

Household Textile Waste Behaviour: A Comparative Analysis of Textile Waste Facilities and Residential Localities

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Abstract—The increasing volume of textile waste has become an environmental concern, highlighting the need to better understand household practices related to textile waste behavior. This study examines households' behavior regarding the disposal of unused clothes and compares it by residential locality and access to textile waste facilities. A quantitative cross-sectional survey was conducted among 200 respondents from several regions in Malaysia. Descriptive statistics, an independent-samples *t*-test, and one-way Analysis of Variance (ANOVA) were used to analyze the data. The findings indicate a significant difference in household textile waste behavior based on access to textile waste facilities, whereas no significant difference was found between urban and rural respondents. These findings underscore the importance of strengthening public awareness of proper textile waste management and improving access to textile collection and recycling activities. This study also highlights the need for stronger policy interventions, including more accessible textile waste infrastructure and the implementation of extended producer responsibility initiatives. Overall, this study provides useful insights for policymakers and environmental stakeholders seeking to promote more sustainable household textile waste management practices in Malaysia.

Keywords—households' behavior, textile waste, textile disposal, textile alteration, environmental, textile waste facilities, locality

I. INTRODUCTION

Over recent years, the textile industry has been recognized as one of the world's leading industries in terms of market size, employment, and economic value [1]. Hole and Hole [2] reported that the global textile sector's annual value is approximately USD 3 trillion, contributing around 2% of global gross domestic product. Despite its substantial economic contribution, the textile industry is also a significant polluter [1, 2]. Across its production, manufacturing, consumption, and disposal life cycles, the textile sector generates more than 1.2 billion tons of CO₂ emissions annually, representing 8% of the global total [3].

Malaysia, as a developing country in Southeast Asia, has also experienced a notable increase in household waste generation over the recent years, mainly due to the country's rapid urbanization, economic expansion, and changing consumption patterns [4]. This trend has intensified concerns over textile waste, particularly at the household level, where disposal behavior practices directly influence the volume of textile sent to landfills. Understanding household textile disposal behavior is therefore important for identifying

current practices, existing barriers, and possible solutions to this growing environmental issue.

Malaysia continues to rely heavily on landfilling as the dominant disposal route for Municipal Solid Waste (MSW), a pattern that raises environmental and public health concerns [5]. Given the heterogeneous composition of MSW, a broader range of waste treatment and recovery facilities is required to reduce disposal costs, enhance resource recovery, and mitigate greenhouse gas emissions [6, 7]. In addition, solid waste management in Malaysia involves multiple institutional actors, including the Ministry of Housing and Local Government, the National Solid Waste Management Department (Jabatan Pengurusan Sisa Pepejal Negara, JPSPN), the Solid Waste Management and Public Cleansing Corporation (SWCorp), local authorities, and concessionaires responsible for collection and public cleansing services [8]. Nevertheless, landfills remain the primary disposal option, making the strengthening of recycling systems, recovery facilities, and inter-agency coordination increasingly necessary for a more sustainable waste management system [9].

These broader waste management issues are particularly relevant to textile waste. In Malaysia, textile waste management remains challenging due to inadequate waste segregation, limited textile-specific collection services, low public awareness, and the continued dominance of a linear "produce–use–dispose" system [10, 11]. At the residential level, limited awareness and participation in waste segregation and recycling remain key barriers to effective waste management, as shown in a Malaysian university hostel context [12]. Recycling initiatives in Malaysia remain constrained by limited source separation practices at the household level, which reduces the effectiveness of material recovery and recycling effort [13]. Although efforts have been made to promote the 3R approach—reduce, reuse, and recycle—further improvement is needed through stronger policy support, better recycling services, and more effective awareness campaigns led by government and relevant organisations [13, 14].

At the same time, textile waste also presents an opportunity for more sustainable and circular practices. The circular economy emphasises closing the loop by extending product life, promoting reuse and repair, and transforming waste into resources for further use [15]. In the Malaysian context, this approach is increasingly relevant given the rise of fast fashion and the growing volume of discarded clothing and fabric

waste [16]. Strengthening textile collection services, improving sorting systems, and expanding recycling and recovery infrastructure would support Malaysia's transition towards a more sustainable and resilient waste management system. Household textile waste behaviour is likely to be shaped by factors such as awareness, attitudes, and the availability of textile waste facilities [17].

Accordingly, this study aims to conduct a thorough examination of existing practices related to textile waste disposal and alteration among households in Malaysia. In particular, the study conducts a comparative analysis of textile waste disposal behaviors among households based on the availability of textile waste facilities and differences in residential locality.

II. LITERATURE REVIEW

Households play a critical role in the management and disposal of textile waste, as individual behaviors and practices can have a significant impact on environmental outcomes. A comprehensive literature review would examine the current research on household attitudes, behaviors, and decision-making processes regarding the disposal and repurposing of old clothes, fabrics, and other textile materials. This review aims to identify the key factors, motivations, and barriers that influence how households manage textile waste, informing strategies to divert more of this waste from landfills and promote more sustainable textile waste management practices.

A. Textile Waste Management

Following the pandemic, the retail landscape in Malaysia has undergone a significant transformation, with a notable shift towards online shopping. This surge in e-commerce has led to a corresponding increase in fabric waste, as consumers purchase more clothing and apparel items with ease [18]. Fabric waste falls under the category of textile waste, and if not properly managed, it can lead to severe environmental consequences. Consequently, the management of textile waste has garnered significant attention due to the environmental risks associated with improper disposal of these materials. Effective textile waste management is crucial in transforming textile waste into reusable resources, thereby reducing its impact [19]. Properly managing textile waste not only controls waste-related activities but also contributes to environmental protection, human health, and resource conservation [20].

Textile waste can be broadly categorized into 3 main groups: production waste, pre-consumer waste, and post-consumer waste. While a significant amount of waste is generated during the production process, the primary challenge lies in disposing of post-consumer textiles, as these comprise the most significant portion of overall textile waste [21]. Furthermore, the rise in fast fashion and the trend of shorter product lifespans have contributed to an alarming increase in the volume of post-consumer textile waste, which poses a significant environmental concern. As more households discard their used clothing and textiles, the need for effective strategies to divert this waste from landfills and promote sustainable disposal and repurposing practices has become increasingly urgent.

Several studies have explored the factors that influence

household behavior towards textile waste disposal [22–24]. One key factor is the level of awareness and understanding among consumers regarding the environmental impact of textile waste [23]. Consumers' knowledge or perceptions about the post-consumer waste stream, including options for donation, recycling, or repurposing, can significantly shape their disposal decisions. Additionally, the convenience and accessibility of disposal options, as well as the perceived effort or cost associated with alternative disposal methods, can also influence household decision-making [25].

A study by Norum [26] on household disposal practices in the United Kingdom found that donation was a widely used mode of textile waste disposal across various household types. This finding aligns with research conducted in Malaysia, where studies have shown that many households opt to donate their used clothing and textiles to charitable organizations or second-hand shops rather than sending these items to landfills. For instance, a survey by Yusof and Asmuni [27] in the Klang Valley region of Malaysia revealed that donating was the most common disposal method reported by respondents, as they recognized the potential for their used textiles to be reused or repurposed. However, the researchers also noted that a lack of awareness about alternative disposal options, such as textile recycling facilities, remained a barrier to more widespread adoption of sustainable textile waste management practices among Malaysian households.

Besides donation, other disposal methods, such as reselling, renting, and recycling, have also been explored in the literature. Morgan and Birtwistle [28] found that resale and renting were less common amongst younger consumers, who were more likely to discard their used clothing in the trash. In other words, it highlights the need to better understand the factors, motivations, and barriers that influence household decision-making regarding different textile waste disposal options in order to develop strategies that can effectively promote more sustainable practices.

B. The Role of Textile Waste or Donations Facilities and Households Locality

Textile waste and donation facilities play a critical role in addressing the issue of textile waste disposal. These facilities, such as recycling centers, donation centers, and textile collection services, provide convenient and accessible options for households to divert their used clothing and textiles from landfills [29]. By offering collection, sorting, and processing services, textile waste facilities make it easier for households to adopt more sustainable disposal practices rather than simply throwing their unwanted textiles in the trash.

Research has shown that the availability and accessibility of these facilities can significantly influence household decision-making. Choon *et al.* [30] found that the presence of cloth donation centers in local communities was a key factor in households' choice to donate their used clothing, as it made the process more convenient. Similarly, a survey in Malaysia revealed that a lack of awareness about alternative disposal options, such as textile recycling facilities, was a barrier to more widespread adoption of sustainable textile waste management practices [31].

Investing in and promoting textile waste facilities can help overcome these barriers by making sustainable disposal

options more visible and accessible to households. These facilities not only divert textiles from landfills but also enable the reuse, repurposing, or recycling of these materials, contributing to a more circular and environmentally friendly textile economy. By processing and finding new uses for discarded textiles, these facilities can help reduce the environmental impact of textile waste and support a more sustainable lifecycle for clothing and other textile products [32]. Policymakers and waste management authorities should prioritize the development and expansion of these facilities to support households in their efforts to reduce textile waste and promote a more sustainable future. Based on these findings, the researcher constructs the following hypothesis.

H¹: There is a significant difference in household textile waste behavior across areas with textile waste facilities, areas without textile waste facilities, and areas where residents are unsure about the availability of such facilities.

The locality of a household can also play a significant role in their textile waste disposal decisions. Households in urban areas, where textile waste facilities such as recycling centers and donation drop-off points are more readily available, may be more inclined to adopt sustainable disposal practices compared to those in rural or remote regions with limited access to such facilities [31]. The convenience and proximity of these facilities can make it easier for urban households to divert their used textiles from landfills and explore alternative disposal options. Conversely, households in areas with limited infrastructure and collection services may face greater barriers to adopting sustainable textile waste management practices, leading them to rely more heavily on traditional disposal methods, such as throwing items in the trash [33].

This aligns with findings from previous studies, such as the research by Gregson *et al.* [34] in the United Kingdom (UK), which found that the presence of donation centers in local communities was a key factor influencing households' choice to donate their used clothing. Similarly, a survey in Malaysia revealed that a lack of awareness about alternative disposal options, such as textile recycling facilities, was a barrier to more widespread adoption of sustainable textile waste management practices [35]. These studies highlight how the availability and accessibility of textile waste facilities can significantly impact household decision-making regarding textile waste disposal.

Policymakers and waste management authorities should consider the unique needs and challenges faced by households in different localities when developing strategies to promote the adoption of sustainable textile waste disposal behaviors [31]. Ensuring equitable access to textile waste facilities, regardless of whether they are in urban or rural locations, will be crucial in encouraging more households to explore and adopt environmentally friendly textile waste management practices. This may involve assessing the specific barriers and enablers to sustainable textile disposal in different communities, such as the availability of collection services, the proximity and convenience of drop-off points, and the level of public awareness and engagement. By tailoring their approaches to the unique circumstances of each locality, policymakers can ensure that all households have the opportunity and support they need to divert their used textiles from landfills and participate in more sustainable

disposal methods, such as donating, reselling, renting, or recycling [36]. Adopting a localized, community-based strategy will be key to fostering widespread adoption of sustainable textile waste management practices across diverse urban and rural settings. Based on this review, the following hypothesis was constructed.

H²: There is a significant difference in household textile waste behavior between respondents residing in urban and rural areas.

III. METHODS

This study employed a quantitative cross-sectional survey design to examine household textile waste behavior in Malaysia. Data were collected using a self-administered online questionnaire distributed through social media and communication platforms, such as Facebook and WhatsApp. Given the exploratory nature of the study and the absence of a sampling frame that could identify households by locality and access to textile waste facilities, a non-probability purposive sampling technique was used. Accordingly, this study should be interpreted as an exploratory comparative survey rather than an experimental design.

A total of 200 usable responses were obtained from respondents residing in several regions of Malaysia. The sample size was considered adequate for the study's comparative analyses. Specifically, the minimum sample size was estimated based on the planned inferential tests, namely the Independent-sample *t*-test and one-way Analysis of Variance (ANOVA), using conventional assumptions of a 0.05 significance level, 0.80 statistical power, and a medium effect size. The calculation indicated that a minimum of approximately 128 respondents was required for the *t*-test and 159 respondents for the ANOVA. Therefore, the final sample of 200 respondents exceeded the minimum requirement and was deemed sufficient for the analysis. Of the total respondents, 142 were from urban areas, and 58 were from rural areas. Based on self-reported access to textile waste facilities, 71 respondents indicated that facilities were available in their area, 65 reported that no facilities were available, and 64 were unsure. These naturally occurring groups were subsequently used for comparative analyses.

The questionnaire consisted of several sections covering (i) demographic background (including contextual information on residential locality and access to textile waste facilities), (ii) perceived difficulty of sorting textile waste, (iii) reasons for textile disposal, (iv) perceptions toward textile alteration behavior, and (v) actual textile waste behavior. The instrument included mainly closed-ended questions, with selected open-ended responses to capture additional views.

For the comparative analysis, the dependent variable was the actual textile waste behavior among the households. The grouping variables were textile waste facility status (facilities provided, no facilities provided, unsure) and residential locality (urban, rural). Descriptive statistics were used to summarize respondents' demographic characteristics and the distribution of responses for the main study variables. A one-way ANOVA was used to examine differences in the household textile waste behaviors score across the 3 facility-access groups, while an independent-samples *t*-test was used to compare the mean score between urban and rural respondents. Statistical analyses were conducted using

Microsoft Excel 2019, and the level of statistical significance was set at $p < 0.05$.

To improve ethical transparency, respondents were informed about the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses before completing the questionnaire. This study received ethical approval from the Institutional Research Ethics Committee (REC), Universiti Teknologi MARA (UiTM), under reference number REC/08/2022 (ST/MR/170), and informed consent was obtained from all respondents prior to data collection.

Based on the study objectives, the following hypotheses were tested:

H¹: There is a significant difference in household textile waste behaviour across areas with textile waste facilities, areas without textile waste facilities, and areas where residents are unsure about the availability of such facilities.

H²: There is a significant difference in household textile waste behaviour between respondents residing in urban and rural areas.

IV. RESULT

This section presents the empirical findings gathered from the data collection process and provides an analytical

discussion of their significance. The results are structured to first provide a comprehensive overview of the respondent profile, followed by a detailed evaluation of the core research variables. By interpreting these findings in relation to the study's primary objectives and existing theoretical frameworks, this study aims to offer a deeper understanding of the observed trends and their broader implications within the current landscape.

A. Demographic Details

Table 1 presents the survey results. The female respondents constitute the majority (73%) compared to the male participants (27%). Compared to other regions, the majority of respondents reside in urban areas in the Central region of Malaysia (56.5%). The dominant age group was below 40 years old (61%) compared to those above 40 years old (39%). From an educational standpoint, many respondents hold a bachelor's degree (29%), followed by a master's degree (23%), a diploma (21%), a primary or secondary school education (6.5%), and a professional certificate (6%). The demographic results reveal that a significant proportion of respondents, specifically 48%, have a monthly income of less than RM4000. Nevertheless, there is a significant representation among individuals in upper-income levels as well.

Table 1. Demographics details

Demographics Variable		Freq.	Percentage (%)
State	Central (Kuala Lumpur, Putrajaya, Selangor)	113	56.5
	Northern	38	19
	Southern	26	13
	Eastern	18	9
	Sabah/Sarawak	5	2.5
Gender	Female	146	73
	Male	54	27
Residential Area	Rural area	58	29
	Urban area	142	71
Age	Less than 20 years	4	2
	21–30 years old	65	32.5
	31–40 years old	53	26.5
	41–50 years old	54	27
	More than 50 years old	24	12
Education	Primary/Secondary School	13	6.5
	Diploma/Advanced/Higher/Graduate Diploma	42	21
	Bachelors' Degree	58	29
	Doctorate (PhD)	29	14.5
	2.5*Master's Degree	46	23
Income	Professional Degree/Certificate	12	6
	Less than RM4000	96	48
	RM4000–RM7999	48	24
	RM8000–RM12,000	48	24
	More than RM12,000	8	4

Freq. = Frequency.

B. The Difficulty of Sorting Textile Waste

Fig. 1 illustrates significant insights into respondents' perspectives regarding the challenges of sorting textile waste. A substantial percentage of participants (47.5%) deemed the activity neither especially tough nor simple; 15.5% faced challenges, and 14.5% regarded the assignment as extremely difficult. The issues arise from several aspects, including respondents' difficulties in differentiating between various fabrics, comprehending the rules or labelling system, and managing the presence of pollutants that hinder the sorting process. To address this issue, the sorting technique should be recommended [26]. Resolving this issue is crucial for enhancing the efficiency and precision of textile waste

recycling [37].

Conversely, a smaller proportion of respondents perceived textile waste sorting as manageable, with 12% rating it as very easy and 10.5% rating it as easy. In other words, with appropriate information, training, and the implementation of intuitive sorting techniques, textile waste sorting could become more feasible for everyone. Enhancing the accessibility of textile waste sorting would increase recycling rates and promote the development of a more sustainable circular economy. The correct classification of textile waste may not be understood by many people. Educational programs can alleviate this challenge by offering comprehensive training on various textile categories, labelling techniques, and local recycling services. A prior

study has claimed that awareness campaigns are essential for teaching individuals about textile waste management [38]. Moreover, by understanding the challenges individuals face regarding this issue, we can identify efficient solutions for the effective management of textile waste.

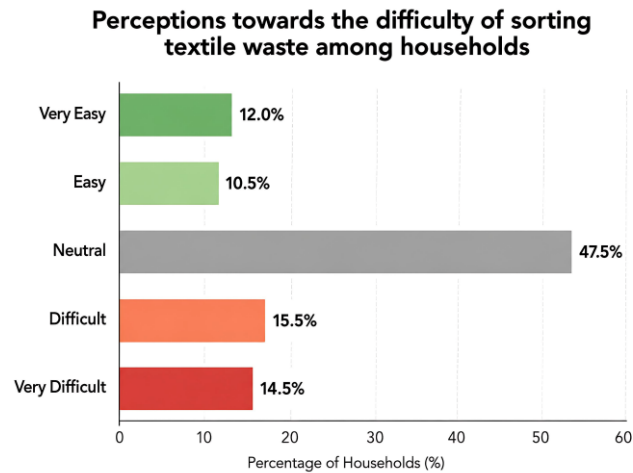


Fig. 1. Perceptions towards the difficulty of sorting textile waste.

C. Reasons for Clearing Textile Waste

Fig. 2 offers valuable insights into the primary reasons respondents dispose of their textiles. The data reveal that damage (e.g., holes, tears) is the most common factor, with a significant majority of respondents (84%) indicating that they would dispose of clothing due to this reason. This suggests that the durability of textiles plays a crucial role in their lifespan. A study on apparel disposal motivations found that damage is a primary driver, highlighting the importance of textile durability in extending garment lifespan [23].

Fit/size issues and no longer suiting personal taste or style were the next most frequently cited reasons for disposal. These findings highlight the importance of clothing that fits well and aligns with individual preferences. It suggests that consumers are increasingly conscious of their style and the fit

of their garments.

While uncomfortable wear is the least frequently mentioned reason, it still represents a significant proportion of respondents (44%). This indicates that comfort is a factor to consider when purchasing and disposing of clothing.

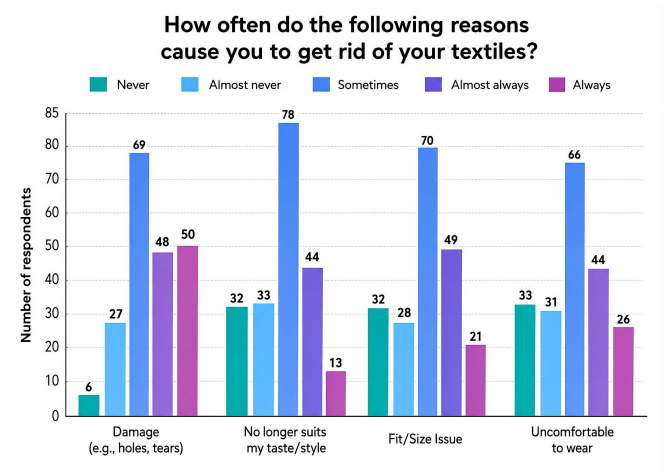


Fig. 2. Perceptions towards textile disposal behavior.

Overall, the findings emphasize the need for more durable, versatile, and comfortable clothing to reduce textile waste. By focusing on these factors, manufacturers can create products that better meet consumer needs and extend their lifespan [39]. Additionally, promoting sustainable fashion practices, such as clothing repair and upcycling, can further contribute to reducing textile waste and promoting a more circular economy.

D. Perceptions Towards Textile Alteration Behavior

Table 2 provides valuable insights into the attitudes and practices of respondents regarding textile alterations. A significant majority (68%) indicated a preference for sending their garments to professionals for repairs or alterations, while a smaller percentage (62%) expressed a willingness to undertake minor repairs themselves.

Table 2. Perceptions towards textile alteration behavior

Items	Never	Almost Never	Sometimes	Almost Always	Always
I repair clothing that is damaged (sew on a button or mend a small tear).	14%	26%	72%	62%	26%
If an item needs repairs or alterations, I send it to a seamstress/tailor.	8%	17%	54%	68%	53%
If an item needs repairs or alterations, I will donate it or give it away.	12%	24%	61%	60%	43%
If an item needs repairs or alterations, I will throw it in the trash.	54%	37%	55%	34%	20%
I will keep wearing an item even if it needs repairing.	27%	47%	79%	35%	12%

Notably, 60% of respondents expressed a desire to donate or give away clothing that needed alterations, demonstrating a commitment to extending the life of garments. While disposal was not the primary choice, a notable 54% indicated that they would discard clothing that required extensive repairs.

Overall, the findings highlight a positive trend toward textile alteration and preservation, with a majority of respondents (79%) indicating a willingness to continue wearing clothing even if it requires repair. These results suggest a growing awareness of sustainable fashion practices and the value of repairing and reusing clothing. Previous studies also argued that the willingness to repair clothing reflects a broader trend towards textile reuse as a key aspect of sustainable textile management [40]. Additionally, the

finding aligns with the growing emphasis on circular fashion principles, which encourage the design of garments for durability and reparability [39].

E. Comparative Analysis

For the inferential analyses, the dependent variable was the household textile waste disposal behavior score. The grouping variables were textile waste facility access and residential locality. Statistical significance was assessed at $p < 0.05$.

As shown in Tables 3 and 4, the one-way ANOVA results indicate a statistically significant difference in household textile waste disposal behavior across respondents based on the availability of textile waste facilities. The analysis produced an F-value of 5.367, which exceeded the F-critical value of 3.042, with a p -value of 0.005, below the

significance level of 0.05. This finding suggests that household textile waste disposal behavior varied significantly among the three facility-related groups, namely respondents

with facilities provided, no facilities provided, and those who were unsure about the availability of such facilities.

Table 3. Descriptive statistics of household textile waste behavior scores by access to textile waste facilities

Groups	Total Sample	Average	Variance
Facilities Provided	71	3.662	0.470
No Facilities Provided	65	3.597	0.433
Unsure	64	3.300	0.467

Table 4. One-way ANOVA results for household textile waste behavior scores by access to textile waste facilities

Source of Variation	SS	df	MS	F	p-value	F critical Value
Between Groups	4.908	2	2.454	5.367	0.005	3.042
Within Groups	90.087	197	0.457			
Total	94.995	199				

Respondents who reported that textile waste facilities were available in their area recorded the highest mean score (mean = 3.662), followed by those who reported that no facilities were available (mean = 3.597), while respondents who were unsure about the availability of such facilities recorded the lowest mean score (mean = 3.300). These findings suggest that awareness and access to textile waste facilities may be associated with more favorable household textile waste behavior. Therefore, hypothesis 1 (H^1) was supported.

In contrast, the independent-samples t -test showed that there was no statistically significant difference in household textile waste disposal behavior between respondents residing in urban and rural areas, as presented in Table 5. Although rural respondents recorded a slightly higher mean score (mean = 3.614) than urban respondents (mean = 3.489), the difference was not statistically significant ($t = -1.155$, $p = 0.251$). Since the p -value exceeded the significance threshold of 0.05, the findings indicate that residential locality was not significantly associated with household textile waste behavior in this sample. Thus, hypothesis 2 (H^2) was not supported.

Table 5. Independent-samples t -test of household textile waste behavior score by residential locality (T-test: Two-sample assuming unequal variances)

Statistics	Urban	Rural
Mean	3.489	3.614
Variance	0.472	0.487
Observations	142	58
Hypothesised Mean Difference	0	-
Degree of Freedom	104	-
t -value	-1.155	-
p -value	0.251	-
Critical value	1.983	-

V. DISCUSSION

The findings suggest that household textile waste behavior in Malaysia is influenced more strongly by awareness, perceived convenience and access to disposal or recovery options than by residential locality alone. A considerable proportion of respondents reported a neutral view regarding the difficulty of sorting textile waste. This neutral response may indicate that many households are not fully familiar with textile sorting requirements, garment categories, or appropriate disposal pathways. In practice, sorting textile waste can be more complex than general household waste because consumers may be uncertain about fabric composition, garment condition, contamination, and whether

an item should be repaired, donated, reused or discarded. This finding is consistent with previous studies which show that lack of awareness, limited information and poor visibility of available disposal options can hinder more sustainable textile waste practices [32, 37].

The results also indicate that respondents tend to dispose of clothing primarily when the item is no longer functional, especially when the fabric is damaged beyond use, rather than because it no longer suits their taste or style. This suggests that practical utility remains a key determinant of clothing disposal behavior. In other words, households appear more willing to retain garments for as long as they remain usable, which reflects a value orientation centered on durability and function. This pattern is broadly consistent with previous research showing that damage, wear and declining usefulness are common triggers for apparel disposal decisions, while alternative pathways such as donation, reuse, and repair depend on consumers' knowledge, motivation and access to convenient channels [23, 24, 26].

Another important finding is that many respondents demonstrated a favorable orientation toward textile alteration. The preference for sending garments to a tailor, performing minor repairs, or continuing to wear an item that needs repair suggests that repair and life extension are still socially acceptable practices among many households in this study. This is important from a circular economy perspective because garment repair delays disposal and reduces the volume of textile waste sent to landfills. The finding also aligns with prior studies that associate repair, reuse and prolonged garment use with more sustainable textile consumption and waste management practices [39–41]. However, the willingness to alter or repair clothing may also be shaped by cost, skill, habit and the availability of local tailoring services. Where such services are visible and affordable, households may be more likely to choose alteration over disposal.

Comparative analysis provides a clearer explanation of the contextual factors influencing behavior. The one-way ANOVA results show significant differences in household textile waste behavior according to the reported availability of textile waste facilities, whereas the t -test shows no statistically significant difference between urban and rural respondents. This means that the present study does not support the claim that locality alone differentiates household textile waste behavior. Instead, the findings suggest that perceived access to facilities, or even awareness of whether such facilities exist, may be more important than whether a

respondent lives in an urban or rural area. Respondents who reported having access to textile waste facilities recorded more favorable behavior scores than those who were unsure about the availability of such facilities. This pattern supports the view that accessibility, visibility, and convenience are central to shaping household disposal practices. It also aligns with earlier studies indicating that consumers are more likely to adopt sustainable disposal behaviors when collection points, donation centers, or recycling channels are easy to identify and use [29–32].

These findings have several practical and policy implications. First, efforts to improve household textile waste management should focus not only on increasing the number of textile collection, donation, and recovery facilities, but also on ensuring that these facilities are visible, accessible, and easy for households to use. The findings suggest that accessibility and awareness are closely linked to more favorable textile waste behavior. Therefore, local authorities and waste management agencies should improve public information on where and how households can channel unwanted textiles for reuse, repair, donation, or recycling.

Second, awareness initiatives should provide clearer and more practical guidance on the available options for unwanted textiles, including repair, resale, donation, reuse, and recycling. Such program should go beyond general environmental messaging and instead equip households with simple instructions on textile sorting, garment life extension, and appropriate disposal pathways. This is particularly important because uncertainty about facilities and disposal options may discourage sustainable behavior.

Third, responsibility for improving textile waste management should not be framed only around universities. While campus-based initiatives may be useful within academic settings, broader implementation requires the active involvement of local authorities, Solid Waste and Public Cleansing Management Corporation (SWCorp), community organizations, schools, retailers, charitable organizations, and textile industry stakeholders. A community-based and multi-stakeholder approach is therefore likely to be more effective than isolated awareness efforts.

Fourth, stronger policy support is needed to develop a more structured textile recycling and recovery system in Malaysia. This includes strengthening textile collection infrastructure, improving coordination between local councils and waste management agencies, and supporting more formal pathways for repair, reuse, donation, and recycling. In addition, Extended Producer Responsibility (EPR) should be considered as a longer-term policy mechanism to encourage producers and retailers to take greater responsibility for post-consumer textile waste. Through EPR-related measures, producers could contribute to collection systems, take-back initiatives, recycling partnerships, and public awareness efforts, thereby supporting a more circular textile management system.

Overall, the discussion indicates that sustainable household textile waste behavior is shaped by a combination of behavioral and contextual factors. Awareness, perceived difficulty, convenience, and access to facilities appear to play an important role in influencing whether textiles are repaired, retained, donated, or discarded. In contrast, locality on its

own was not a significant differentiating factor in this sample. These findings suggest that future interventions should prioritize practical accessibility, clearer public guidance, stronger textile recovery systems, and closer coordination among community, industry, and policy actors.

VI. CONCLUSION

This study provides useful insight into household textile waste behavior in Malaysia, particularly in relation to the availability of textile waste facilities. The findings indicate that household textile waste behavior differed significantly according to respondents' reported access to textile waste facilities, suggesting that facility accessibility and awareness may play an important role in encouraging more sustainable textile waste practices. In contrast, no statistically significant difference was found between urban and rural respondents, indicating that residential locality alone may not be a determining factor in household textile waste behavior within this sample.

These findings highlight the importance of strengthening practical support systems for household textile waste management. Improving the visibility, accessibility, and public awareness of textile waste facilities may encourage more sustainable disposal, reuse, and alteration practices. Greater collaboration among local authorities, waste management agencies, community organizations, and relevant industry stakeholders is also needed to support more effective textile waste management initiatives.

Nevertheless, this study has several important limitations. The main limitation lies in the research design and data collection approach, rather than the sample size itself. The study employed a cross-sectional survey design and non-probability purposive sampling through social media and communication platforms, such as Facebook and WhatsApp, which may have introduced self-selection bias and limited the representativeness of the sample. In addition, the comparisons were based on naturally occurring groups, rather than pre-selected or matched groups, which restricts stronger inference regarding the influence of locality and facility access. The use of self-reported responses may also have limited the extent to which the survey fully captured the complexity of actual household textile waste behavior.

Future research should therefore adopt a more rigorous design, such as area-based or stratified sampling involving pre-identified urban and rural locations with clearly established access to textile waste facilities. In addition, qualitative approaches such as interviews or focus groups could provide deeper insight into the motivations, attitudes, cultural influences, and practical barriers affecting household textile waste behavior. Comparative studies across different regions and case studies of successful textile waste initiatives may also help identify more effective strategies for promoting sustainable textile waste management. Overall, this study offers an initial empirical contribution and provides a useful basis for future research and policy development in this area.

ETHICAL DECLARATIONS

This study was approved by the Institutional Research Ethics Committee (REC) (Ref. Number: REC/08/2022 (ST/MR/170). Informed consent was obtained from all

participants.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Norshima Humaidi conceived the original research idea, designed the methodology and responsible for data collection and field surveys, while Lennora Putit and Heny Hendrayati performed the formal data analysis and the discussion of the findings. The initial draft of the manuscript was written by all the authors providing critical revisions and intellectual input. All authors have read and approved the final version of the manuscript.

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