

Repair-Friendly Fashion Design: Designing Garments That Are Easy to Mend

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Abstract

The fashion industry has traditionally followed a linear model in which garments are produced, purchased, used, and eventually discarded. This model contributes to textile waste and increases the consumption of materials and resources. Extending the useful life of garments through repair is one possible approach to making fashion more sustainable. However, repair is often considered only after a garment has been damaged rather than during the initial design and construction process.

This research explores the concept of repair-friendly fashion design, focusing on how garments can be intentionally designed to make repair, alteration, maintenance, and component replacement easier. The study examines garment construction, material selection, seams, fastenings, reinforcement, replaceable components, accessibility, and modular design as factors that can influence repairability. Existing research indicates that poor product design, lack of repair skills, and the cost of repair can discourage consumers from repairing clothing. Therefore, repairability needs to be considered as a design characteristic rather than only as a consumer activity.

The research proposes a combination of secondary research and primary research through questionnaires, interviews, garment observation, and a practical design experiment. The study aims to develop practical recommendations that fashion designers can use when creating garments with longer useful lives. Repair-friendly design can contribute to sustainable and circular fashion by helping garments remain functional for longer and reducing the need for premature replacement.

Keywords: repair-friendly fashion, sustainable fashion, garment repair, circular fashion, garment longevity, fashion design, repairability.

1. Introduction

Fashion is an important creative and economic industry, but the conventional fashion system has also created significant environmental challenges. A linear fashion model generally follows a “take-make-use-dispose” pattern, in which raw materials are converted into garments that are eventually discarded. Circular-fashion approaches instead aim to keep products and materials in use for longer.

The Ellen MacArthur Foundation identifies repair, resale, rental and remaking as important circular business models that can help keep fashion products in use. It also argues that products need to be designed to last longer and to be repaired or remade.

Repair is particularly important because a garment does not necessarily need to be discarded simply because one part has become damaged. A missing button, damaged seam, worn collar, broken zipper or small tear can sometimes be repaired while the remainder of the garment remains functional. However, the ease with which a garment can be repaired is influenced by decisions made during its design and manufacturing.

Research on clothing repair has identified several barriers to repair, including lack of skills, poor product design and the cost of professional repair services. This suggests that encouraging repair cannot depend only on educating consumers. Designers can also contribute by creating garments that are easier to maintain and mend.

Repair-friendly fashion design therefore asks an important question:

How can fashion designers design garments from the beginning so that they are easier to repair when damage occurs?

This research investigates this question by examining garment construction and design strategies that can support repairability and longer garment use.

2. Background of the Study

2.1 Sustainable Fashion

Sustainable fashion seeks to reduce the negative environmental and social impacts associated with the production, use and disposal of clothing. It can involve responsible material selection, efficient production, durability, ethical production, reduced waste and longer product lifetimes.

Sustainability in fashion is not limited to choosing environmentally preferable fabrics. The way a garment is designed can also determine how long it remains useful.

2.2 Circular Fashion

Circular fashion aims to move away from the linear system of producing and discarding products. The Ellen MacArthur Foundation describes a circular vision for fashion in which products are designed to be used more, made to be made again, and made from safe and recycled or renewable inputs.

Repair is therefore connected to circular fashion because it allows an existing garment to continue serving its original purpose instead of being immediately replaced.

2.3 Garment Longevity

Garment longevity refers to keeping clothing functional and relevant for an extended period. Longevity can depend on physical durability, emotional attachment, quality, maintenance, repairability and design.

Research on design for longevity identifies strategies such as durability, repairability, upgradability and emotional attachment as important considerations in fashion product design.

A garment that lasts longer can reduce the need for frequent replacement and make better use of the resources already invested in its production.

3. Literature Review

3.1 Repair as a Strategy for Garment Longevity

Previous research has established that repairing garments can contribute to extending their useful lives. A study investigating clothing repair and repurposing among 300 UK citizens found that poor product design was one of the barriers to repair, alongside lack of skills and the affordability of repair services.

This finding is particularly relevant to fashion design because it demonstrates that repairability is not solely a consumer issue. The physical characteristics of a garment can either support or discourage repair.

3.2 Designing for Repair

Durrani, Niinimäki and McLauchlan argue that although garment mending has been studied as a user practice, its influence on garment design has received comparatively less attention. Their work approaches garment design from a repair-centred perspective.

This provides an important foundation for the present research. Rather than considering repair as an activity that happens after design, repair can be incorporated into the design process itself.

3.3 Design for Durability

Physical durability is another important aspect of repair-friendly design. The Ellen MacArthur Foundation describes physical durability as the combination of material selection and garment construction that allows products to resist damage and wear over longer periods.

Designers can therefore consider reinforcement at high-stress areas, appropriate seam construction and suitable materials to reduce premature damage.

3.4 Repairability and Consumer Behaviour

Consumer willingness to repair depends on several factors. Skills, time, cost, convenience, emotional attachment and the perceived value of the garment can influence repair behaviour. Research has shown that people can encounter practical and psychological barriers to repairing clothing.

Consequently, a repair-friendly garment should ideally make repair more accessible and convenient rather than requiring advanced technical knowledge.

3.5 Current Development in the Fashion Industry

Repair and durability are increasingly being discussed within the fashion industry. WRAP's 2026 research on clothing durability emphasizes the importance of designing products that last and identifies durability as an increasingly important issue for the fashion sector.

The Ellen MacArthur Foundation's Jeans Redesign project has also demonstrated how circular-design principles can be applied to mainstream garments. Between 2021 and 2023, participating brands brought 1.5 million redesigned pairs of jeans to market, incorporating principles including durability and recyclability.

These developments indicate that garment longevity and circular design are becoming increasingly relevant to contemporary fashion.

4. Research Gap

Existing research has examined clothing repair, consumer behaviour, garment longevity and circular fashion. However, there is a need to further connect these areas with the practical decisions made by fashion designers during garment development.

The research gap addressed by this study is:

How can specific garment-design and construction decisions make everyday clothing easier to repair without negatively affecting its functionality and aesthetic appeal?

The study therefore focuses specifically on repairability as a design characteristic.

5. Problem Statement

Many garments are discarded when relatively small areas become damaged. Although some damage can be repaired, garment construction may make repair difficult, time-consuming or expensive.

The problem addressed in this research is the limited consideration of repairability during garment design. If designers intentionally incorporate accessible construction, replaceable components, reinforced areas and repair-friendly details, garments may become easier to maintain and remain functional for longer.

6. Aim of the Research

To investigate how fashion designers can incorporate repair-friendly construction and design features into garments to make them easier to mend and extend their useful life.

7. Research Objectives

1. To identify common reasons why garments become difficult to repair.
2. To study existing research on garment repair, durability and circular fashion.
3. To investigate consumer attitudes toward clothing repair.
4. To identify garment-design features that can improve repairability.
5. To explore how construction techniques can make damaged garment components easier to replace.
6. To develop practical design recommendations for repair-friendly garments.

8. Research Questions

1. What factors make garments difficult to repair?
2. What types of garment damage occur most frequently?
3. What design and construction features can improve repairability?
4. What prevents consumers from repairing damaged clothing?
5. Can repair-friendly design help extend the useful life of garments?
6. How can repairability be incorporated without compromising garment aesthetics?

9. Hypothesis

Main Hypothesis

H1: Garments designed with repair-friendly construction features are easier to repair and have greater potential for extended use than garments designed without specific consideration of repairability.

Null Hypothesis

H0: Repair-friendly design features do not significantly improve the ease of repairing garments or their potential for extended use.

10. Discussion

The research is expected to demonstrate that repairability can be treated as an important part of garment design rather than as an activity that occurs only after a garment has failed.

Existing literature supports the relationship between repair and garment longevity. Research has identified poor product design as one barrier to clothing repair, while circular-fashion research emphasizes keeping products in use for longer.

From a fashion-design perspective, repairability can be addressed through relatively simple construction decisions. For example, reinforcement can reduce damage at high-stress areas, while replaceable components can prevent a small damaged element from making an otherwise usable garment difficult to wear.

However, repair-friendly design also has limitations. Additional construction features can increase manufacturing time, material requirements or cost. Designers must therefore balance repairability with aesthetics, comfort, affordability and production efficiency.

Repairability should not be viewed as a replacement for good quality or durable design. Instead, it can work alongside durability. A garment should first be designed to withstand normal use, while also being designed so that predictable damage can be repaired when it occurs.

11. Design Recommendations

Based on the literature and proposed research framework, the following recommendations can be made:

1. Design for Accessibility

Designers should consider whether damaged areas can be easily reached during repair.

2. Reinforce High-Stress Areas

Areas such as underarms, pockets, cuffs, waistbands and seams can receive appropriate reinforcement.

3. Use Replaceable Components

Buttons and other frequently damaged components can be designed for easy replacement.

4. Provide Adequate Seam Allowance

Sufficient seam allowance can make alterations and some repairs easier.

5. Consider Modular Construction

Selected components can be designed to be removed and replaced without reconstructing the entire garment.

6. Provide Spare Materials

Providing spare buttons or small quantities of matching fabric can make future repairs easier.

7. Keep Construction Understandable

Straightforward construction can make garments easier for consumers and repair professionals to understand.

8. Provide Repair Information

Simple care and repair instructions can help consumers maintain garments.

9. Consider Aesthetics After Repair

A successful repair should ideally preserve or intentionally enhance the garment's appearance.

10. Design for Longer Use

Repairability should be considered together with durability, comfort, functionality and emotional value.

12. Conclusion

Repair-friendly fashion design provides an opportunity for fashion designers to contribute to sustainable and circular fashion through decisions made during the design and construction stages. Instead of treating repair as an afterthought, designers can anticipate common forms of garment damage and develop products that are easier to maintain, alter and repair.

The literature indicates that repair can support longer garment use, while poor product design can act as a barrier to repair. Research and industry initiatives increasingly emphasize durability, repair and circular design as ways of keeping clothing in use for longer.

Repair-friendly design does not necessarily require complicated technology. Simple decisions such as reinforced seams, replaceable components, accessible construction, adequate seam allowance and spare materials can potentially improve the repairability of everyday garments.

The research therefore concludes that **repairability should be considered as a design characteristic alongside aesthetics, functionality, durability and comfort**. By designing garments that are easier to mend, fashion designers can help reduce premature disposal and encourage longer relationships between consumers and their clothing.

Future research could investigate repair-friendly design across different garment categories, materials and consumer groups. Further practical testing could also measure repair time, cost, durability after repair and consumer satisfaction.