

Consumers' motivation to purchase second-hand clothing: a multimethod investigation anchored on belief elicitation and theory of planned behavior

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Abstract

Purpose – Amidst escalating sustainability challenges, product and brand managers face a pressing need to foster responsible consumption and marketing strategies. Guided by the theory of planned behavior, this paper aims to explore consumers' motivation to purchase second-hand clothing, a type of product that contributes to Sustainable Development Goal (SDG) 12 on Responsible Consumption and Production by democratizing the brand, extending the life-cycle of the product, promoting a circular economy, while reducing economic costs for consumers and environmental costs for companies.

Design/methodology/approach – A two-stage study was conducted: 20 consumers were initially interviewed to identify the salient beliefs about second-hand clothing, and following that, a survey was conducted with 449 consumers to statistically analyze consumers' motivation to purchase second-hand clothing. The data were analyzed using partial least squares-structural equation modeling (PLS-SEM) and necessary condition analysis (NCA).

Findings – From a "should-have" perspective (PLS-SEM), the study reveals that behavioral beliefs, injunctive normative beliefs, descriptive normative beliefs and control beliefs positively shape attitudes, injunctive norms, descriptive norms and perceived behavioral control toward second-hand clothing, whereas attitudes, injunctive norms, moral norms and perceived behavioral control positively influence consumers' purchases of second-hand clothing. From a "must-have" perspective (NCA), the study shows that behavioral beliefs, injunctive normative beliefs and descriptive normative beliefs are necessary conditions to positively shape attitudes, injunctive norms and descriptive norms toward second-hand clothing, whereas attitudes, injunctive norms and perceived behavioral control are necessary conditions to stimulate second-hand clothing purchases.

Originality/value – The study offers a deep dive into consumers' motivation to purchase second-hand clothing using a multimethod approach that enables not only the elicitation of salient beliefs (through interviews) but also the empirical examination of these beliefs alongside varying subjective norms in motivating consumers to purchase second-hand clothing (via survey). Given that beliefs are deeply rooted, the rigorous unfolding and validation of consumers' beliefs about second-hand clothing, including the "should-haves" versus the "must-haves," provide finer-grained insights that product and brand managers can strategically use to encourage consumers to purchase second-hand clothing.

Keywords Survey, Theory of planned behavior, Interview, SDG 12, Second-hand clothing, Belief elicitation

Paper type Research paper

1. Introduction

The fast fashion industry, which generated \$36bn in revenue in 2019 and is anticipated to hit \$43bn by 2029 (Statista, 2021a, 2021b), provides consumers with the latest affordable fashion

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trends inspired by runway shows. Well-known brands like Boohoo, Mango, Topshop and UNIQLO actively encourage consumers to frequently buy fashionable clothing (Stringer et al., 2020). Nevertheless, the industry has faced criticism due to environmental harm and excessive textile waste (Koay et al., 2022; Roozen and Raedts, 2020). Consequently, brands and consumers alike are increasingly embracing sustainable fashion involving second-hand clothing (Koay et al., 2023; Turunen and Leipämaa-Leskinen, 2015). Experts suggest that buying second-hand clothing is more economical for consumers and can reduce textile waste and pollution by companies (Han et al., 2022), thereby representing a type of product that contributes to Sustainable Development Goal (SDG) 12 on Responsible Consumption and Production (Lim, 2022). With a projected worth of \$218bn by 2026 (Smith, 2022), the second-hand clothing market, which extends the life-cycle of clothing, has firmly established itself as a socially just circular economy (Persson and Hinton, 2023), attracting and expanding with environmentally-conscious, style-savvy consumers (Yan et al., 2015). Moreover, affluent consumers now appreciate the uniqueness (e.g. retro) and value (e.g. lower economic and environmental costs) of second-hand clothing, debunking the traditional belief that such products, which democratizes brands to those who may not be able to afford the full price, appeals only to low-income consumers (Sorensen and Jorgensen, 2019).

Numerous studies contributed to the extant literature on product and brand management of second-hand clothing by elucidating the factors affecting consumers' intention to purchase such products (e.g. Koay et al., 2023; Sihvonen and Turunen, 2016; Turunen and Leipämaa-Leskinen, 2015). For instance, Yan et al. (2015) revealed that consumers are more inclined to purchase second-hand clothing if they are perceived to be more affordable and have low contamination risk and high self-expressive potential. Koay et al. (2023) reported differences in risk perceptions among consumers and nonconsumers of second-hand clothing, with the former affected by aesthetic, financial and social risks while the latter by psychological and sanitary risks. Liang and Xu (2018) discovered that different generations have distinct motivations for buying second-hand clothing, with post-70s generations having more considerations and resistance. Other factors such as durability and quality (Edbring et al., 2016), desire to be unique (Laitala and Klepp, 2018), originality (Zaman et al., 2019), nostalgia (Zaman et al., 2019) and social status (Herjanto and Hendriana, 2020) wield considerable influence on consumers' consideration when it comes to purchasing second-hand clothing. While the theory of planned behavior is a commonly used theoretical framework to help product and brand managers comprehend and predict consumers' purchase intentions for second-hand clothing (e.g. Borusiak et al., 2020; Koay et al., 2022; Seo and Kim, 2019), these studies have several noteworthy limitations.

To begin, existing product and brand management studies guided by the theory of planned behavior, including those dedicated to the study of second-hand clothing (Koay et al., 2022; Rodrigues et al., 2023; Seo and Kim, 2019), typically investigate the impact of attitudes, subjective norms and perceived behavioral control on the purchase intentions of products and brands without exploring the salient beliefs associated with these constructs, which limit understanding of the underlying mechanisms that enable their effects for product

and brand management (*first gap*). Furthermore, these product and brand management studies leveraging the theory of planned behavior have rarely attempted to reimagine and reinvigorate the core components of the theory, which impedes meaningful theoretical extension (*second gap*). Moreover, these product and brand management studies using the theory of planned behavior tend to rely solely on a regression-based analysis, which cannot adequately ascertain the factors necessary for driving purchase intentions of a given product or brand (Dul et al., 2023) (*third gap*).

To fill the aforementioned *gaps*, this study conducts a belief elicitation study via interviews to explore the salient behavioral beliefs, injunctive normative beliefs, descriptive normative beliefs and control beliefs associated with purchasing second-hand clothing. Furthermore, apart from adopting and implementing the theory of planned behavior in its entirety (i.e. beliefs, attitudes, norms, controls and intentions) to understand consumers' motivation to purchase second-hand clothing, this study makes a noteworthy *theoretical contribution* by expanding the original concept of subjective norms in this theory into three distinctive norms in the form of (i) injunctive norms, which capture consumers' perception of what significant others think they should do, (ii) descriptive norms, which encapsulate consumers' perception of what others are doing in a given situation and (iii) moral norms, which relate to consumers' sense of moral obligation and responsibility toward a specific behavior, issue or practice. Investigating the impact of various kinds of norms on consumers' purchase intention of a given product or brand expands understanding of how norms can play a role in product and brand management, in this case, the purchase or sales of second-hand clothing.

A notable strength of this study lies in its holistic analytical approach, combining the predictive capabilities of partial least squares-structural equation modeling (PLS-SEM, a symmetrical and regression-based method) with the boundary-identifying insights of necessary condition analysis (NCA, an asymmetrical and nonregression-based technique), a combination of analytical techniques that enables the study to (i) address complex relationships, (ii) enhance predictive accuracy and (iii) offer complementary perspectives. This integration also strengthens the *practical contribution* of this study, as it enables the identification of both should-have (PLS-SEM) and must-have (NCA) factors to motivate consumers' intention to purchase second-hand clothing (Dul et al., 2023; Richter et al., 2020). This allows product and brand managers of second-hand clothing to know exactly which factors are important (PLS-SEM) and necessary (NCA) to encourage consumers to purchase second-hand clothing, thereby formulating more effective marketing strategies to position and promote such products in the marketplace.

The rest of this paper is structured as follows. The subsequent section reviews the literature, shedding light on the theory of planned behavior as the study's guiding theory and a discussion leading to the development of the study's hypotheses, followed by a disclosure of the methodological considerations and steps in the study, as well as the results from the combined analysis of PLS-SEM and NCA. The paper concludes by elucidating its theoretical contributions, managerial implications, limitations and directions for future research.

2. Theoretical background and hypotheses development

2.1 Theory of planned behavior

Various theories have been developed in recent decades to understand and predict human behavior across diverse contexts (Koay *et al.*, 2020; Soh *et al.*, 2018). The theory of planned behavior is a prominent social-psychological model, initially proposed by Ajzen in 1985, which has since gained significant recognition (Ajzen, 2020; Ajzen and Fishbein, 1977). Consumers consciously weigh factors such as perceived benefits, costs and potential outcomes before making a decision. According to the theory of planned behavior, intentions can be predicted by attitudes, subjective norms and perceived behavioral control (Ajzen, 1985, 1991). Numerous studies have expanded the original theory of planned behavior to better understand specific behaviors (Ajzen, 2020). Furthermore, subjective norms can be further distinguished as injunctive and descriptive norms (Cialdini *et al.*, 1990). Injunctive norms pertain to how consumers perceive the acceptance of behavior, whereas descriptive norms are formed by observing what others do. This study also includes moral norms, which relate to moral obligation and responsibility, as a predictor of intentions due to their significant relationship with various behaviors (Branscum *et al.*, 2023; Song *et al.*, 2023).

2.2 Attitudes

Attitudes refer to the degree to which an individual has a favorable or unfavorable evaluation of the behavior of interest (Ajzen, 1991). Underlying attitudes are behavioral beliefs. When consumers believe that a particular behavior is likely to yield favorable outcomes, they typically develop positive attitudes toward it (Garas *et al.*, 2023). Previous research has demonstrated the crucial role of attitudes in determining a consumer's inclination to engage in specific behaviors (Djafarova and Fouts, 2022). In this study, attitudes are defined as a consumer's positive or negative feelings toward purchasing second-hand clothing (Koay *et al.*, 2022). It is surmised that if consumers hold favorable views of second-hand clothing, they will show a higher tendency to purchase it. Studies have shown that attitudes significantly impact a consumer's willingness to participate in recycling products (Liu *et al.*, 2022) and that consumers are more likely to engage in recycling of products when they hold positive attitudes toward it (Thoo *et al.*, 2022). Kumar *et al.* (2022) revealed that the favorable attitudes of consumers toward eco-friendly apparel significantly predict their inclination to buy it. Moreover, Koay *et al.* (2022) reported that attitudes are positively related to intentions to purchase second-hand clothing. Based on these findings, the following hypotheses have been formulated:

- H1. Attitudes toward second-hand clothing have a significant positive effect on intentions to purchase it.
- H2. Behavioral beliefs toward second-hand clothing have a significant positive effect on attitudes toward it.

2.3 Injunctive norms

Injunctive norms refer to a consumer's perception of the level of social influence exerted by significant others in endorsing the acceptability of a practice, for example, purchasing second-hand clothing (Koay *et al.*, 2022; Zahid *et al.*, 2023). The higher the

injunctive norms, the more likely a consumer will buy second-hand clothing. Injunctive norms are shaped by a consumer's perception of important others' normative beliefs, weighted by one's motivation to comply with those beliefs (Ajzen, 1991). Underlying injunctive norms are injunctive normative beliefs. Consumers tend to value the opinions of someone they perceive as important. If consumers feel that purchasing a particular product is not socially acceptable, they are less inclined to purchase it (Garas *et al.*, 2023). Several studies have found that consumers' green purchasing behavior is significantly impacted by injunctive norms (Sun *et al.*, 2022; Vu *et al.*, 2022). Similarly, Koay *et al.* (2022) reported that when consumers perceive that others approve of purchasing second-hand clothing, their intentions to purchase second-hand clothing increase. Based on this information, it is hypothesized that when consumers perceive that their significant others, such as family and friends, hold positive views about acquiring second-hand clothing, they tend to demonstrate a higher tendency to purchase second-hand clothing:

- H3. Injunctive norms toward second-hand clothing have a significant positive effect on intentions to purchase it.
- H4. Injunctive normative beliefs toward second-hand clothing have a significant positive effect on injunctive norms.

2.4 Descriptive norms

Descriptive norms differ from injunctive norms in that they are based on observed behaviors rather than what consumers should do (Rivis and Sheeran, 2003). When consumers observe other consumers engaging in a particular behavior, they are more likely to engage in that behavior themselves. Underlying descriptive norms are descriptive normative beliefs. In this study, descriptive norms are defined as the degree to which a consumer perceives their significant others purchasing second-hand clothing (Koay *et al.*, 2022). A study by Gugenishvili *et al.* (2022) showed that descriptive norms act as a critical factor in determining consumers' intention to donate. In addition, Xu *et al.* (2014) demonstrated that when young consumers observe their significant others, such as family and friends, purchasing second-hand clothing, they tend to adopt the same purchasing pattern. Koay *et al.* (2022) also found a significant positive relationship between descriptive norms and intentions to acquire second-hand clothing. Thus:

- H5. Descriptive norms toward second-hand clothing have a significant positive effect on intentions to purchase it.
- H6. Descriptive normative beliefs toward second-hand clothing have a significant positive effect on descriptive norms.

2.5 Moral norms

The concept of moral norms involves how a consumer perceives a behavior in terms of its morality, i.e. whether it is right or wrong (Conner and Armitage, 1998). Although initially included in the theory of planned behavior, moral norms were later removed due to their strong correlation with intentions (Harland *et al.*, 1999). However, some researchers have contended that consumers do not always make decisions based on logical reasoning (Certo *et al.*, 2008; Smith and McSweeney, 2007). Sometimes,

consumers may act altruistically, benefiting others without expecting personal gain, or refrain from certain behaviors that violate moral norms to avoid causing harm or feeling guilty (Schwartz, 1977). In some studies, moral norms and personal norms are seen as equivalent, as in the norm activation theory (Munerah et al., 2021). Noteworthy, consumers who possess strong moral values tend to feel an obligation to participate in proenvironmental actions, as Koay et al. (2022) revealed that moral norms significantly predict consumers' intention to purchase second-hand clothing, a type of product that is associated with lower economic and environmental costs (Han et al., 2022). Hence, the following hypothesis is postulated:

H7. Moral norms toward second-hand clothing have a significant positive effect on intentions to purchase it.

2.6 Perceived behavioral control

Perceived behavioral control, when applied to the context of second-hand clothing, refers to a consumer's perception of the ease of purchasing second-hand clothing (Koay et al., 2022). The theory of planned behavior includes this construct to predict both intentions and actual actions, unlike the theory of reasoned action, which does not consider whether a consumer possesses the necessary skills and resources to execute the desired behavior (Ajzen, 1991). If a consumer lacks confidence in their ability to successfully perform a behavior, the likelihood of developing an intention to do so is significantly lower. Underlying perceived behavioral control is control beliefs. Past studies have shown that consumers are more motivated to purchase environmentally friendly products if they believe they have the capability to do so (Laheri et al., 2024; Kumar, 2021). Chaturvedi et al. (2020) found that perceived behavioral control is a strong predictor of consumers' purchase intentions for recycled clothing. Consequently, this research suggests that consumers with a strong sense of perceived control over their behavior to purchase second-hand clothing are more inclined to possess high levels of intentions to buy second-hand clothing:

H8. Perceived behavioral control toward second-hand clothing has a significant positive effect on intentions to purchase it.

H9. Control beliefs toward second-hand clothing have a significant positive effect on perceived behavioral control.

The research model is presented in Figure 1.

3. Methodology

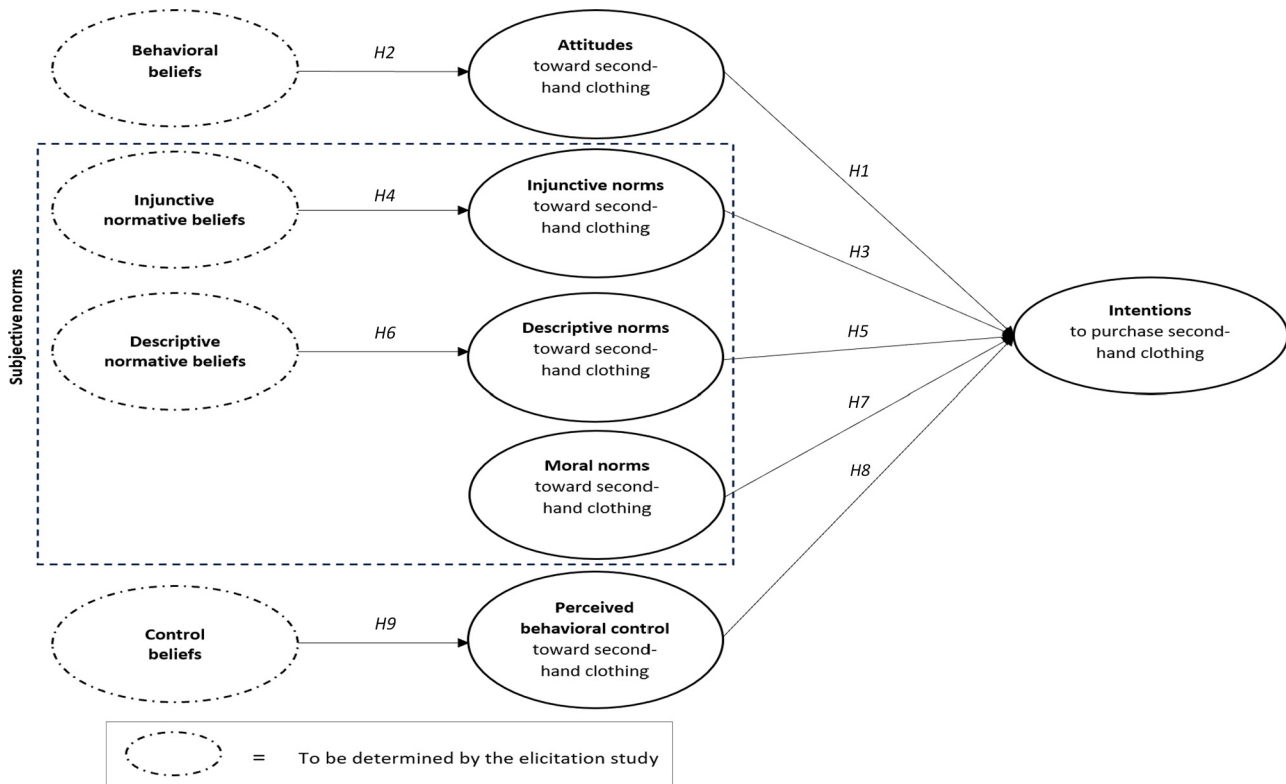
3.1 Measures

A belief elicitation study was conducted to develop belief-related scales, including behavioral beliefs, injunctive normative beliefs, descriptive normative beliefs and control beliefs (Ajzen, 2006). Twenty respondents familiar with second-hand clothing were interviewed, and high-frequency salient beliefs were extracted to measure each respective belief construct. Respondents' demographic profiles are presented in Appendix 1, and the full procedure is discussed in Appendix 2. Other constructs, such as attitudes, descriptive norms, injunctive norms, moral norms, perceived behavioral control and purchase intentions, were assessed using scales adapted from previous studies (Table 2).

To ascertain behavioral beliefs, respondents rated the probability of achieving various outcomes by purchasing second-hand clothing on a six-point scale ranging from 1 (definitely not) to 6 (yes, definitely). They also assessed the importance of each outcome using a six-point scale ranging from 1 (not important at all) to 6 (very important). The top four positive and top four negative outcomes associated with purchasing second-hand clothing were solicited. To obtain the overall behavioral beliefs score, this study multiplied the score for the likelihood of an outcome by the score of its importance and subsequently added all the multiplied scores. To assess injunctive normative beliefs, respondents were asked to rate the extent to which they believed significant others in their lives expected them to purchase second-hand clothing and their motivation to comply with these expectations. Respondents evaluated each statement using a six-point scale, where 1 indicates "definitely not" and 6 reflects "yes, definitely." To obtain the overall injunctive normative beliefs score, this study multiplied the score for the perceived expectation by the score for the motivation to comply, and subsequently added all the multiplied scores. To evaluate descriptive normative beliefs, respondents were asked to evaluate whether they believed important others would purchase second-hand clothing themselves and whether these individuals were perceived as behavioral role models. Respondents evaluated each statement using a six-point scale, where 1 indicates "definitely not" and 6 reflects "yes, definitely." The overall descriptive normative beliefs score was calculated by multiplying the belief in others' actions by the perceived role model strength for each important other, and then summing these products. To measure control beliefs, respondents were asked to rate internal and external factors that could facilitate their second-hand clothing purchases and the likelihood of these factors occurring. Respondents rated each statement using a six-point scale, where 1 indicates "definitely not" and 6 reflects "yes, definitely." To calculate the overall control beliefs score, the study multiplied the score for the presence of each factor by its likelihood of occurrence and then added up all the multiplied scores. Therefore, the formula to compute the composite score for each category of beliefs is: $\Sigma_{\text{belief}} = 1A \times 1B + 2A \times 2B + \dots + nA \times nB$, where A represents the probability rating of an outcome (or expectation, depending on the belief category), and B represents the importance rating of that outcome (or motivation to comply with the expectation). Each product $A \times B$ corresponds to an individual's weighted belief about a specific outcome (or expectation), and summing these products across all considered outcomes (or expectations) provides a comprehensive measure of the individual's overall beliefs. This consistent method across different belief types ensures that the survey maintains uniformity in its approach to measuring and interpreting the various dimensions of consumer beliefs, in this case, consumer beliefs related to purchasing second-hand clothing.

All other statements were rated on a seven-point Likert scale ranging from strongly disagree (1) to strongly agree (7) unless otherwise indicated. To measure purchase intentions, this study used a scale comprising two items developed by Kim et al. (2021). Adapted from Ajzen (1991), this study used five items to measure attitudes. A three-item scale adapted from Ajzen (1991) and Koay et al. (2022) was used to measure injunctive norms. A scale made up of three items adapted from Ajzen (1991) was used to measure descriptive norms. Respondents were asked to indicate their answers on three statements pertaining to descriptive norms using a seven-point Likert scale. Consisting of

Figure 1 Research model



Source: Authors' own illustration

three items, the scale by Tonglet *et al.* (2004) was used to assess moral norms. Two items adapted from Seo and Kim (2019) were used to assess perceived behavioral control.

3.2 Sampling method

This study adopted a quantitative survey approach to explore the determinants of consumers' intention to purchase second-hand clothing. The questionnaire comprised three sections: the first included a cover page outlining essential information for respondents; the second contained questions related to the research topic; and the third gathered demographic information, such as gender, age, race, income level and marital status. The study used a convenience sampling approach to disseminate an online survey link among Malaysian residents spanning a period of seven weeks. In addition, careful attention was paid to the ethnic demographics of the sample, striving to maintain a reasonably close alignment with Malaysia's broader ethnic distribution. This sampling strategy aimed to ensure diverse representation among respondents of different demographic backgrounds, aiming to enhance the potential for robust generalization of the study's findings to the Malaysian population. The survey was anonymous and voluntary, yielding a total of 449 respondents. A screening question asking whether they had purchased second-hand clothing previously was included in the questionnaire. Only respondents who had previously bought second-hand clothing were retained for the final data analysis. Of the 449 respondents, 240 (53.5%) are identified as female and 209 (46.5%) as male. The mean age of the respondents is 24.1 years old. In terms of ethnicity, 347

(77.3%) are classified as Malay, 47 (10.5%) as Chinese, 28 (6.2%) as Indian and 27 (6.0%) as Others. Concerning income distribution, 337 respondents (75.1%) belong to the income bracket of RM 0 to RM 2,000, 75 respondents (16.7%) fall within the income range of RM 2,001 to RM 5,000, 19 respondents (4.2%) lie within the range of RM 5,001 to RM 8,000 and 18 respondents (4.0%) possess incomes exceeding RM 8,000.

3.3 Analytical technique

The empirical testing of the model was conducted using PLS-SEM for three primary reasons (Hair and Alamer, 2022). First, the study aimed to examine an extended version of the theory of planned behavior (i.e. exploring a theoretically emerging model) rather than the original theory of planned behavior (i.e. examining a theoretically established model). Second, PLS-SEM was chosen as a more effective SEM method for prediction purposes. Specifically, PLS-SEM allows us to perform the PLSpredict procedure, which offers an out-of-sample predictive capabilities assessment (Shmueli *et al.*, 2019). Third, the PLS algorithm produces latent variable scores that can be used for various types of analysis, and this study used these scores for NCA.

4. Results

4.1 Common method bias

Given that this study used a self-report survey method, it is important to detect the potential threat of common method bias (CMB) to the study's validity (Bozionelos and Simmering,

2022). This study implemented two statistical remedies, including a full-collinearity test (Kock, 2015) and a measured latent marker variable test (Chin et al., 2013), to assess the extent of the influence of CMB on the findings of this study. To conduct the full-collinearity test, a surrogate variable, denoted by random numbers, was generated and used as the dependent variable in a regression analysis that encompassed all the constructs being investigated as the independent variables. With variance inflation factor (VIF) values below 3.3, the results showed no signs of CMB. For the measured latent marker test, a three-item cognitive rigidity scale (Oreg, 2003) was used to represent the measured latent marker. A comparison of regression analyses with and without the marker found no significant differences, as shown in Table 1.

4.2 Measurement model

In line with recommendations by Hair and Alamer (2022), the measurement model evaluation focused on three main criteria: internal consistency, convergent validity and discriminant validity. As shown in Table 2, all constructs demonstrated high reliability, with Cronbach’s alpha and composite reliability values exceeding the minimum threshold of 0.7. For convergent validity, both factor loadings and average variance extracted surpassed the recommended minimum thresholds of 0.7 and 0.5, respectively. Discriminant validity was assessed by examining the heterotrait–monotrait (HTMT) ratio of correlations (Henseler et al., 2015). With all HTMT values below the recommended maximum threshold of 0.85 (Table 3), the study encountered no issues with discriminant validity.

4.3 Structural model

In accordance with Hair and Alamer’s (2022) standard reporting procedure for structural models, this study presented the significance of coefficients, coefficients of determination (R^2), effect sizes (f^2) and predictive relevance (Q^2). Table 4 indicates that attitudes ($\beta = 0.275, p < 0.001, f^2 = 0.075$), injunctive norms ($\beta = 0.148, p < 0.01, f^2 = 0.022$), moral norms ($\beta = 0.092, p < 0.05, f^2 = 0.013$) and perceived behavioral control ($\beta = 0.314, p < 0.001, f^2 = 0.131$) are positively related to purchase intentions for second-hand clothing. However, descriptive norms ($\beta = 0.066, p > 0.05, f^2 = 0.005$) had no significant relationship with purchase intentions. Therefore, H1, H3, H7 and H8 were supported, but not H5. Furthermore, this

study found that behavioral beliefs ($\beta = 0.401, p < 0.001, f^2 = 0.192$), injunctive normative beliefs ($\beta = 0.467, p < 0.001, f^2 = 0.279$), descriptive normative beliefs ($\beta = 0.393, p < 0.001, f^2 = 0.183$) and control beliefs ($\beta = 0.400, p < 0.001, f^2 = 0.190$) are positively related to attitudes, injunctive norms, descriptive norms and perceived behavioral control, respectively. Thus, H2, H4, H6 and H9 were supported.

A PLS predict analysis (Shmueli et al., 2019) was conducted to assess the predictive relevance of the research model. The Q^2 predict value for purchase intentions was 0.214 (Table 5), indicating the model’s predictive relevance. Moreover, this study compared the prediction error statistics, including root mean squared error and mean absolute error, generated from the PLS model and linear model (LM). The results showed that the PLS model performs similarly to the LM.

An NCA was performed to identify the critical (necessary) factors for the dependent variables. Table 6 presents the results of the NCA. The ceiling envelopment–free disposal hull line was used to “separate the space with observations from the space without observations” (Richter et al., 2020, p. 2246). The results revealed that behavioral beliefs ($d = 0.057, p < 0.01$), injunctive normative beliefs ($d = 0.054, p < 0.001$) and descriptive normative beliefs ($d = 0.035, p < 0.05$) were necessary conditions for attitudes, injunctive norms and descriptive norms, respectively. Surprisingly, control beliefs ($d = 0.000, p > 0.05$) were not a must-have factor for perceived behavioral control. This study also found that attitudes ($d = 0.159, p < 0.01$), injunctive norms ($d = 0.111, p < 0.05$) and perceived behavioral control ($d = 0.208, p < 0.001$) were necessary conditions for purchase intentions. However, descriptive norms ($d = 0.076, p > 0.05$) and moral norms ($d = 0.000, p > 0.05$) were not necessary conditions for purchase intentions. Further scrutiny of d , as per Dul et al. (2023), suggests “ $0 < d < 0.1$ represents a small effect, $0.1 \leq d < 0.3$ a medium effect, $0.3 \leq d < 0.5$ a large effect, and $d \geq 0.5$ a very large effect” (p. 686).

5. Theoretical implications

This study discovered that attitudes positively affect purchase intentions, indicating that when consumers view second-hand clothing favorably, they exhibit a higher likelihood of buying it. This finding aligns with previous product and brand management research on second-hand clothing (e.g. Koay et al., 2022; Seo and

Table 1 Common method bias test results

| Relationship | Path coefficient | p -value | Path coefficient | p -value | Difference |
|--|------------------|------------|------------------|------------|------------|
| | Without marker | | With marker | | |
| H1: Attitudes → Purchase intentions | 0.275 | 0.000 | 0.269 | 0.000 | No |
| H2: Behavioral beliefs → Attitudes | 0.401 | 0.000 | 0.361 | 0.000 | No |
| H3: Injunctive norms → Purchase intentions | 0.148 | 0.005 | 0.147 | 0.005 | No |
| H4: Injunctive normative beliefs → Injunctive norms | 0.467 | 0.000 | 0.428 | 0.000 | No |
| H5: Descriptive norms → Purchase intentions | 0.066 | 0.108 | 0.056 | 0.144 | No |
| H6: Descriptive normative beliefs → Descriptive norms | 0.393 | 0.000 | 0.332 | 0.000 | No |
| H7: Moral norms → Purchase intentions | 0.092 | 0.019 | 0.084 | 0.034 | No |
| H8: Perceived behavioral control → Purchase intentions | 0.314 | 0.000 | 0.304 | 0.000 | No |
| H9: Control beliefs → Perceived behavioral control | 0.400 | 0.000 | 0.351 | 0.000 | No |

Source: Authors’ own illustration

Table 2 Measurement model

| Construct | Item | Factor loading | Cronbach's alpha | Composite reliability | Average variance extracted |
|---|---|----------------|------------------|-----------------------|----------------------------|
| Attitudes (ATT) | ATT1: I think that buying second-hand clothing is wise | 0.845 | 0.898 | 0.900 | 0.710 |
| | ATT2: I think that buying second-hand clothing is positive | 0.859 | | | |
| | ATT3: I think that buying second-hand clothing is good | 0.878 | | | |
| | ATT4: I think that buying second-hand clothing is satisfactory | 0.795 | | | |
| | ATT5: I think that buying second-hand clothing is pleasant | 0.835 | | | |
| Descriptive norms (DN) | DN1: Most people who are important to me buy second-hand clothing | 0.865 | 0.848 | 0.851 | 0.766 |
| | DN2: Most people whose opinions I value buy second-hand clothing | 0.879 | | | |
| | DN3: Most people I respect and admire buy second-hand clothing | 0.883 | | | |
| Injunctive norms (IN) | IN1: Most people who are important to me think that I should buy second-hand clothing | 0.795 | 0.780 | 0.781 | 0.695 |
| | IN2: Most people whose opinions I value would approve of me buying second-hand clothing | 0.849 | | | |
| | IN3: Most people I respect and admire will approve of me buying second-hand clothing | 0.856 | | | |
| Moral norms (MN) | MN1: It would be wrong of me not to buy second-hand clothing | 0.782 | 0.823 | 0.831 | 0.651 |
| | MN2: I would feel guilty if I did not buy second-hand clothing | 0.851 | | | |
| | MN3: Not buying second-hand clothing goes against my principles | 0.810 | | | |
| | MN4: Everybody should share the responsibility to buy second-hand clothing | 0.784 | | | |
| Perceived behavioral control (PBC) | PBC1: It fully depends on me whether or not I will buy second-hand clothing | 0.898 | 0.771 | 0.772 | 0.814 |
| | PBC2: I am fully in control of the fact that I will buy second-hand clothing | 0.906 | | | |
| Purchase intentions (PI) | PI1: It is very likely that I will buy second-hand clothing in the future | 0.912 | 0.798 | 0.798 | 0.832 |
| | PI2: Certainly, I will buy second-hand clothing | 0.912 | | | |
| Behavioral beliefs | It is likely that second-hand clothing is usually cheap | 1.000 | – | – | – |
| | It is likely that second-hand clothing conserves the environment | | | | |
| | It is likely that second-hand clothing allows me to obtain quality clothing | | | | |
| | It is likely that second-hand clothing gives me fashionable choices | | | | |
| | It is likely that second-hand clothing is usually in poor condition (<i>N</i>) | | | | |
| | It is likely that second-hand clothing has cleanliness/hygiene issues (<i>N</i>) | | | | |
| | It is likely that second-hand clothing is from unknown sources (<i>N</i>) | | | | |
| | It is likely that second-hand clothing has limited choices (e.g. size and color) (<i>N</i>) | | | | |
| Control beliefs | I think that buying second-hand clothing will be easy due to the widely available stores | 1.000 | – | – | – |
| | I think that buying second-hand clothing will be easy due to the widely accessible stores | | | | |
| | I think that buying second-hand clothing will be easy due to clear product condition and information | | | | |
| | I think that buying second-hand clothing will be easy due to its high product visibility (display of product) | | | | |
| Descriptive normative beliefs | Environmentally-conscious consumers | 1.000 | – | – | – |
| | Cost-conscious consumers | | | | |
| | Mindful consumers | | | | |
| | Brand-conscious consumers | | | | |
| Injunctive normative beliefs | Younger generations | 1.000 | – | – | – |
| | My family members | | | | |
| | My friends | | | | |
| | Environmentally-conscious consumers | | | | |

Notes: The scales to measure behavioral beliefs, injunctive normative beliefs, descriptive normative beliefs and control beliefs are developed using the belief elicitation study via interviews. All belief constructs are represented by composite scores. Hence, the assessment of Cronbach's alpha, composite reliability and average variance extracted are not applicable to them

Source: Authors' own illustration

Table 3 HTMT criterion

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|
| 1. Attitudes | | | | | | | | | | |
| 2. Behavioral beliefs | 0.423 | | | | | | | | | |
| 3. Control beliefs | 0.550 | 0.426 | | | | | | | | |
| 4. Descriptive normative beliefs | 0.543 | 0.317 | 0.672 | | | | | | | |
| 5. Descriptive norms | 0.531 | 0.295 | 0.435 | 0.426 | | | | | | |
| 6. Injunctive normative beliefs | 0.574 | 0.361 | 0.640 | 0.734 | 0.471 | | | | | |
| 7. Injunctive norms | 0.652 | 0.304 | 0.483 | 0.453 | 0.726 | 0.529 | | | | |
| 8. Moral norms | 0.308 | 0.155 | 0.217 | 0.238 | 0.474 | 0.306 | 0.447 | | | |
| 9. Perceived behavioral control | 0.613 | 0.217 | 0.456 | 0.456 | 0.305 | 0.379 | 0.407 | 0.127 | | |
| 10. Purchase intentions | 0.675 | 0.347 | 0.513 | 0.429 | 0.480 | 0.457 | 0.596 | 0.335 | 0.671 | |

Source: Authors' own illustration

Table 4 Structural model results

| Relationship | Path coefficient | Standard error | t-value | p-value | CI 95% | Outcome | f ² |
|--|------------------|----------------|---------|---------|-----------------|---------------|----------------|
| H1: Attitudes → Purchase intentions | 0.275 | 0.057 | 4.783 | 0.000 | [0.177, 0.366] | Supported | 0.075 |
| H2: Behavioral beliefs → Attitudes | 0.401 | 0.038 | 10.665 | 0.000 | [0.336, 0.459] | Supported | 0.192 |
| H3: Injunctive norms → Purchase intentions | 0.148 | 0.057 | 2.582 | 0.005 | [0.052, 0.241] | Supported | 0.022 |
| H4: Injunctive normative beliefs → Injunctive norms | 0.467 | 0.041 | 11.377 | 0.000 | [0.392, 0.530] | Supported | 0.279 |
| H5: Descriptive norms → Purchase intentions | 0.066 | 0.053 | 1.238 | 0.108 | [−0.019, 0.158] | Not supported | 0.005 |
| H6: Descriptive normative beliefs → Descriptive norms | 0.393 | 0.044 | 8.852 | 0.000 | [0.318, 0.463] | Supported | 0.183 |
| H7: Moral norms → Purchase intentions | 0.092 | 0.045 | 2.077 | 0.019 | [0.016, 0.163] | Supported | 0.013 |
| H8: Perceived behavioral control → Purchase intentions | 0.314 | 0.047 | 6.709 | 0.000 | [0.235, 0.391] | Supported | 0.131 |
| H9: Control beliefs → Perceived behavioral control | 0.400 | 0.039 | 10.170 | 0.000 | [0.333, 0.463] | Supported | 0.190 |

Note: CI = Confidence interval

Source: Authors' own illustration

Table 5 Q² predict results

| Construct | Q ² predict | | | | | | | |
|---------------------|------------------------|-------|-------|-------|-------|-------|--------|--|
| Purchase intentions | 0.214 | | | | | | | |
| Item | Q ² predict | PLS | | | LM | | PLS-LM | |
| | | RMSE | MAE | RMSE | MAE | RMSE | MAE | |
| PI1 | 0.177 | 1.411 | 1.216 | 1.390 | 1.139 | 0.021 | 0.077 | |
| PI2 | 0.179 | 1.448 | 1.250 | 1.434 | 1.182 | 0.014 | 0.067 | |

Notes: PI = purchase intentions; Q² = predictive relevance; PLS = partial least squares; LM = linear model; RMSE = root mean squared error; MAE = mean absolute error

Source: Authors' own illustration

Kim, 2019). Notably, this study found that behavioral beliefs positively influence attitudes. Based on the belief elicitation study, positive perceptions of second-hand clothing's affordability, environmental friendliness, quality and trendiness contribute to favorable attitudes toward purchasing it, while negative beliefs about the clothing's condition, hygiene, source, and limited options can lead to unfavorable attitudes. The results align with Hur's (2020) research, indicating that consumers are inclined to buy second-hand clothing if they perceive it as fashionable and environmentally friendly. Nevertheless, factors like social status considerations and concerns about quality significantly impede consumers from engaging in second-hand clothing purchases.

Injunctive norms were positively related to purchase intentions, consistent with prior studies (e.g. Koay et al., 2022). This finding suggests that the opinions of significant individuals in consumers' lives greatly impact their decision to buy second-hand clothing. Consistent with past studies (e.g. Kim and Kim, 2022; Laitala and Klepp, 2018), social discomfort is found to be one of the major reasons why consumers choose not to buy second-hand clothing. This is because second-hand clothing is often associated with lower-income groups. Injunctive normative beliefs, consisting of perceptions from family, friends, younger generations and environmentally-conscious consumers, were positively related to injunctive norms. Diverse consumers may hold varying perceptions of acquiring second-hand clothing. For example, a qualitative

Table 6 Necessary condition analysis (NCA) effect sizes

| Construct | Attitudes | | Injunctive norms | | Descriptive norms | | Perceived behavioral control | | Intentions | |
|-------------------------------|--------------------|---------|--------------------|---------|--------------------|---------|------------------------------|---------|--------------------|---------|
| | CE-FDH effect size | p-value | CE-FDH effect size | p-value | CE-FDH effect size | p-value | CE-FDH effect size | p-value | CE-FDH effect size | p-value |
| Behavioral beliefs | 0.057 | 0.008 | | | | | | | | |
| Injunctive normative beliefs | | | 0.054 | 0.000 | | | | | | |
| Descriptive normative beliefs | | | | | 0.035 | 0.034 | | | | |
| Control beliefs | | | | | | | 0.000 | 1.000 | | |
| Attitudes | | | | | | | | | 0.159 | 0.001 |
| Injunctive norms | | | | | | | | | 0.111 | 0.024 |
| Descriptive norms | | | | | | | | | 0.076 | 0.084 |
| Moral norms | | | | | | | | | 0.000 | 1.000 |
| Perceived behavioral control | | | | | | | | | 0.208 | 0.000 |

Notes: CE-FDH = ceiling envelopment-free disposal hull
 Source: Authors' own illustration

investigation carried out in the Czech Republic by Rulikova (2020) revealed that “people usually share their enjoyment of shopping for second-hand clothes only with a circle of family and close friends” (p. 15).

Descriptive norms were not positively related to purchase intentions, implying that the purchasing behavior of other individuals does not influence consumers' intention to purchase second-hand clothing. This finding contradicts Koay et al. (2022) and could be explained by the fact that consumers cannot easily observe whether other individuals actually purchase second-hand clothing. Descriptive normative beliefs, encompassing brand-conscious, cost-conscious, environmentally-conscious and mindful consumers, were found to be positively related to descriptive norms. As demonstrated by numerous studies (e.g. Hur, 2020; Khurana and Tadesse, 2019), purchasing second-hand clothing is frequently perceived as having a lower social status. Consequently, it is logical to infer that many individuals may be hesitant to openly admit to engaging in such purchases. When this purchasing behavior remains inconspicuous, it follows that descriptive norms may struggle to develop and consequently wield limited influence over purchase intentions.

Moral norms were positively related to purchase intentions, in line with prior research findings (Borusiak et al., 2020; Koay et al., 2022). Consumers with higher moral norms are more likely to understand the consequences of their actions and feel a greater responsibility toward the environment, which can lead to guilt when not purchasing second-hand clothing.

Perceived behavioral control, another factor positively related to purchase intentions, supports earlier studies (Borusiak et al., 2020; Koay et al., 2022; Ögel, 2022). Consumers' decisions depend on their ability, opportunity and resources to acquire second-hand clothing. Control beliefs, such as ensuring the availability and accessibility of second-hand clothing stores, were positively related to perceived behavioral control.

Apart from using a sufficiency logic for hypothesis testing, this study used a necessity logic to explore the nature of all the proposed relationships. Attitudes, injunctive norms and perceived behavioral control were identified as must-have factors for purchase intentions, meaning these factors must be present for purchase intentions to form. Descriptive norms and moral norms were not considered

necessary factors, with moral norms being a should-have rather than a must-have factor. Behavioral beliefs, injunctive normative beliefs and descriptive normative beliefs were necessary conditions for attitudes, injunctive norms and descriptive norms, respectively. However, control beliefs were not a prerequisite for perceived behavioral control, indicating that such controls may be overt or outside the individual (Lim and Weissmann, 2023).

This study builds upon previous research that has applied the theory of planned behavior to investigate consumers' intention to purchase second-hand clothing. First, this study delves into the salient beliefs linked to attitudes, injunctive norms, descriptive norms and perceived behavioral control by conducting a belief elicitation study via interviews. The findings unveil the context-specific beliefs associated with purchasing second-hand clothing, shedding light on how attitudes, injunctive norms, descriptive norms and perceived behavioral control are formed. Second, this study successfully confirms the applicability of the extended theory of planned behavior in explaining consumers' intention to purchase second-hand clothing. In brief, attitudes, injunctive norms, moral norms and perceived behavioral control are important predictors of purchase intentions. Lastly, the combined use of PLS-SEM and NCA enhances the understanding of the should-have and must-have conditions in motivating consumers' second-hand clothing purchases.

6. Managerial implications

This research provides essential insights for second-hand clothing product and brand managers, facilitating the formulation of impactful marketing strategies aimed at stimulating second-hand clothing purchases. The managerial suggestions are derived from the findings obtained via the belief elicitation study.

A pivotal initial step involves fostering positive consumer perceptions of second-hand clothing. It is imperative for product and brand managers of second-hand clothing to establish competitive pricing relative to new garments (Liang and Xu, 2018), while concurrently highlighting the associated contemporary style quotient, environmental advantages and superior quality (Ferraro et al., 2016). This holistic approach ensures a comprehensive appeal to the target audience, paving

the way for the successful adoption of second-hand fashion. It is also imperative to address apprehensions related to suboptimal conditions, cleanliness, hygiene and the origins of products (Hur, 2020; Silva et al., 2021). Mitigating these concerns necessitates a twofold approach: first, ensuring the impeccable state of products through meticulous quality control measures and rigorous cleaning and sanitation protocols (Koay et al., 2023). Second, fostering a sense of trust and authenticity within the consumer base by adopting a transparent stance regarding the sourcing of clothing items. To surmount the obstacle of limited options, product and brand managers of second-hand clothing should proactively refresh and diversify their inventory, incorporating a steady stream of novel and fashionable selections (Koay et al., 2022; Sihvonen and Turunen, 2016). This multifaceted strategy not only assuages concerns but also protects and positions the brand as a promise of innovation and reliability in the competitive marketplace.

Although injunctive norms play a significant role in encouraging consumers to purchase second-hand clothing, product and brand managers have limited control over consumers' perceptions of such clothing (Koay et al., 2022). Therefore, product and brand managers of second-hand clothing should use various marketing channels to highlight the advantages of second-hand clothing, raising public awareness and gradually establishing it as a norm. This branding strategy can also appeal to consumers with strong moral values. Furthermore, it is important for product and brand managers to assure that second-hand clothing is ubiquitously obtainable and conveniently accessible to potential buyers, whether through brick-and-mortar establishments or virtual marketplaces (Padmavathy et al., 2019; Sandberg, 2023). Providing clear and correct product information, including the clothing's condition, can enhance customer trust and satisfaction. Moreover, product and brand managers should ensure high product visibility of second-hand clothing by prominently displaying products in-store or using high-quality product images online (Khitous et al., 2022). This will attract potential customers and increase the likelihood of a sale. By addressing these factors, product and brand managers can create a positive shopping experience for customers and increase their chances of purchasing second-hand clothing.

7. Limitations and future directions

Notwithstanding its contributions, several weaknesses of this study warrant attention and offer opportunities for future research. One significant concern is that the data were predominantly collected from Malaysia, raising questions about the generalizability of the findings to a broader, global population, as it is possible that respondents from developing countries have higher purchase intentions for second-hand clothing due to lower income compared to those from developed countries. Future studies could compare findings from samples in both developing and developed countries. Moreover, this study used only the theory of planned behavior to understand what motivates consumers to purchase second-hand clothing. To deepen the comprehension of how consumers make decisions when it comes to purchasing second-hand clothing, further studies are recommended to combine the theory of planned behavior with other theories, such as perceived risk theory, theory of consumption values, theory of interpersonal behavior or theory of behavioral control. Lastly, it is important to acknowledge that factors influencing consumers' intention to purchase second-hand

clothing may differ across demographics such as gender, ethnicity and income level. Future researchers should incorporate these variables into their forthcoming studies for a more comprehensive understanding.

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Appendix 1

Table A1 Profile of participants in the belief elicitation study

| Participant (P) | Age | Gender | Race |
|--|-----|--------|---------|
| Panel A: Consumers of second-hand clothing | | | |
| P1 | 34 | Female | Chinese |
| P2 | 33 | Female | Malay |
| P3 | 34 | Female | Chinese |
| P4 | 31 | Female | Chinese |
| P5 | 26 | Male | Malay |
| P6 | 34 | Male | Malay |
| P7 | 35 | Female | Chinese |
| P8 | 33 | Female | Chinese |
| P9 | 34 | Female | Malay |
| P10 | 34 | Male | Chinese |
| Panel B: Nonconsumers of second-hand clothing | | | |
| P11 | 30 | Female | Chinese |
| P12 | 38 | Female | Indian |
| P13 | 35 | Male | Malay |
| P14 | 36 | Male | Indian |
| P15 | 28 | Male | Chinese |
| P16 | 30 | Female | Chinese |
| P17 | 31 | Male | Chinese |
| P18 | 54 | Female | Indian |
| P19 | 39 | Female | Indian |
| P20 | 36 | Female | Malay |

Source: Authors' own illustration

Appendix 2. Belief elicitation study

To elicit the salient beliefs associated with their respective belief constructs, we asked the questions below from our respondents. These questions were adapted from Fishbein and Ajzen (2010). Twenty respondents familiar with second-hand clothing were interviewed. The selection of the respondents was based on the convenience sampling method. We carefully recorded and coded all the salient beliefs associated with behavioral beliefs, injunctive normative beliefs, descriptive normative beliefs and control beliefs.

Behavioral beliefs:

- What do you think would be the advantages for you to buy second-hand clothing in the future?
- What do you think would be the disadvantages for you to buy second-hand clothing in the future?
- What else comes to mind when you think about buying second-hand clothing in the future?

Injunctive normative beliefs:

- Are there any groups or people who would approve of you buying second-hand clothing in the future?
- Are there any groups or people who would disapprove of you buying second-hand clothing in the future?

Descriptive normative beliefs:

- Are there any groups or people who would engage in buying second-hand clothing in the future?

- Are there any groups or people who would not engage in buying second-hand clothing in the future?

Control beliefs:

- Please list any factors or circumstances that would make it easy or enable you to buy second-hand clothing in the future.
- Please list any factors or circumstances that would make it difficult or prevent you from buying second-hand clothing in the future.

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