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SUSTAINABLE FASHION DESIGN: EXPLORING THE POTENTIAL OF FABRIC RECONSTRUCTION TECHNIQUES IN CREATING ONE-PIECE DRESSES

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ABSTRACT

This research investigates the innovative application of fabric reconstruction techniques to design stylish and sustainable one-piece dresses, addressing the growing environmental challenges posed by the fashion industry. The industry, though renowned for its creativity and self-expression, significantly contributes to ecological issues such as textile waste and excessive resource consumption. Fabric reconstruction offers a promising solution by repurposing discarded garments into fashionable new designs, thereby reducing waste and promoting resource efficiency.

The study focused on college-going girls as the target demographic, aiming to understand their preferences and acceptance of reconstructed garments compared to conventional clothing. Data was collected using structured questionnaires, capturing insights into their buying behaviour, opinions on sustainability, and perceptions of the reconstructed dresses. The research highlighted the shift in consumer behaviour toward eco-friendly clothing, as participants demonstrated a high level of acceptance and appreciation for the reconstructed designs. Key attributes such as creativity, uniqueness, and quality were particularly valued, indicating a strong potential for these garments to gain traction in the market.

Furthermore, the study underscores the importance of fabric reconstruction as a sustainable practice in the fashion industry, emphasizing its role in reducing textile waste while offering innovative design solutions. The findings also highlight the critical need for increased consumer awareness and education about the benefits of reconstructed clothing. Promoting this understanding can pave the way for broader market acceptance and adoption of sustainable fashion practices. Ultimately, this research contributes valuable insights into how sustainable design can reshape the fashion industry and align with the growing demand for environmentally conscious choices.

Keywords: Fabric Reconstruction, Sustainable Fashion, Textile Waste, Consumer Behaviour, Eco-Friendly Design, Reconstructed Garments

1. INTRODUCTION

The fashion industry, once regarded as a beacon of creativity and self-expression, is now grappling with an urgent challenge which is the escalating environmental impact of its practices. From the cultivation of cotton under the shadow of pesticides to the vast consumption of land, water, and fossil fuels in fabric production, the industry's toll on the planet is undeniable. A particularly alarming concern is the mounting waste generated by garments reaching the end of their life cycle, exacerbated by the complexities of recycling non-biodegradable synthetic fibers and blended materials.

The craft of recreating garments has arisen as a promising paradigm in response to this environmental dilemma. This innovative approach breathes new life into discarded garments, providing a sustainable alternative to the wasteful norm. The movement gained momentum in the mid-2000s, as designers began transforming used items into unique fashion statements. Not only does reconstructed clothing offer wearers one-of-a-kind outfits, but it also showcases the transformative power of design, turning pre-loved pieces into entirely distinct creations. One interesting historical parallel to reconstructing clothing is the art of patchwork, dating back thousands of years. Patchwork is the art of piecing together tiny pieces of fabric to make a larger design, frequently featuring different shapes and patterns that repeat. Patchwork is celebrated globally, with diverse traditions such as the Lambani tribes in Karnataka, India, creating blankets for newborns. In Pakistan, ralli quilts, a form of patchwork, are produced by women and are gaining recognition worldwide. Despite its ancient roots, patchwork and its modern counterpart, reconstructed clothing, represent innovative approaches to sustainable fashion, offering a path towards reducing waste and environmental impact in the ever-evolving world of design and textiles. This paper delves into the realms of reconstructed clothing, exploring its rise to prominence and its potential to revolutionize the fashion landscape through the old-age technique of patchwork

2. REVIEW OF LITERATURE

The exploration of sustainable design using leftover materials has been the cornerstone of many studies aimed at reducing waste and promoting eco-friendly practices. Rani (1995) demonstrated the potential of utilizing khadi and jute fabric remnants in creating utility items such as cushions, table mats, and magazine holders. These articles achieved an acceptability rate of over 80%, showcasing the versatility and consumer appeal of these sustainable materials. This study underscored how even minimal resources can lead to impactful design solutions, highlighting the commercial viability of such approaches. Similarly, Singh (1998) explored innovation in home furnishing by combining appliqué work with kantha embroidery. This technique introduced novel designs while preserving traditional crafts, offering a creative method to enhance sustainability in home décor.

Fabric reconstruction has emerged as a promising method to address environmental concerns in the fashion industry. Libo (2019) focused on the aesthetic and functional aspects of reconstructed fabrics, emphasizing the importance of balancing practicality with visual appeal. The arrangement and aggregation of unit elements in reconstructed textiles—whether regular or irregular—play a key role in their overall effectiveness. Warp (2012) further discussed the complexities and labor-intensive nature of reconstruction, noting that the time and effort required can vary widely based on the garment type and method used. These challenges highlight the need for innovation and efficiency in fabric reconstruction processes.

Recent studies have delved deeper into the evolving trends and consumer preferences in sustainable fashion. Wang et al. (2021) explored the application of fabric upcycling to create sustainable garments, revealing a growing consumer preference for eco-friendly products. Their research highlighted reconstructed clothing as an effective solution to textile waste, with consumer education emerging as a critical factor in driving demand. The findings indicated that consumers with higher awareness of upcycling were more inclined to purchase reconstructed garments, suggesting the importance of targeted awareness campaigns to foster greater acceptance.

Emerging trends in 2023 and 2024 have further revolutionized sustainable fashion practices. Bananatex, a material made from banana plant stalks, gained significant attention for its compostable properties and versatility in fashion applications. This innovation secured investment from Parley, an environmental organization, and was shortlisted for material innovation in the Dezeen Awards 2024. The development of biodegradable fibers and the use of unconventional sources like food waste, algae, and mushrooms for fabric production has also gained prominence. These innovations reflect a commitment to sustainability and the circular economy, providing scalable solutions for the fashion industry.

Additionally, Zhang et al. (2022) highlighted the role of technology in enhancing fabric reconstruction processes. The integration of 3D printing and digital pattern-making tools has streamlined the reconstruction process, reducing production time while maintaining creativity and quality. These advancements demonstrate how traditional techniques can be combined with modern technologies to achieve sustainable outcomes more efficiently.

In 2024, sustainable fashion continues to be shaped by these innovations, which emphasize reducing environmental impact and fostering a circular economy. The focus on consumer education, advanced materials, and technological integration collectively underscores the potential of fabric reconstruction and other sustainable practices. These studies provide a strong foundation for future research and development in eco-friendly design, showcasing how innovation and sustainability can drive meaningful change in the fashion industry.

Objectives

- To develop and construct one-piece dresses from used garments using reconstruction technique.
- To explore the consumer buying behaviour of college-going girls for one-piece dresses.
- To study consumer acceptance regarding prepared one-piece dresses by using the reconstruction technique.

Research Methodology

For the purpose of reconstruction of one-piece dresses from old garments, different garments like trousers, leggings, kurtas, stoles, dupattas etc were used. These garments were reconstructed into one-piece dresses according to the contemporary trend followed by the females. The sample of the study was college-going girls who were selected through a random sampling technique from PCM.S.D. College for Women, Jalandhar. A total 90 College-going girls were selected as the representatives of the study. Two questionnaires were employed for the collection of data. The first questionnaire was created to study the consumer behaviour of College-going girls with respect to one-piece dresses. The respondents were asked questions regarding their buying frequency as well as their choice of brands etc. In the second set of questionnaires, respondents were asked about their liking towards the dresses constructed from the old garments. The consumer acceptance was analysed based on 5 Likert scale ranging from excellent to poor. The results of the results of the data was coded and tabulated in simple percentages.

Limitations

This research is conducted to develop and construct one-piece dresses from used garments using the reconstruction technique.

- It is only limited to college-going girls.
- This study is limited to the Jalandhar city.

3. RESULT & DISCUSSION

Table 1. Demographic details of the respondents

Age	**Percentage (%)**
18-21	15.4
21-24	41.6
24-27	24.6
27-30	18.4
Educational Qualification	**Percentage (%)**
Undergraduate	34
Graduate	48
Post Graduate	18
Income	**Percentage (%)**
Below 20,000	29.2
20,000-40,000	23.1
40,000-60,000	30.8
60,000 above	16.9

From the above data, it can be concluded that the majority of respondents (41.6%) belong to the age group 21-24 followed by 24.6% belonging to the age group 24-27. Also, 18.4% of respondents belong to the age range 27-30 while the least number of respondents (15.4%) belongs to 18-21. In the context of education qualification, it can be concluded that the maximum number of respondents 48% are Graduates followed by 34% of respondents are undergraduates. On the other hand, 18% of girls are postgraduate. Moreover, the majority of respondents 30.8 % belong to the family income level of Rs. 40,000-60,000 while the least percentage i.e. 16.9% have a family income above Rs. 60,000.

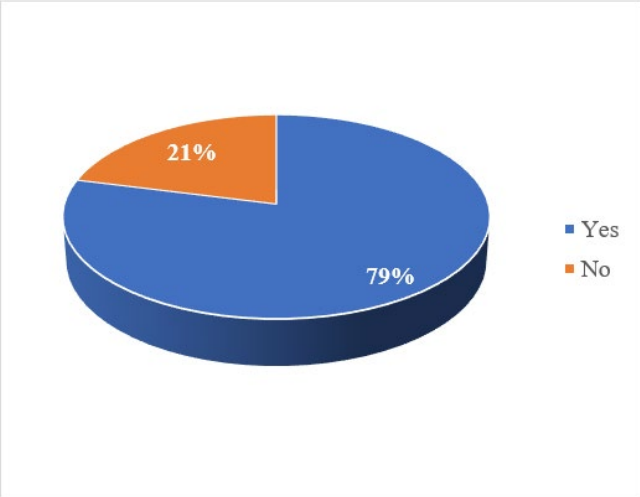


Fig. 1 Liking towards one-piece dresses

From the above fig.1, it can be concluded that the majority of respondents 79% responded Yes whereas 21% don't prefer to wear one-piece dresses.

Table 2. Frequency of one-piece dresses in wardrobe

Number of one-piece dress	Percentage (%)
1-5	22.5%
5-10	36.6%
10-15	16.9%
Above 15	23.9%

It is observed from the above table that the majority of the participants comprising 36.6% fall within the range of owning 5 to 10 one-piece dresses followed by 23.9% reported owning 15 or more one-piece dresses. Also, a notable portion of the participants, representing 22.5%, reported owning between 1 to 5 one-piece dresses whereas a smaller segment, accounting for 16.9%, reported owning a collection ranging from 10 to 15 one-piece dresses.

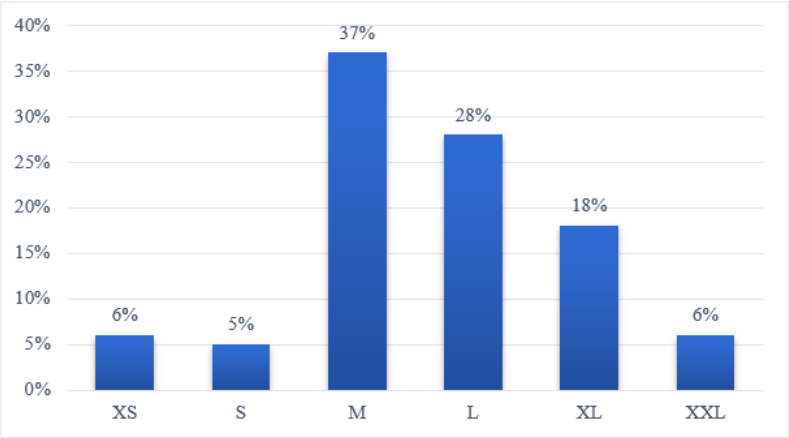


Fig. 2 Most usual size of one-piece

From fig. 2 it is observed that the maximum number of respondents 37% belong to the M size followed by 28% belonging to the L size and 18% belonging to the XL size. On the other hand, only 6 % belong to XXL size and XS size while the least respondents i.e. 5% to S size.

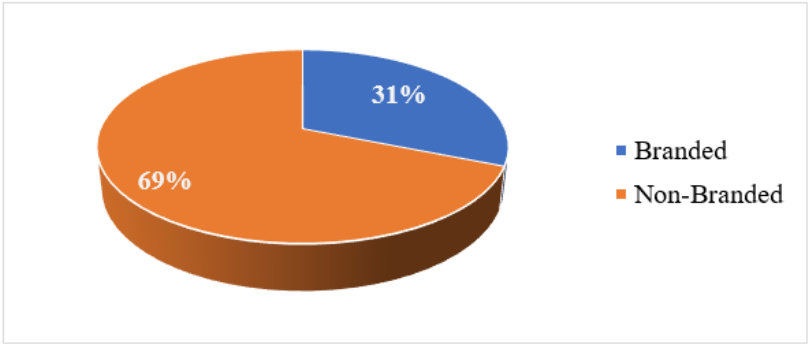


Fig. 3 Preference for Branded/ Non-Branded One-piece Dress

From the above data, it can be concluded that a significant majority, 86%, prefer branded dresses, while only 14% do not have a preference for branded options. This indicates a strong inclination towards branded products among the respondents.

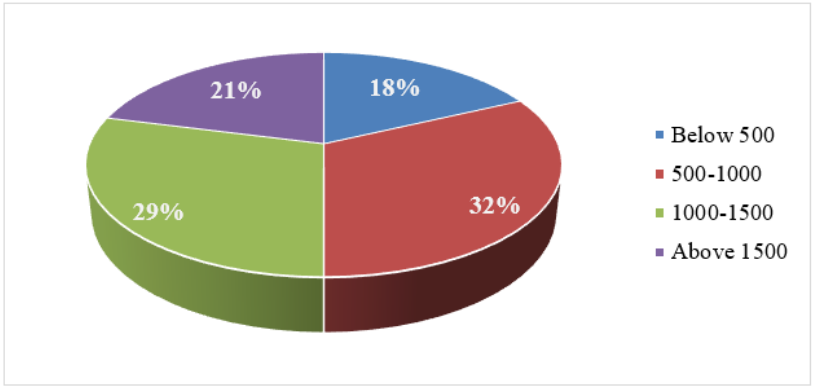


Fig. 4 Preferable Price Range of one-piece dresses

The largest segment (32%) prefers a price range of ₹500–₹1000. This is followed by 29% of respondents who favor ₹1000–₹1500. Additionally, 21% of respondents prefer dresses priced above ₹1500, while the smallest group, 18%, opts for dresses below ₹500. This suggests a diverse preference for price ranges, with a slight skew toward mid-range pricing.

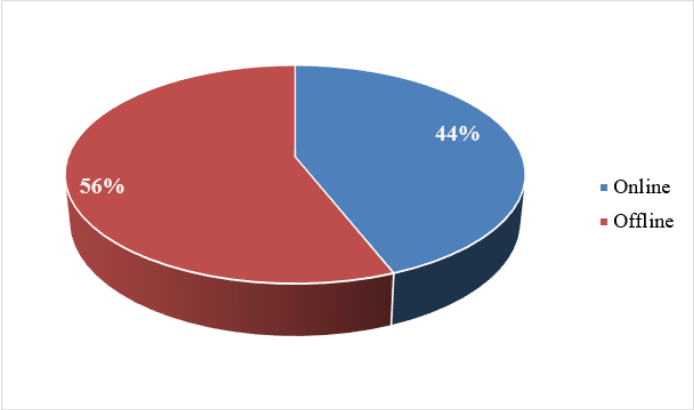


Fig. 5 Source of purchasing

It is clear from Fig. 5 that the maximum number of respondents (56%) prefer offline sources like shops, malls etc. for purchasing one-piece dresses whereas nearly half of the respondents (44%) prefer to buy online through e-shopping websites.

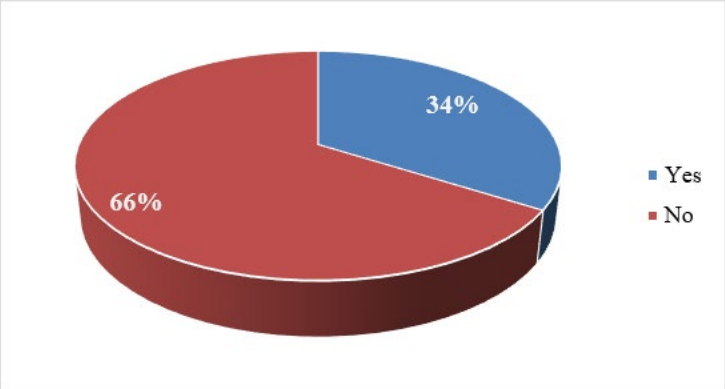


Fig. 6 Awareness of reconstruction garments

Respondents were asked about their knowledge of the reconstructed garments. The fig. 6 shows that the majority (66%) are unaware of the reconstruction of the garment from old garments while 34% are aware of the reconstruction of the garment from used garments.

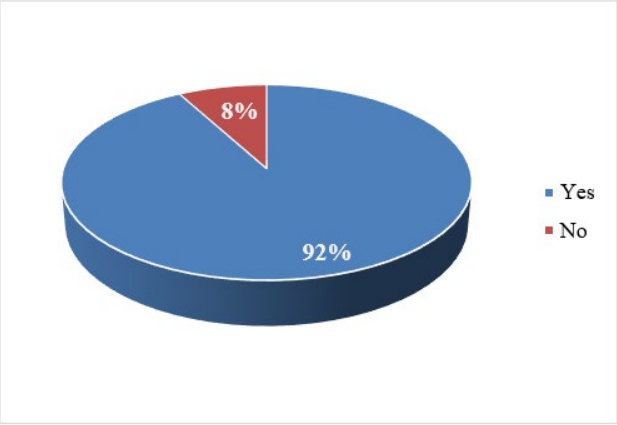


Fig 7 Liking towards reconstructed garments

Respondents were asked about their opinion regarding their liking for the reconstruction technique of creating new garments from old garments. It is observed that the majority 92% like this technique whereas only 8% considered it an unfavourable technique.

4. CONSTRUCTED ONE PIECE DRESS FROM CONSTRUCTED GARMENTS

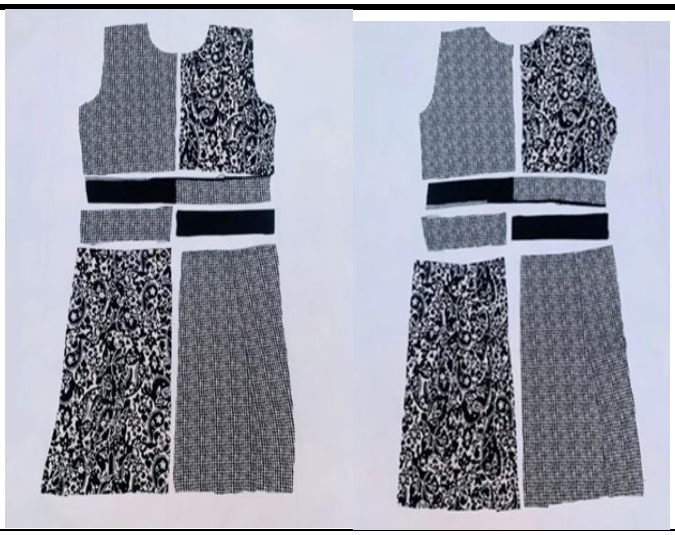
DESIGN 1

Original Garment

STEP1- Cutting of different parts for constructing one-piece dress (front)

STEP 2- Cutting of different parts for constructing one-piece dress (back)

STEP 3- Arrangements of different pieces before sewing (front and back)

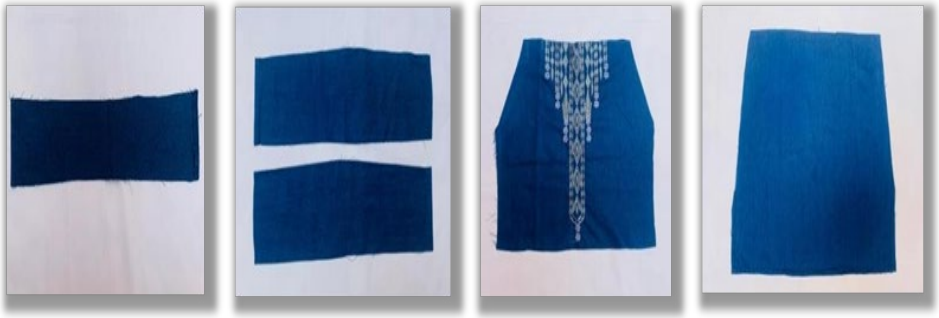


Step 4- Final construction of the garment

DESIGN 2

Original Garment

STEP1- Cutting of different parts for constructing one-piece dress (front)



STEP 2- Cutting of different parts for constructing one-piece dress (back)

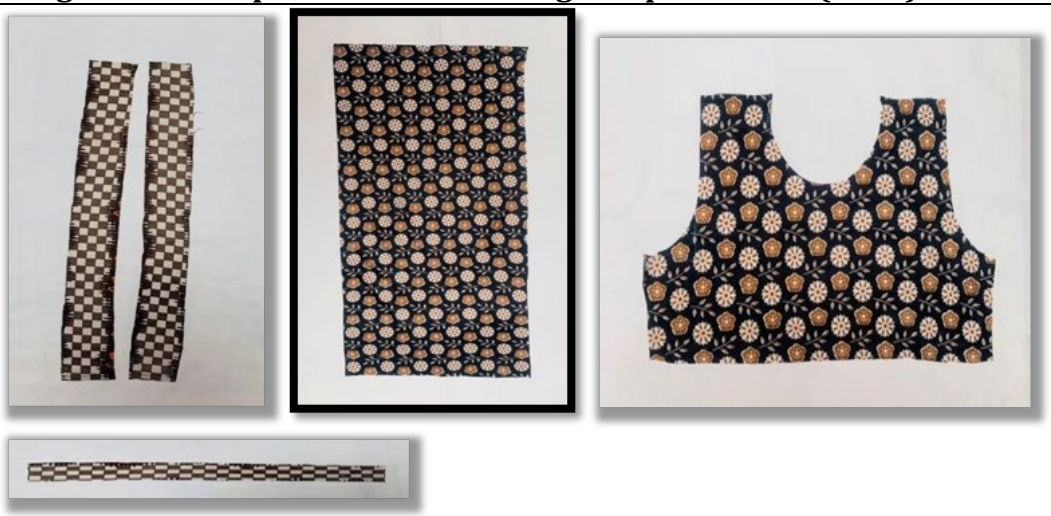
STEP 3- Arrangements of different pieces before sewing (front and back)

Step 4- Final construction of the garment

DESIGN 3

Original Garment

STEP1- Cutting of different parts for constructing one-piece dress (front)



STEP 2- Cutting of different parts for constructing one-piece dress (back)

STEP 3- Arrangements of different pieces before sewing (front and back)

Step 4- Final construction of the garment

DESIGN 4

Original Garment

STEP1- Cutting of different parts for constructing one-piece dress (front)

STEP 2- Cutting of different parts for constructing one-piece dress (back)

STEP 3- Arrangements of different pieces before sewing (front and back)

Step 4- Final construction of the garment

DESIGN 5

Original Garment

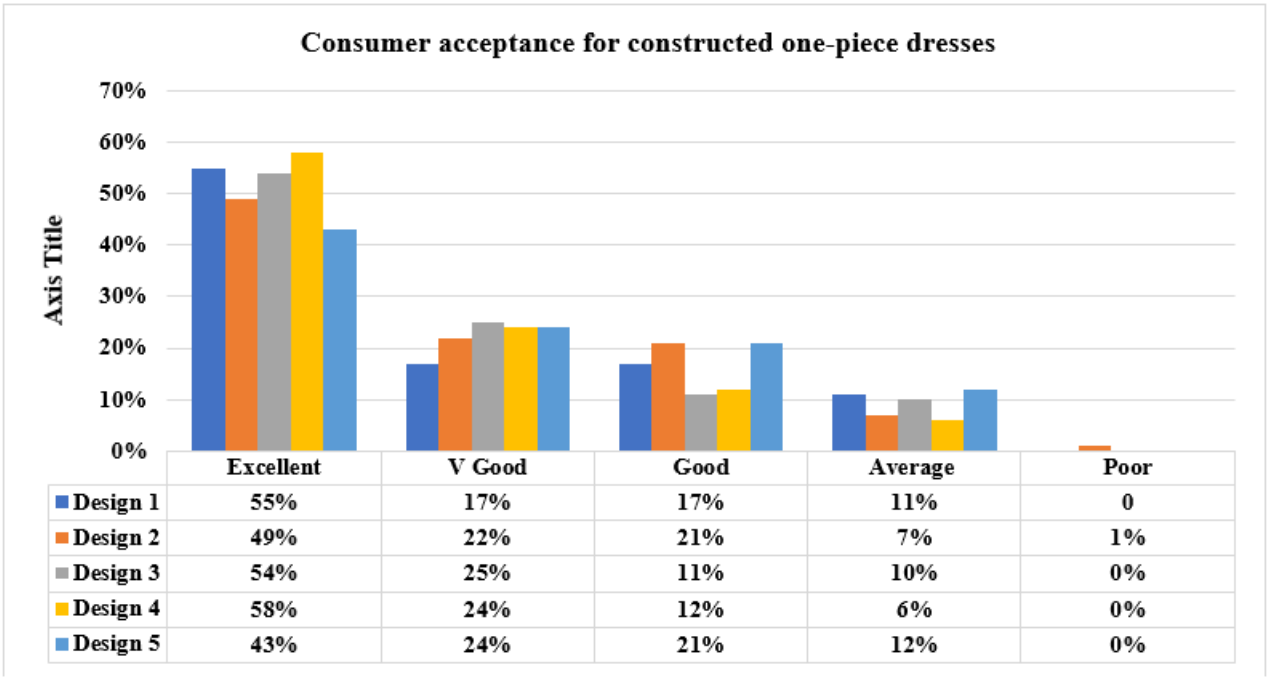
STEP1- Cutting of different parts for constructing one-piece dress (front)

STEP 2- Cutting of different parts for constructing one-piece dress (back)


STEP 3- Arrangements of different pieces before sewing (front and back)


Step 4- Final construction of the garment


Table 3. Consumer acceptance for Constructed one-piece dresses



	Excellent	V Good	Good	Average	Poor
Design 1	55%	17%	17%	11%	0
Design 2	49%	22%	21%	7%	1%
Design 3	54%	25%	11%	10%	0%
Design 4	58%	24%	12%	6%	0%
Design 5	43%	24%	21%	12%	0%

It is observed from the above table 3 that maximum number of respondents considered the Design 1(55%), Design 2 (49%), Design 3 (54%), Design 4 (58%) and Design 5 (43%) as Excellent. Moreover, good number of respondents also reported that all the designs are V Good. Whereas least number of respondents or no respondents considered the constructed dresses as poor. This concludes that constructed garments from reconstruction technique are highly accepted by the respondents.

5. CONCLUSION

This study successfully showcased the potential of fabric reconstruction techniques to create sustainable and innovative one-piece dresses. The research demonstrated a creative and effective approach to reducing textile waste in the fashion industry by reusing discarded fabrics. College-going girls, the study's target audience, displayed high acceptance of these reconstructed garments, appreciating their creativity, environmental benefits, and unique style. These findings highlight the commercial viability and appeal of reconstruction techniques in a sustainable fashion.

The research revealed a gap in awareness about reconstructed garments among the participants, emphasizing the need for initiatives to educate consumers about their benefits. Increased consumer awareness can lead to greater acceptance and demand for such innovative clothing options. This shift is essential for fostering sustainability in the fashion industry and encouraging responsible consumption.

The study also underscores the potential for fabric reconstruction to inspire new trends in sustainable fashion. By blending creativity with sustainability, reconstruction techniques offer a way to transform discarded materials into high-quality and desirable designs. This approach not only addresses environmental challenges but also aligns with the growing demand for unique and sustainable products, paving the way for a more responsible and innovative fashion industry.

ACKNOWLEDGEMENT

None.

CONFLICT OF INTEREST

None.

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