\beta = 0.510$, $p < 0.001$). Attitude is the strongest predictor of intention ($\beta = 0.351$, $p < 0.001$), confirming H3 and personal norms are also positively related to intention ($\beta = 0.280$, $p < 0.001$), supporting H4. Perceived behavioral control is the weakest predictor of intention ($\beta = 0.138$, $p < 0.01$), yet still supports H5 as it is statistically significant.

4.4 Discussion

According to the study's results, respondents seem to prefer donation compared to other apparel disposal options such as reselling and reusing. South Africa is characterized by high levels of income inequality and despite a growing middle to higher-income consumer segment, a large percentage of the population remains poverty-stricken (Sonnenberg et al., 2019). Those who have joined higher-income segments may thus feel morally obliged (underpinned by altruism and environmental concerns) to donate clothing to disadvantaged community members.

In using a combined TPB and NAT framework to explain the underlying motivation to donate apparel, all of the specified hypotheses are supported, which reiterate findings of previous studies. Participating female consumers seem aware of the consequences of post-consumer textile waste and its effect on the environment. This awareness is strongly associated with social norms as evidenced in prior empirical research (Bamberg and Möser, 2007; Khan et al., 2019; Taljaard et al., 2018; Xu et al., 2020). Social norms, in particular, seem to influence the formation of perceived behavioral control and personal norms, although, surprisingly these norms do not affect participants' attitudes as much. Perhaps, this is because these women tend to form their own opinion about whether the donation of apparel is good, beneficial and/or wise rather than relying on the perspectives of others. Arkorful et al. (2021) also obtained interesting results surrounding attitudes about mask waste separation in Ghana. In their study, they tested a direct relationship between awareness of consequences and attitudes, which they found to be insignificant and attributed the outcome to participants' education, younger age and urban background, which enabled them to form independent opinions about the behavior in question. Similarly, this study's participants were younger, resided in urban areas and had higher levels of education, rendering them less reliant on others in forming their own opinions about donation.

The results do however indicate a strong association between social norms and personal moral norms, even more so than reported in previous studies conducted abroad (Bamberg and Möser, 2007). The significant association between social and personal norms is also reported in empirical evidence derived from other developing and emerging economies (Arkorful et al., 2021; Le and Nguyen, 2022; Liu et al., 2017) that often have strong communal orientations. In the context of this study, it would seem that even though local social groups had limited influence on individuals' attitudes, they do exert a strong influence on their personal moral obligation to donate unwanted apparel. These reference groups also seem to influence perceptions about the ease/difficulty of performing the behavior in question. Perceived behavioral control is however the weakest predictor of intention to donate. The result is rather unexpected but corresponds with the findings of other local studies that employed the TPB as the underlying theoretical framework for the investigation of eco-friendly apparel acquisition (Taljaard et al., 2018). It has been argued that perceived behavioral control may have a stronger influence on actual behavior rather than intention (Armitage and Conner, 2001). Nonetheless, there are many charitable causes and impoverished communities in the local context (Sonnenberg et al., 2019), and therefore finding an appropriate cause to donate to may not represent a major obstacle in determining respondents' willingness to donate.

As a last note, notwithstanding slight variations in construct associations, most studies combining NAT and TPB report low R^2 values for sustainable and pro-environmental intention, including those conducted in developing and emerging economies (e.g. Arkorful et al. (2021) report an $R^2 = 0.28$ for the intention to separate waste in Ghana; Liu et al. (2017) report an $R^2 = 0.28$ for the intention to reduce car travel in China). In conducting a meta-analysis of 46 independent studies (mostly based in developed countries), Bamberg and Möser (2007) report an $R^2 = 0.27$ for the intention to engage in pro-environmental behavior. Our study reveals similar results with an $R^2 = 0.30$ for the intention to donate apparel. It would thus seem that merged TPB and NAT models offer similar results regarding the variance that is explained for intention irrespective of the contextual setting.

5 Conclusion and future research recommendations

As previously highlighted, many African countries already face an immense overflow of post-consumer textile waste that is donated by citizens of more advanced economies. Paired with the findings of this research, which identifies donation as a preferred method of apparel disposal among a local sample, it becomes apparent that the sheer volume of donated clothing that requires redistribution in the African context is a matter of much concern. While donation does extend the lifespan of a garment (and is often performed with good intent), it becomes problematic if the volume of what is being donated cannot be effectively absorbed by the receiving entity and ultimately end up in a landfill with detrimental environmental consequences. Exacerbated by the lack of mechanical and chemical textile recycling facilities, the current textile waste levels in Africa require urgent policy intervention. Since local consumers also prefer to donate apparel, it may be prudent to prioritize the redistribution of local donated post-consumer textile waste over imported waste. Redistribution of local post-consumer textile waste will, after all, result in a lower ecological footprint than the redistribution of waste imported from abroad because of emissions linked to shipping and transportation. However, in addressing the current volumes of

donated clothing, local consumers could also be persuaded to adopt alternative disposal methods. Recycling is imperative in the pursuit of a truly closed-loop system that underscores circularity in the fashion value chain. In the local South African context, opportunities for such disposal behavior is limited but can be facilitated by e.g. offering incentives for recycling old garments (e.g. discount vouchers on new purchases) and/ or simply introducing recycling bins in clothing stores or close to where consumers live to make it convenient and easy for them to recycle. Yet, the required technology and capital investment to implement mechanical and chemical textile recycling plants in the African context are desperately needed for such initiatives to succeed and could also contribute to much-needed job creation and social upliftment in the African context.

While government and industry interventions are needed, consumers fulfil an equally definitive role in reducing textile waste, especially if other stakeholder efforts fail to achieve the envisaged outcomes. As an example, some African countries (e.g. Rwanda, Uganda, Tanzania and Burundi) implemented tariff increases on imported used apparel and attempted to ban all second-hand apparel imports by 2019 but were eventually forced to relent due to international pressure and trade disputes. In this regard, media coverage and documentaries such as “Dead White Man's Clothes”(Besser, 2021) can do much to sensitize the broader public about the post-consumer textile waste overflow in Africa and initiate consumer activism to combat further repercussions. Some argue that information campaigns have limited efficacy in driving behavioral change, but this might depend on the issue and contextual setting in which it is raised. This study (in addition to another recent study in Ghana) found that awareness of consequences fulfilled a key role in activating social norms. In turn, social norms and social networks represent major sources of influence in many African communities. South Africa in particular has for many years been shaped by communal and collectivist action among local citizens. In this regard, information- and waste reduction campaigns could reveal the broader picture, beyond environmental consequences, of how the overflow of donated clothing impacts the larger African clothing and textile manufacturing sectors, along with other social implications surrounding human dignity and global inequality. A recent report by McKinsey & Company (2021), predicts that as global consumer populations become increasingly aware of the plight of the vulnerable, shifts in consumption will occur with growing pressure imposed on apparel brands to invest in social justice throughout the fashion value chain.

In assessing the utility of the study's theoretical basis, results emulate those of several other studies that merged TPB with NAT to predict pro-environmental intention. Despite some variation in construct associations and the studies' contextual settings, the combination of independent variables specified for predicting intention achieved $R^2 \leq 0.3$. Moreover, most researchers agree that intention does not always translate into actual behavior and much critique surrounds the use of intention as a proximal measure of behavior in applying TPB. However, irrespective of the theoretical basis, surveys are often plagued with social response bias since participants tend to over-report their actual behavior, particularly those concerning sustainability issues. Future research could thus focus on measuring actual behavior but in doing so, consider methodological approaches that circumvent or reduce response bias. In specifying motivational factors to predict behavior, an emerging economy such as South Africa comprises several situational factors that may influence consumers' willingness to engage in sustainable apparel disposal. These factors might not be effectively captured in existing TPB and NAT frameworks. In the words of Sniehotta et al. (2014), perhaps it is “Time to retire the theory of planned behaviour” and seek alternative models or develop new approaches to interpret sustainable behavior. The future research challenge however remains in developing empirically testable models that offer parsimony and explanatory inclusiveness. In this regard, scientific efforts should be ongoing and relentless in gaining a deeper and broader understanding of not only motivational aspects but also other contextual factors that may influence consumers' disposal behavior.

In conclusion, this study is limited in the generalizability of its findings. A more representative account of the cultural heterogeneity and socio-economic diversity in the broader South African population may highlight further differentiation in underlying motives for apparel disposal. Also, samples should be extended to include both genders as gender roles are shifting with men becoming more decisive in decisions pertaining to apparel. Despite the difficulties of recruiting representative samples in emerging economies, such actions are important in obtaining a balanced perspective of those capable of engaging in decisive action through behavior (e.g. choosing sustainable alternatives) as well as those who might find themselves locked in by circumstances that render them incapable of choosing more sustainable alternatives. A critical reflection on the perspectives of those who receive donated clothing is also needed and can benefit from qualitative insights to gain an in-depth understanding of their experiences surrounding the donation of second-hand clothes.

Author contributions

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Nadene J.M.M. Marx-Pienaar: conceptualization, methodology and supervision

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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