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Motivations on the choice of post-consumer clothing disposal routes by Brazilian consumers

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Abstract

Fast fashion has boosted apparel production, encouraging consumers to buy and discard at an accelerated pace because garments are viewed as easily replaceable items. This paper investigates motivating factors influencing Brazilian consumers' choices in post-consumer clothing disposal. The choice of clothing disposal routes depends both on the consumer's motivations and the garment's attributes. The empirical investigation was developed using a quantitative approach of multivariate analysis, involving 652 survey participants, to test nine hypotheses using structural equation modeling. Variables explored include consumer's motivating factors (personal motivating operation, product attributes, and socio-environmental awareness) and disposal route choices (reuse, resale or donation, or discard as waste). Our results validate four hypotheses, indicating that stronger personal motivation reduces garment intention to reuse but increases the likelihood of reselling or donating, and socio-environmental awareness discourages clothing disposal as waste. Common post-consumer clothing disposal methods include donating to relatives or friends, while using retail stores' garment collection services is less prevalent. This paper contributes to the literature about post-consumer behaviors regarding clothing in the Brazilian context. Also, it elucidates opportunities for consumers, governments, and fashion market players with the end-of-life of garments, by valuing textile waste and promoting a sustainable transition toward circular fashion.

Keywords: *post-consumer clothing, clothing disposal behavior, sustainable fashion, circular economy*

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1. Introduction

The fashion industry has increasingly adopted shorter, adaptable supply chains with reduced timelines and cost efficiency, such as rapid response and just-in-time systems, operating within a linear "take-make-waste" model [1]. The global dissemination of trends and information has empowered consumers with extensive options, fueling increased garment consumption [2]. Fast fashion, characterized by rapid trend turnover and low prices, encourages frequent purchases, exacerbates consumption patterns [3], and significantly reduces garment lifespans. Fast-changing fashion cycles make clothing quickly appear outdated, fostering a disposable attitude among consumers and contributing to significant environmental challenges [4, 5]. Approximately 140 billion garments are produced globally each year, equivalent to about 20 new items per capita annually [6]. Consumers not only purchase but discard clothing at an accelerating pace [7]. Garments are often perceived as disposable due to their perceived low durability relative to cost [8–12]. The average number of times a garment is worn has declined by 36% over the past 18 years, with most garments worn fewer than ten times before being discarded [13]. This affordability and ease of replacement reduce guilt associated with waste [14]. Each year, approximately 36 million garments go unused and are discarded [15], predominantly ending up in landfills or incinerators, raising serious environmental concerns [16].

The increasing volume of post-consumer textiles represents a significant obstacle to the fashion sector's transition toward a circular economy [8, 9, 17], which seeks regenerative production and consumption cycles [13]. Disposing of clothing through landfills or incineration leads to an annual loss of material value estimated at approximately USD 500 billion [18]. In Brazil, 9 billion garments produced in 2018 generated 170,000 tons of textile waste, with nearly 78% disposed of in landfills or incinerated [13]. Since 2008, Brazil has forfeited an estimated USD 12 billion due to underdeveloped textile recycling initiatives [19]. Although research in Brazil predominantly focuses on textile industry waste during the production phase [2, 20–22], limited attention is given to post-consumer clothing disposal behavior.

This study seeks to address this significant gap, emphasizing the motivations behind consumer disposal choices. While human motivations such as biological needs, social belonging, and functional group demands are shared across cultures [23], the translation of these needs into actions, attitudes, and perceptions is shaped by individual and collective values [24, 25]. In this context, "motivations" refer to internal drivers, whether altruistic, pragmatic, or convenience-oriented, that guide individuals' decisions regarding post-consumer clothing disposal.

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Brazil presents a unique cultural, economic, and social context for studying these behaviors. As a country marked by significant regional disparities in income, education, sanitation, and consumption patterns [26], Brazilian consumers may exhibit disposal motivations distinct from those observed in higher-income countries. Moreover, regional factors may influence preferences for donation, resale, recycling, or landfill disposal routes [27].

Recent trends in the Latin American fashion industry reveal a growing tension between fast fashion consumption and emerging responsible consumption practices. Studies show that socioeconomic inequalities, cultural identity, and environmental concerns are influencing new consumer behaviors in the region [28–31]. Research highlights how responsible consumption movements are gaining momentum, often coexisting with traditional fast fashion purchasing patterns [32]. Low-cost fashion phenomena have also been explored as both an enabler of access and a contributor to unsustainable disposal habits [33, 34]. These regional specificities illustrate that Latin American consumers navigate between affordability pressures and an increasing consciousness regarding sustainability, significantly impacting their decision-making processes regarding clothing purchase, use, and disposal.

Transitioning to a circular economy requires a profound shift in production and consumption paradigms. Expanding updated research aligned with contemporary fashion markets and consumer behaviors is crucial [12, 35]. Notably, while sustainable fashion consumption has gained attention globally [36, 37], consumer-driven change within the fashion industry remains insufficiently explored [38]. In Latin America, initiatives to promote circular economy practices in fashion are still emerging, but studies such as those by [39, 40] suggest a growing awareness.

The COVID-19 pandemic, which disrupted global supply chains and altered consumer habits, also significantly influenced fashion consumption patterns in Brazil. It heightened consumers' awareness regarding the utility, longevity, and sustainable management of clothing items [41]. With lockdowns, economic uncertainty, and mobility restrictions, many Brazilian consumers reduced clothing purchases, increased the resale and donation of used garments, and became more attentive to sustainable practices [41].

This evolving context underscores the importance of considering regional and situational factors when investigating consumer motivations for different disposal routes. This study, therefore, analyzes how different motivations influence the choice of post-consumer clothing disposal routes among Brazilian consumers. Specifically, it seeks to answer: How do different motivations shape disposal route preferences? What are the most and least common disposal methods among Brazilians?

By addressing critical gaps in discussions around fast fashion's negative impacts, consumerism, and waste management within a linear economy, this research stresses the urgency of transitioning to circular systems. As the third-largest textile producer globally and a major consumer market, Brazil offers a compelling context for such investigations. Insights from this study can inform policymakers, industry leaders, and businesses committed to sustainable fashion practices. Finally, by exploring motivations and disposal routes across Brazil's diverse sociodemographic regions, this research contributes to a deeper understanding of how cultural, economic, and social factors shape post-consumer clothing management. It aims to stimulate reflection on sustainable development paradigms within the fashion sector and promote strategies to harness untapped opportunities for circular economy initiatives.

1.1. Theoretical background

Clothing consumption behavior encompasses pre-purchase, purchase, and post-purchase stages. Post-purchase activities include the disposal process, initiated when consumers decide to cease using a product, even if it remains functional [42]. Despite its growing significance, the disposal component remains a relatively novel area of research, as most studies on socially responsible consumer behavior focus on the shopping experience [43]. Inefficient clothing disposal has emerged as a pressing environmental concern [44], compounded by consumers' limited awareness of disposal methods with lower environmental impacts [45]. Textiles represent one of the unexplored consumer commodities, with strong reuse and recycling potential [46].

Prior studies have identified various reasons influencing consumers' clothing disposal decisions, including outdated style, inappropriate size, worn-out garments, or boredom [47, 48]. Common disposal routes encompass discarding as waste in trash bins, donating, reusing via upcycling, or resale [44]. Donation, motivated by consumers' desire to declutter and altruistic concerns, represents a hedonic motivation [49]. Certain consumers tend to reuse or recycle over disposing, repurposing textiles or customizing garments through upcycling to prolong their usability [50]. However, low-value and poor-quality clothing frequently fails to offer adequate financial justification for recycling, compounded by the inherent difficulties associated with the recycling process. The challenges of clothing recycling are multifaceted, particularly due to the prevalence of fiber blends, such as cotton–polyester, which complicate the recycling efforts by necessitating fiber separation. Additionally, the labor-intensive nature of disassembly, coupled with the absence of standardized recycling technologies and insufficient infrastructure in numerous regions, exacerbates the issue. As a result, fashion-damaged clothing is often relegated to regular waste disposal [51].

The theoretical framework used for post-consumer clothing disposal routes in this article is demonstrated in **Table 1**.

Table 1 • Theoretical framework on post-consumer clothing disposal routes.

Disposal routes	Discard motivations	References
Resale	Inappropriate size, tired of clothes, price, existing habit, creating space in the wardrobe, convenience, family influence, environmental concern, economic concern.	[48, 52, 53]
Donation	Inappropriate size, disgusted with clothes, price, existing habit, creating space in the wardrobe, convenience, environmental concern, social concern, changes in fashion, alleviating feelings of guilt, increased consumption of clothes, avoiding throwing in the trash.	[4, 14, 45, 46, 48, 52–55]
Reuse	Inappropriate size, price, worn-out clothing, changes in fashion, economic concerns, avoid discarding as waste.	[48, 53]
Discard as waste	Worn-out clothes, cheap clothes, convenience.	[53–55]

Note: Adapted from [51].

Although there are various routes for disposing of post-consumer clothing (e.g., return to the manufacturer, sale at charity auctions, exchange, composting, loan) with different consumer motivations, this study focuses on resale, donation, reuse, and discard as waste, given their prominence in the existing literature (adapted from [51]). The "resale" and "donation" pathways, while distinct [52], are treated as interconnected due to shared motivations and the garments' ultimate destination [47, 48, 53].

Thus, three alternatives are considered: retention within the consumer's domain (reuse), transfer for utilization by others (resale or donation), and abandonment (discard as waste). In addition to the fashion industry itself starting to look for alternatives, consumers must become increasingly aware of their own discarding behavior [56].

2. Materials and methods

2.1. Tested hypotheses

The tested variables are divided into Discard Motivation Antecedents and Discard Attributes and Routes. In this study, the antecedents of motivation characterize the reasons behind individuals' decisions to discard clothing. As for Disposal Attributes and Routes, the attributes characterize the means by which clothing is discarded. Based on prior academic references and specialized literature, nine hypotheses were formulated to be tested. Three motivational factors were chosen, and these were related to three primary disposal routes (**Table 2**).

Table 2 • Motivational factors and garment disposal routes chosen for the survey.

Variables		Characteristics	References
Motivational Factors	Personal Motivating Operation	How the individual sees the garment.	[57]
	Product Aspects	Physical condition of the garment.	[58, 59]
	Social and Environmental Awareness	Notions and awareness of social and environmental situations.	[4, 10, 48, 52, 54, 55, 60, 61]
Disposal Routes	Reuse	Customization and upcycling.	[48, 51–55]
	Resale or Donation	Resale online or to thrift stores. Donation or transfer to charity, family, or friends.	
	Discard as Waste	Dispose of as waste in the trash.	

Clothing recycling faces several challenges, notably fiber blends (e.g., cotton–polyester), which complicate the recycling process due to the need for fiber separation, the labor-intensive nature of disassembly, the lack of standardized recycling technologies, and insufficient recycling infrastructure in many regions [62, 63]. These factors increase costs and reduce the feasibility of textile recycling at a large scale.

2.1.1. Personal motivating operation

The personal motivating operation relates to individual consumer behavior and their intrinsic reasons for discarding clothing. These include psychological aspects such as style change, trend adherence, usage frequency, and financial needs, among others [51]. The scale was validated by Netemeyer and O. Bearden [57].

H1a: Personal motivating operation is negatively related to the intention to reuse clothes.

H1b: Personal motivating operation is positively related to reselling or donating clothes.

H1c: Personal motivating operation is positively related to the disposal of clothing as waste.

Consumers motivated by personal factors may perceive garments as obsolete even if physically intact, prompting either disposal through resale/donation (financial/psychological motivations) or waste disposal if perceived as worthless [60].

2.1.2. Product attributes

Product attributes indicate the physical condition of the item, for example, if the garment is no longer the right size or if it is worn-out, overall functionality and consequently the individual's attitude toward it. The scale was validated by Neelamegham and Dipak Jain [58].

H2a: Product attributes are positively related to the intention to reuse clothes.

H2b: Product attributes are positively related to reselling or donating clothes.

H2c: Product attributes are positively related to the disposal of clothing as waste.

Physically degraded products are more likely to be discarded, while garments still in good condition may be reused or donated, consistent with Ajzen's Theory of Planned Behavior [59] regarding perceived behavioral control over possessions.

2.1.3. Social and environmental awareness

The level of socio-environmental awareness of the responsible consumer impacts the disposal of clothing. The scale was validated by [4, 46–48, 52–55].

Environmental awareness is related to increasing the life cycle of clothes and avoiding sending them to landfills. Strong environmental awareness leads individuals to sell or donate clothes because they are concerned about environmental issues or customize them to avoid discarding them. The sale, donation, and customization of clothes can also be influenced by the desire to extend the lifespan of the garments and by concern for the environment and needy people, representing a socio-environmental motivation [22, 55]. The scale related to consumer activism was validated by [64]. The environmentalism scale is validated by [60, 61].

If the consumer opts for any other means of disposing of clothing that increases its life cycle, it is understood that they have a degree

of environmental awareness for not having chosen to discard the clothing as waste.

H3a: Socio-environmental awareness is positively related to the intention to reuse clothes.

H3b: Socio-environmental awareness is positively related to re-selling or donating clothes.

H3c: Socio-environmental awareness is negatively related to the disposal of clothing as waste.

While resale and donation were analyzed together under disposal behavior, it is recognized that resale often involves financial motivation, while donation involves altruistic and socio-environmental motivations. Their environmental impacts may differ: resale prolongs usage cycles through economic incentives, whereas donation often redistributes garments for social purposes [65]. This nuance is acknowledged although the study grouped them statistically.

2.2. Methodology

The variables formulated in this study form the basis of the conceptual model and hypotheses, which aim to validate the causal relationships between motivational factors and clothing disposal methods (**Figure 1**).

The research employs a structural equation modeling (SEM) approach with a quantitative methodology [66], using multivariate analysis techniques [67]. A survey-based research design was adopted to allow for the generalization of the findings to the broader Brazilian population [68]. The population of interest for this study consists of Brazilian consumers, given that all individuals are involved in the use and disposal of clothing. The sample was probabilistic, selected through random methods, ensuring that it is representative of the population, with no form of compensation provided to the participants. The inclusion criteria were people residing in Brazil and above 18 years of age, and the excluding criteria were incomplete surveys or inconsistent responses (e.g., straight-lining patterns).

For the data collection, a non-probabilistic convenience sampling method was used, due to the exploratory nature of the research and to allow for fast access to a varied population.

The questionnaires were made available online through electronic media platforms. A total of 652 valid responses were gathered, which is an adequate sample size for the structural equation modeling with the Partial Least Squares (PLS) method [69], which suggests a minimum of 10 respondents per path in the structural model. The questionnaire was developed using Google Forms, and it remained open for 13 days. It contained 21 core questions, listed in **Table 3**, and five sociodemographic questions. The questions were designed using a Likert-type scale to capture respondents' opinions on a range of statements related to clothing disposal behavior. The scale ranged from 1 (I totally disagree) to 7 (I totally agree), enabling the measurement of the degree of agreement with each statement [70].

After the data were collected, SPSS Data Entry software (SPSS Statistics v.28) was employed for the initial data processing, including statistical and descriptive analysis. Given the focus on understanding the relationships between the variables, the analysis began with exploratory factor analysis (EFA). This step allowed for the identification of the underlying dimensions of the variables. Following this, confirmatory factor analysis (CFA) was conducted to validate the structure and ensure the reliability of the constructs. The frequency distributions of responses were also analyzed to gain insight into the data characteristics.

To calculate the structural equation model (SEM), SmartPLS 4.0 software was utilized. The PLS method, a variance-based SEM, was applied to assess the relationships between the variables in the model. A discriminant analysis was performed to evaluate the validity of the constructs, ensuring that they were distinct from each other. Given that the sample did not follow a normal distribution, the PLS method was deemed appropriate, as it is capable of handling non-normally distributed data [66]. The PLS methodology provided a robust platform for confirming the hypothesized relationships, making it suitable for the study's objectives.

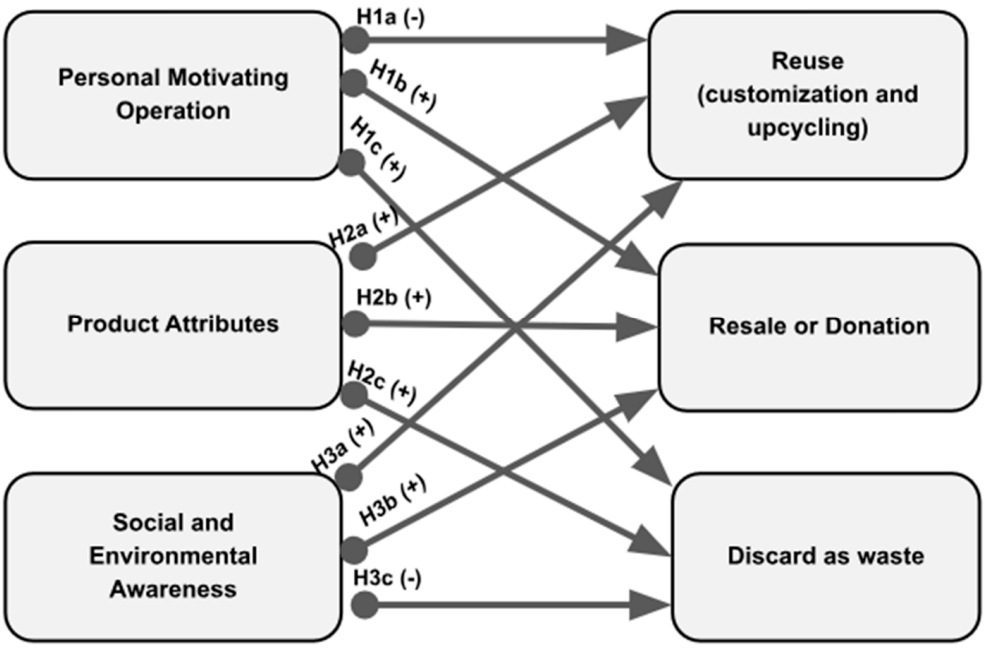

Figure 1 • Conceptual model of the study.

Table 3 • Variables presented in the proposed model with respective referential authors, and questions presented in the questionnaire.

Rate the following statements, where 1 means strongly disagree and 7 strongly agree (1~7)		
Variables	**Questions**	**References**
Personal Motivating Operation (PMO)	PMO01 I get rid of clothes that I don't wear because I get tired of them	[57]
	PMO02 I get rid of clothes that I don't use to renew my wardrobe by buying new pieces of garments	
	PMO03 I get rid of clothes that I don't wear, because I feel I have no attachment to them	
Product Attributes (PRA)	PRA01 I get rid of clothes that I don't wear because they no longer fit me (inappropriate size)	[58]
	PRA02 I get rid of clothes that I don't use because they are already worn-out (overused)	
	PRA03 I get rid of clothes that I don't wear because the garment is no longer in fashion	
Social Awareness (SEA)	SEA01 I donate clothes that I don't wear because I feel good helping other people	[4, 48, 52–55]
	SEA02 I donate clothes that I don't wear because I care about charitable and social issues	
	SEA03 I donate clothes that I don't wear so I can help those in need	
Environmental Awareness (SEA)	SEA04 I sell or donate clothes that I don't wear because I care about environmental issues (e.g., clothes in landfills)	[60, 61]
	SEA05 I get rid of clothes that I don't use in the form of sale or donation	
	SEA06 I customize clothes that I don't wear to avoid discarding them as waste	
Disposal Routes (DIR)	DIR01 I sell clothes that I don't wear for the financial benefit	[48, 52–55]
	DIR02 I sell clothes that I don't wear because it's practical and easy to advertise them	
	DIR03 I don't discard my clothes, I customize them to wear them longer	
	DIR04 I transform clothes that I no longer use into other uses (e.g., transforming them into cleaning cloths or blankets)	
	DIR05 I get rid of clothes that I don't wear by throwing them straight in the trash bin for practicality and convenience	
	DIR06 I throw clothes I don't wear straight into the trash bin because I paid cheap for them	

Throughout the analysis, scientific rigor was prioritized to ensure the reliability and validity of the results. The use of structural equation modeling (SEM) allows for a comprehensive examination of the relationships between the variables, facilitating both a predictive and explanatory understanding of the factors influencing clothing disposal behaviors. While this study incorporates predictive models, it also emphasizes explanatory elements to uncover the causal mechanisms involved. The methodology employed in this study integrates both qualitative and quantitative phases, ensuring the robustness of the findings and aligning them with the theoretical framework that guides the research.

To enhance the statistical rigor, bootstrapping with 5000 resamples was performed to assess the significance of the path coefficients. The Average Variance Extracted (AVE) was analyzed to ensure convergent validity, with all constructs meeting the threshold of >0.50. Multicollinearity was assessed using the Variance Inflation Factor (VIF), and all values were found to be below 3.3, confirming the absence of multicollinearity issues [71]. These steps ensure the reliability of the results and further reinforce the validity of the conclusions drawn from the data.

3. Results

3.1. Respondents' profile

The characterization of the respondents' profile reveals a predominance of young, highly educated females residing in Brazil's southeast region. As shown in **Table 4**, the majority of participants are women aged between 23 and 27 years old. **Table 4** indicates that a considerable proportion of the sample has completed postgraduate education, while **Table 5** shows that the majority belong to a monthly family income bracket between USD 1271.00 and USD 2720.00. **Table 6** provides a summary of the respondent's profiles.

These demographic characteristics suggest a relatively young, educated, and economically active population, which is particularly relevant considering the patterns of clothing consumption and disposal behaviors analyzed in this study. Understanding the sociodemographic context of respondents is critical to interpreting the motivations behind clothing disposal choices, as previous studies have indicated that education and income levels can significantly influence environmental behaviors and consumption patterns [72, 73].

3.2. Confirmatory factor analysis and model fit

Confirmatory factor analysis (CFA) was employed to assess the adequacy and validity of the measurement scales utilized in this research. Using Principal Component Extraction [74] and Varimax Orthogonal Rotation with Kaiser–Meyer–Olkin Normalization, the model fit was evaluated and found to be satisfactory (**Figure 2**).

Convergent validity was analyzed through Cronbach's alpha, where most constructs exceeded the recommended 0.7 threshold, suggesting good internal consistency [75]. Only two constructs, "discard attributes" and "personal motivating operation", exhibited slightly lower values, but not to the extent of undermining the validity of the model. These small deviations align with the existing literature, which acknowledges that in social sciences, constructs measuring complex human behaviors may occasionally present marginally lower Cronbach's alpha values without compromising reliability [67].

Table 4 • Respondents according to Brazilian sociodemographic region and schooling level.

	Central west	Northeast	North	Southeast	South	Total
Completed Primary Education	0.2% (1)	0.2% (1)	0% (0)	0.5% (3)	0.2% (1)	0.9% (6)
Completed High School	0.9% (6)	1.07% (7)	0.3% (2)	27.3% (94)	0.61% (4)	30.2% (197)
Completed Bachelor's Degree	1.2% (8)	1.2% (8)	0.5% (3)	31.6% (207)	0.77% (5)	35.5% (231)
Completed Post-graduation	1.7% (11)	1.7% (11)	0.5% (3)	26.3% (172)	3.22% (21)	33.4% (218)
Total	4% (26)	4.17% (27)	1.3% (8)	85.7% (560)	4.8% (31)	100% (652)

Note: n = 652.

Table 5 • Respondents according to Brazilian sociodemographic region and monthly family income.

	Central west	Northeast	North	Southeast	South	Total
USD 2721.00 or more	0.5% (3)	0.5% (3)	0.2% (1)	11.55% (76)	1.53% (10)	14.3% (93)
Between USD 1271.00 and USD 2720.00	1.2% (8)	0.77% (5)	0.3% (2)	30.06% (196)	1.08% (7)	33.4% (218)
Between USD 551.00 and USD 1270.00	0.9% (6)	1.68% (11)	0.3% (2)	28.06% (183)	1.23% (8)	32.2% (210)
Up to USD 550.00	1.4% (9)	1.22% (8)	0.5% (3)	16.1% (105)	0.92% (6)	20.1% (131)
Total	4% (26)	4.17% (27)	1.3% (8)	85.77% (560)	4.76% (31)	100% (652)

Note: n = 652.

Table 6 • Respondents according to Brazilian sociodemographic region, gender, and age.

Central west	Female	Male
18 to 27 years old	0.77% (5)	0.92% (6)
28 to 37 years old	0.77% (5)	0.31% (2)
38 to 47 years old	0.77% (5)	0.15% (1)
48 years or older	0.15% (1)	0.15% (1)
Northeast		
18 to 27 years old	1.23% (8)	0.46% (3)
28 to 37 years old	0.77% (5)	0% (0)
38 to 47 years old	0.77% (5)	0% (0)
48 years or older	0.77% (5)	0.15% (1)
North		
18 to 27 years old	0.31% (2)	0.15% (1)
28 to 37 years old	0.31% (2)	0% (0)
38 to 47 years old	0% (0)	0.15% (1)
48 years or older	0.31% (2)	0% (0)
Southeast		
18 to 27 years old	26.99% (176)	12.88% (84)
28 to 37 years old	17.02% (111)	3.68% (24)
38 to 47 years old	6.75% (44)	4.29% (28)
48 years or older	10.43% (68)	3.83% (25)
South		
18 to 27 years old	0.92% (6)	0.15% (1)
28 to 37 years old	0.77% (5)	0.61% (4)
38 to 47 years old	0.92% (6)	0.15% (1)
48 years or older	1.07% (7)	0.15% (1)
Total	71.78% (468)	28.22% (184)

Note: n = 652.

Discriminant validity was confirmed using the Fornell–Larcker criterion [76], as shown in **Table 7**. Each construct demonstrated stronger loadings with its respective items than with others, indicating that the constructs are distinct and measure different underlying concepts.

Furthermore, Average Variance Extracted (AVE) values were above 0.500, and Composite Reliability indices surpassed 0.700 across all constructs, supporting both the convergence and discriminant validity of the model [69]. Multicollinearity was assessed using the Variance Inflation Factor (VIF), and all values remained below 3.3 (**Table 8**), confirming the absence of problematic collinearity among the variables [77].

Statistical rigor was further ensured through the application of bootstrapping with 5000 resamples to test path coefficient significance. These methodological choices enhance the robustness and credibility of the findings, as recommended in the structural equation modeling literature [78].

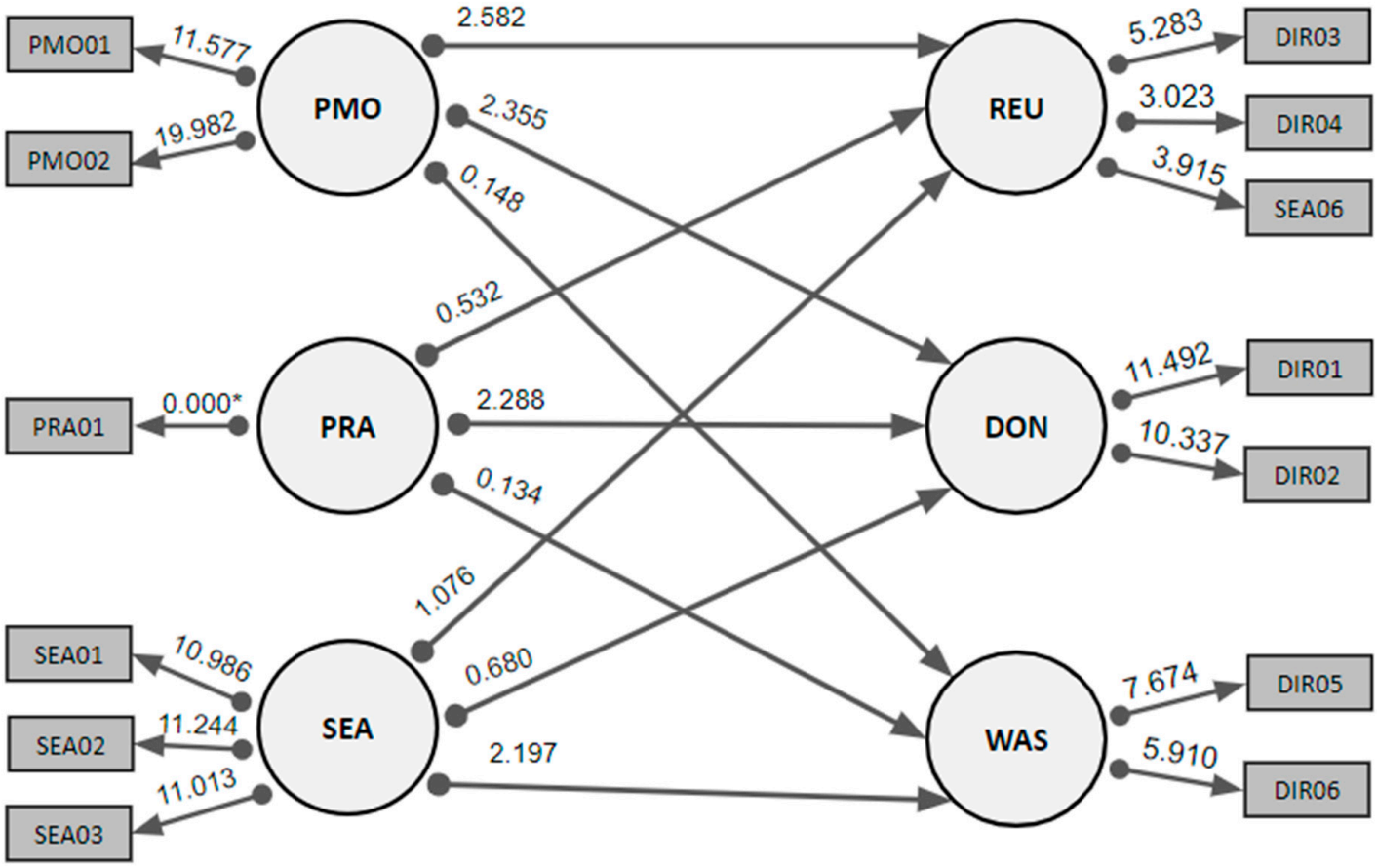

Figure 2 • Structural model formed by clothing disposal constructs. * Significance level of $p \leq 0.05$.

Table 7 • Discriminant validity calculations for the variables.

	Reuse	Discard as waste	Personal motivating operation	Product attributes	Resale or donation	Social and environmental awareness
Reuse	0.794					
Discard as Waste	0.088	0.853				
Personal Motivating Operation	−0.163	−0.021	0.842			
Product Attributes	−0.012	−0.025	0.021	1.000		
Resale or Donation	0.189	0.042	0.106	0.077	0.922	
Social and Environmental Awareness	0.051	−0.101	0.148	0.192	−0.002	0.894
Cronbach's Alpha	0.714	0.638	0.591	1.000	0.823	0.881
Compound Reliability	0.836	0.842	0.830	1.000	0.919	0.923
Average Variance Extracted (AVE)	0.630	0.728	0.709	1.000	0.849	0.800
rho_A	0.720	0.700	0.598	1.000	0.833	1.042

Note: The diagonals represent the root of the extracted variance.

Table 8 • Evaluation of the structural model.

	Sample average	Standard deviation	T statistics	*p* values
Social and Environmental Awareness (SEA) -> Disposal Routes (DIR)	0.667	0.023	29.477	0.000 *
Social and Environmental Awareness (SEA) -> Personal Motivating Operation (PMO)	−0.038	0.038	0.988	0.324
Personal Motivation (PMO) -> Disposal Routes (DIR)	−0.167	0.030	5.465	0.000 *
Product Attributes (PRA) -> Personal Motivating Operation (PMO)	0.367	0.036	10.211	0.000 *
Social and Environmental Awareness (SEA) -> Product Attributes (PRA)	0.133	0.036	3.710	0.000 *

Notes: n = 652. * Significance level of $p \leq 0.05$.

The p values, which represent the confidence intervals, determine the significance of relationships between variables, revealing four significant hypotheses supported at $p \leq 0.05$ (**Table 5**). These findings suggest that four of the nine variables significantly influence clothing disposal motivation, while hypotheses H1c, H2a, H2c, H3a, and H3b were non-significant and therefore not validated. Non-significant hypotheses merely denote the insignificance of the relationship between variables, and not necessarily that this correlation does not exist.

Throughout the analysis, scientific rigor was prioritized to ensure the reliability and validity of the results. The use of SEM allows for a comprehensive examination of the relationships between the variables, enabling both a predictive and explanatory understanding of the factors influencing clothing disposal. In this context, this study does not rely solely on predictive models but also incorporates explanatory elements, contributing to a deeper understanding of the causal mechanisms involved. The methodological approach employed in this study combines both qualitative and quantitative phases, ensuring the robustness of the findings and addressing the study's theoretical framework.

3.3. Validation of hypotheses about motivations for garment disposal

The hypotheses tested in this study provided important insights into the motivations guiding clothing disposal choices among Brazilian consumers.

3.3.1. Hypotheses *H1a*, *H1b*, and *H1c*

Hypothesis *H1a* was validated, showing a significant negative relationship between "personal motivating operation" and "reuse intention". This finding suggests that when individuals experience a stronger personal motivation (e.g., perceiving clothing as outdated or incompatible with their identity), their likelihood of reusing garments decreases.

Hypothesis *H1b* was also validated, demonstrating a positive association between "personal motivating operation" and "resale/donation". This implies that personal dissatisfaction with clothing leads consumers to opt for resale or donation rather than disposal. This pattern aligns with findings in the literature, emphasizing the role of altruism and financial pragmatism in facilitating second-hand clothing markets.

In contrast, Hypothesis *H1c* was not validated, indicating that "personal motivating operation" did not significantly predict the direct disposal of clothing as waste. This nuance highlights that emotional detachment from clothing may lead consumers to choose alternative paths, such as donation or resale, rather than simply discarding garments, thus contributing positively to circular economy efforts.

3.3.2. Hypotheses *H2a*, *H2b*, and *H2c*

Hypothesis *H2a* was not validated, suggesting that garment attributes alone do not significantly motivate clothing reuse. This may reflect cultural factors where customization practices, such as upcycling, are not yet widespread among Brazilian consumers.

Hypothesis *H2b* was validated, confirming that favorable garment attributes (such as good physical condition) significantly influence the intention to resell or donate. This finding reinforces the importance of clothing durability and aesthetic value in extending a garment's life cycle through second-hand markets.

Hypothesis *H2c*, similar to H2a, was not validated. Although garment attributes are crucial for resale and donation, they do not appear to have a strong direct effect on the likelihood of disposal as waste. This suggests that other variables, such as awareness and personal values, might mediate the final disposal decision.

3.3.3. Hypotheses *H3a*, *H3b*, and *H3c*

Hypotheses *H3a* and *H3b* were not validated, indicating that socio-environmental awareness does not significantly predict clothing reuse or resale/donation behaviors in the sample. However, Hypothesis *H3c* was validated, showing that greater socio-environmental awareness is significantly associated with lower clothing disposal as waste. This aligns with previous research, confirming that individuals with heightened environmental consciousness are less likely to send garments directly to landfills, instead seeking alternative, less environmentally damaging disposal routes.

It is common for some hypotheses to lack significance in studies of human behavior. In this research, a pattern emerged among Brazilian participants regarding clothing disposal motivations:

- Disposal as regular waste is negatively associated with socio-environmental awareness.
- Resale or donation is directly linked to garment attributes.
- Clothing reuse, resale, or donation is directly correlated with personal motivating operation.

In summary, although not all hypotheses were supported, the overall findings reflect coherent behavioral patterns: resale or donation behaviors are closely tied to garment attributes and personal motivations, while reduced waste disposal is associated with higher environmental awareness.

3.4. Clothing disposal routes

Disposing of clothing with household waste was a route often chosen by individuals with a high level of education (7.8% of respondents), and if associated with a monthly family income of USD 2723.49 or more, 3.37% of respondents discard their clothes as waste. This means that, even with a more complete education and a higher socioeconomic situation, individuals choose to dispose of their clothes in the trash, along with domestic waste, instead of giving them another destination with less environmental impact. This finding suggests that access to information and resources alone does not necessarily guarantee sustainable disposal practices, reflecting gaps in cultural practices or infrastructure for clothing reuse and recycling.

Figure 3 illustrates the qualitative correlations between sociodemographic variables (age, income, education) and preferred garment disposal behaviors among Brazilian consumers. Given the categorical nature of the data, a Spearman-like approach was adopted to simulate correlation patterns. Higher correlations, represented by darker tones (deep red or deep blue, depending on the color scheme), indicate a stronger association between specific demographic profiles and disposal behaviors, such as giving clothes to family or friends, upcycling, or donating to charities. Medium correlations are shown in mid-tones, while low and very low correlations are depicted using progressively lighter shades. In this representation, behaviors more frequently observed within particular demographic groups exhibit higher correlation values (0.60–0.65), whereas rare or absent behaviors correspond to lower or negative correlations, reflected by lighter or pale colors. This visualization provides a comprehensive understanding of how sociodemographic factors qualitatively influence garment disposal practices in Brazil. Education has a strong correlation with the upcycling of garments and the respondent's income has a strong correlation with online resale. The respondent's age has a low correlation with garment collection at retail stores and education has a low correlation with the disposal of garments in domestic trash bins.

The table below (**Table 9**) demonstrates an overall view of the most and least common garment disposal routes among Brazilian consumers, according to their demographic region.

Figure 4 summarizes how Brazilian consumers predominantly dispose of their garments after use. The data reflect a positive cultural tendency toward informal reuse and donation, and also highlights opportunities to improve resale initiatives and formal collection systems.

Transfer of clothing to family and friends emerged as the most popular disposal route across all regions, underscoring the strength of informal redistribution networks in Brazilian culture. In contrast, the use of clothing collection bins in retail stores was notably rare, likely due to a lack of awareness or accessibility. Similarly, online resale platforms were less popular, particularly in the South and Northeast, pointing to potential regional differences in digital commerce adoption and second-hand market culture. These findings emphasize the need for more effective communication campaigns and infrastructure improvements to encourage sustainable clothing disposal behaviors.

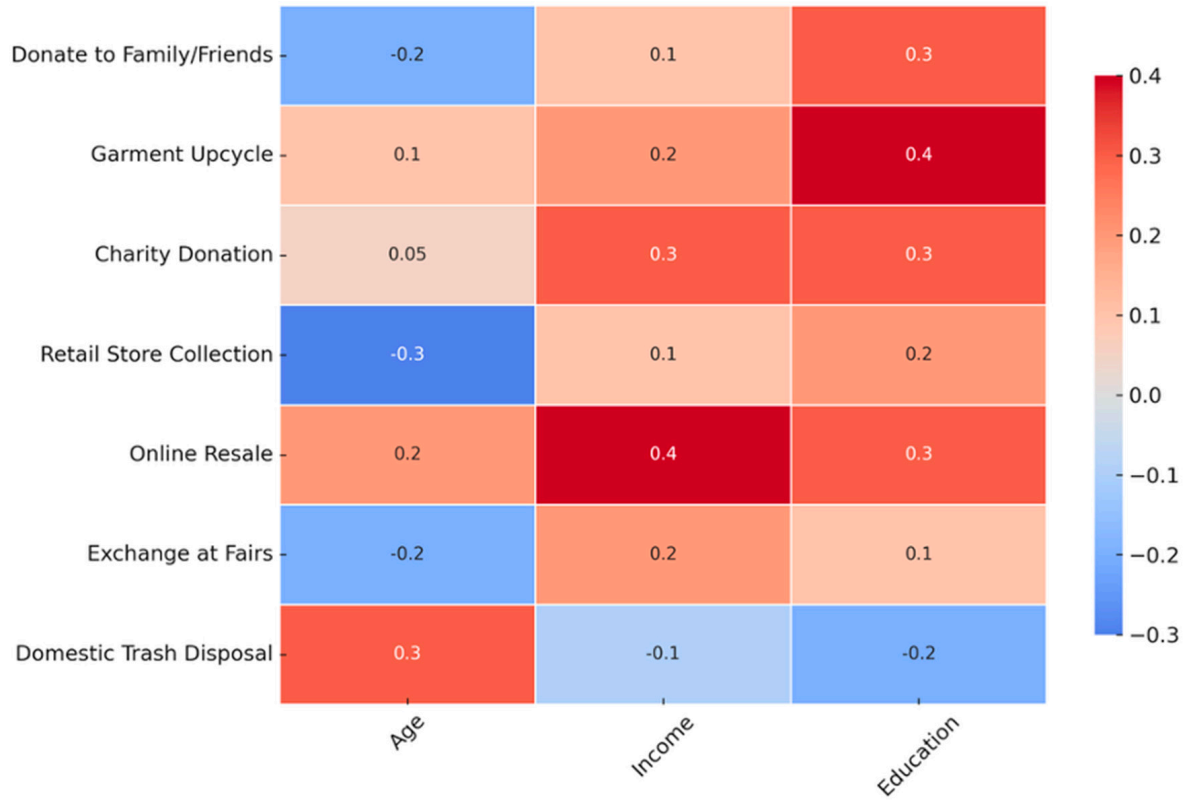

Figure 3 • Correlation between sociodemographic variables and disposal behaviors.

Table 9 • Garment disposal routes chosen by Brazilian consumers.

Brazilian region	Most common route	Percentage of respondents	Least common route	Percentage of respondents
South	Give to family or friends; Garment upcycle; Charities.	34.6%; 22.2%; 21%	Used garment collection at retail stores; Online resale platforms; Exchange at fairs.	0%; 2.5%; 1.2%
North	Give to family or friends; Garment upcycle; Charities.	47.1%; 17.6%; 11.8%	Used garment collection at retail stores; Garment upcycle.	0%; 0%
Central West	Give to family or friends; Charities; Garment upcycle.	27.7%; 22.9%; 19.3%	Domestic trash (as waste); Used garment collection at retail stores; Exchange at fairs.	0%; 3.6%; 3.6%
Northeast	Give to family or friends; Charities; Garment upcycle.	35.9%; 24.4%; 19.2%	Used garment collection at retail stores; Exchange at fairs; Online resale platforms.	0%; 1.3%; 2.6%
Southeast	Give to family or friends; Charities; Garment upcycle.	33.2%; 29.2%; 17.7%	Exchange at fairs; Used garment collection at retail stores.	0.9%; 1.4%
Total	Give to family or friends.	90.8% (592 respondents)	Used garment collection at retail stores.	3.8% (25 respondents)

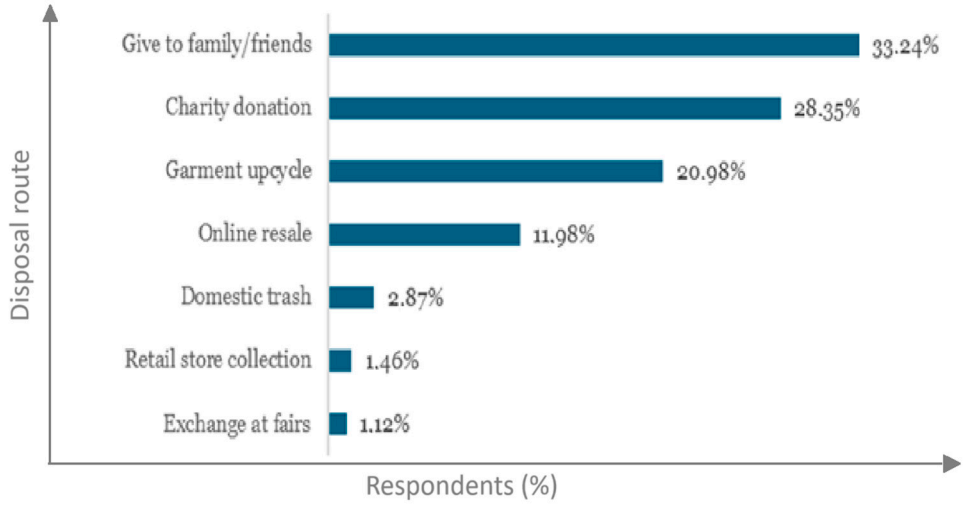

Figure 4 • Garment disposal routes among Brazilian consumers.

4. Discussion

This study presents important insights into the motivations driving Brazilian consumers' choices regarding post-consumer clothing disposal routes, although certain limitations must be acknowledged. Although the model demonstrated overall validity, certain constructs exhibited Cronbach's alpha values slightly below the recommended threshold, indicating minor reliability concerns. The reliance on self-reported data through Likert-scale questionnaires may have introduced social desirability bias, potentially affecting the accuracy of reported behaviors [79]. Additionally, the adapted measurement scales, although grounded in the literature, may not have fully captured the cultural specificities of Brazilian consumers. The cross-sectional design also limits causal inferences, and the sample, skewed toward individuals with higher education levels, may not entirely represent Brazil's diverse population. Finally, while sociodemographic factors were considered, the relationship between education level and disposal motivations warrants deeper exploration in future research.

Addressing the study's first research question—how different motivations influence the consumer's choice of post-consumer clothing disposal routes—the results indicate that physical attributes of the garments (such as inappropriate sizing or worn-out conditions) and subjective evaluations (such as perceiving items as unfashionable or no longer desirable) play a central role in motivating resale or donation. Conversely, socio-environmental motivations emerge as crucial in discouraging waste disposal. The motivation to customize garments diminishes when negative perceptions prevail, revealing that consumers often prefer divestment over creative re-appropriation.

In relation to the second research question—identifying the most and least common disposal routes among Brazilian consumers—the findings revealed a strong preference for forwarding garments to family or friends (90.8%), donating to charities (77.3%), and customizing items (57.2%). Less common behaviors included resale via second-hand channels (32.7%), landfill disposal (7.8%), retail store collection initiatives (4%), and clothing swaps (3.1%).

Connecting these findings with previous studies, it becomes evident that while research has long established a relationship between environmental attitudes and sustainable purchasing behaviors [79], fewer studies have focused on the nuances of disposal behavior [4, 14, 44, 46, 51], particularly within emerging economies like Brazil. The results reinforce and expand on existing knowledge by emphasizing how personal motivations and garment characteristics intertwine with broader socio-environmental values in shaping disposal decisions.

However, this study also identified some unexpected results, particularly the low adoption rate of retail collection bins (4%), despite the increasing emphasis on reverse logistics initiatives by large

retailers. This divergence highlights a persistent disconnection between corporate sustainability programs and consumer participation, a phenomenon also reported in other emerging markets [4]. This underscores the necessity of designing more engaging and accessible collection strategies.

The findings have several theoretical, policy, and practical implications. Theoretically, this study enriches existing models of consumer behavior by illustrating the intricate role of both utilitarian and hedonic motivations in disposal practices. Policy-wise, the results advocate for the reinforcement of Brazil's National Policy on Solid Waste (PNRS—Law N° 12.305), especially the enhancement of extended producer responsibility (EPR) frameworks to include incentives for consumers and obligatory participation for producers and retailers. Practically, the fashion industry must extend beyond symbolic sustainability gestures and establish substantive circularity practices, such as well-promoted buyback programs, textile upcycling partnerships, and collaborative disposal schemes.

While practices such as resale, donation, and reuse are generally regarded as environmentally beneficial due to their potential to extend the life cycle of garments and reduce landfill waste, it is important to acknowledge their varying environmental and social implications. Clothing donations, for example, are often perceived positively by consumers; however, a growing body of literature raises critical concerns about their unintended consequences, particularly in the Global South. The SHC trade is largely driven by fast fashion in the Global North, resulting in large volumes of low-quality clothing being exported to the Global South, especially Africa and parts of Asia [80]. Large-scale donations have been criticized for over-saturating second-hand clothing markets, which can disrupt local textile industries, undermine domestic production, and foster economic dependency on imported garments [8]. This phenomenon not only threatens the long-term economic sustainability of recipient communities but also poses environmental risks through increased transportation and logistical operations, contributing to greenhouse gas emissions. Therefore, while promoting post-consumer clothing redistribution is essential, policymakers and practitioners should carefully consider these broader implications to ensure that sustainability initiatives do not inadvertently generate new social or environmental challenges, thereby aligning more effectively with global sustainability goals.

Moreover, an expanded analysis of sociodemographic patterns revealed that education levels significantly correlate with disposal choices. Consumers with higher educational attainment demonstrated a greater propensity for environmentally sustainable behaviors, such as donation and customization, while those with lower education levels showed a higher likelihood of landfill disposal. This reinforces the critical role of education in promoting conscious post-consumer practices and suggests that targeted educational interventions could substantially impact behavior change.

In light of these insights, the study's limitations must be more clearly articulated. First, while the model provides robust theoretical and practical contributions, its generalizability is constrained by the use of a convenience sample predominantly composed of urban, educated consumers. Secondly, the cross-sectional nature of the data precludes causal inference. Future research could explore longitudinal approaches and employ mixed methods to validate and deepen the findings.

Finally, to promote a comprehensive understanding of consumer behavior related to textile disposal, future studies could also investigate the influence of economic factors, such as income, on disposal motivations and behaviors. Although this study emphasized educational levels over income, acknowledging income as a potential moderating variable remains an important avenue for further inquiry.

5. Conclusions

This study underscores the importance of concerted efforts across governmental, industrial, and societal stakeholders in addressing post-consumer clothing disposal challenges. By elucidating the motivations behind consumer disposal choices, it highlights the critical need to foster a culture of reuse, redesign, and recycling, aiming toward a sustainable and circular economy.

Theoretically, the findings advance the literature by demonstrating the significant role of both tangible garment attributes and intangible perceptions in shaping disposal behaviors, while also emphasizing the influence of education in driving environmentally responsible practices. These insights advocate for more nuanced models of consumer behavior that incorporate motivational complexity and sociodemographic mediators.

From a policy perspective, this study reinforces the urgent necessity of strengthening Brazil's PNRS and implementing comprehensive extended producer responsibility frameworks that include consumer incentives, enforce producer accountability, and promote accessible reverse logistics infrastructure. The establishment of robust partnerships among fashion retailers, government agencies, and non-governmental organizations is essential for enhancing the efficacy of post-consumer clothing management initiatives.

Practically, the fashion industry must engage consumers more effectively by demystifying sustainable disposal practices, offering incentives for garment returns, and expanding accessible recycling options. In parallel, public awareness campaigns must critically address not only the environmental benefits of responsible disposal but also the potential global inequities stemming from unchecked donations to Global South countries.

In summary, by integrating innovative policies, targeted educational initiatives, and collaborative industry practices, society can transform post-consumer clothing disposal from a predominantly linear to a genuinely circular process. Through such efforts, it is possible to achieve not only environmental preservation but also greater social equity and economic resilience, contributing decisively to the global transition toward sustainability.

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Author contributions

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Conflict of interest

The authors declare no conflicts of interest.

Data availability statement

Data supporting these findings are available within the article, at https://doi.org/10.20935/AcadEnvSci7771, or upon request.

Institutional review board statement

This study was conducted in accordance with the Declaration of Helsinki and approved by the Ethics Committee of the University of Sao Paulo/Luiz de Queiroz College of Agriculture (protocol code 4.179.870, approved on 2020 Jul 29). The research followed all the guidelines of CONEP (National Research Ethics Committee) and the USP/ESALQ Research Commission regarding ethical, scientific, and legal standards.

Informed consent statement

Informed consent was obtained from all subjects involved in the study.

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