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UP CYCLING WASTE FABRICS: TRANSFORMING DISCARDED MATERIALS INTO SUSTAINABLE PRODUCTS

Irshma Butt

Lecturer, Textile Design Department, University of Gujrat

irshmabutt1989@gmail.com

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Corresponding Author: *
Irshma Butt

Abstract

Background: *Environmental damage is caused around the world by the textile and fashion sectors, mainly because of their enormous output and waste. Using discarded materials to make usable items helps save the environment and is a creative method. This article looks at the creative, environmental, and monetary potential of design by upcycling, using the bark of century-old trees in Bagh-e-Jinnah, Lahore, Pakistan, for inspiration.*

Objectives: *The study intended to determine*

1. Produce interior decor items out of old textiles by basing them on the patterns found in barks.

2. Look at how up cycling materials can be creative and functional.

3. Check if the promised environmental, visual, and economic benefits are present in what is built.

Methods: *A technique called practice-based research was applied. Bark patterns were made on recycled textiles using embroidery, appliqué, layering, heat, and beads. Materials were obtained from discarded factory textiles and used garments sold in thrift shops. Final projects created included wall art, blinds, and ways to section off areas. The cost-effectiveness of the project and how much potential the market has were looked into as well.*

Results: *It was possible to design decor items for the home that were not only nice to look at but also strong in environmental protection. Products on the menu were priced fairly (PKR 10,000–14,000), but they looked high-class. Innovation in design could be seen in having different functions connect and using usual material with unusual ways.*

Conclusions*: Taking waste materials and turning them into something new allows artists to be creative and save the environment. It helps to conserve the environment, fits well with circular economy rules, and supports all groups being involved in the economy. It is revealed that up cycling can be used to design items for decorating areas that encourage fresh design ideas.*

INTRODUCTION

Making useful items out of what's been discarded, called up cycling, is considered a creative way to protect the environment or make objects that look useful again. Unlike recycling, it leaves the material in its original shape, which saves energy and cuts down on carbon emissions(Lu et al., 2017). The textile industry is now using up cycling to help the environment by rerouting unused materials from

landfills and needing less natural material (Tirado-Estrada et al., 2018)

This work investigates textile up cycling using the pattern of tree bark from Bagh-e-Jinnah (formerly Lawrence Gardens) in Lahore, Pakistan, as its inspiration. Because the garden was home to trees over a hundred years old, it greatly inspired the research into its appearance and its ecology. Bark's complex textures, scars, and signs of aging were linked to time and the environment, and these themes became part of my textile designs made from waste and extra fabrics.

Some work featured tree bark surrogates by combining fabric manipulation with felt, beads, embroidery, and heating methods (Burns, 2022). Up cycled textiles were developed for several interior uses, such as wall art, window treatments, or space dividerss. By making this project, I tried to prove that textiles made from waste can be beautiful and also encourage environmentally responsible textile art.

Up cycling has become a favorite topic for designers and artists because more creative people are adopting eco-friendly ways to create. Using bark cloth made from the Mutuba tree, Jose Hendo has brought attention to environmentally friendly fashion. Her Resonance label uses natural and recycled fibers, opposing the trend of wasting resources and supporting models where items are used and reused. According to Hendo, not only is bark cloth biodegradable, but it can be collected in a sustainable way for a long period (Tirado-Estrada et al., 2018)

Ceramic sculptor and mixed-media artist Becky Grismer adds dried bark, seeds, and wood to her artwork. Her way of working keeps in mind the material's basic form, just like philosophies found in material-led design, which drive sustainable art (Tirado-Estrada et al., 2018)

On her hand-made textiles, Sofia Usmani investigates the concepts of annual rings and tree bark patterns by employing adda work, embroidery, digital printing, and changing fabric on silk and organza (Burns, 2022). Using cultural elements and textures from nature, she designs wearable fashion for those who earn mid-range incomes.

Digital interpretations of natural textures are created by the textile designer Morgan Cox. To make her eco-printed items for children, her hand-draws bark patterns and corrects them in Photoshop and Illustrator. Cox designs with eco-consciousness by using textures from tree materials in her choice of colors (Tirado-Estrada et al., 2018)

The Australian artist Janell Mithani tells whimsical stories about nature in her landscape paintings by using real bark, performing sketches, and adding gel mediums. (Burns, 2022)

The artist paints onto the rings of cut tree trunks. Moritsugu builds scenes from wood that help us think about deforestation and reflect on our connection with the wilderness (Moritsugu, 2015)

Using mod roc, oil paint, sugar, and natural materials, Mini Pavellay makes dendrological textures inspired by trees. She often explores living-like forms and the ways surfaces are presented **Pavellay, M. (2022)**

By using up cycled materials, these works show how important and adaptable they can be in design today. The increasing environmental issues caused by how the fashion industry produces its goods have moved up cycling to the top of sustainable fashion approaches. Up cycling, meaning making new products from waste, is now necessary to both decrease textile waste and follow circular economy ideas.

Experts today point to the many advantages of up cycling in the clothing industry. They explain that disposing of pre-consumer textile waste in sustainable ways assists the environment and the economy. The study shows that up cycling helps cut the use of resources and lowers costs, allowing the circular economy to be incorporated into standard production processes.

At the same time, Lee (2023) investigates creativity in up cycling by producing sustainable three-dimensional textiles from used clothing. It aims to cut down on textiles that reach landfills by developing a fresh way of designing that is powered by new innovations to help nature. When digital fabrication and sustainability are combined in this way, up cycling creates new opportunities for popularizing sustainable designs and practices. (Lee, 2023)

Some studies agree that, as designers, they should prioritize sustainable textile solutions and believe that up cycling serves as an easy and handy way for newcomers. According to their analysis, designers can help make fashion more sustainable by rethinking materials and inventing new uses for them. (Provin et al., 2021)

In addition, notes that using materials that are not perfectly new can offer many opportunities for creative design. Her study demonstrates that focusing on obvious histories in textiles helps designers develop emotionally and visually different garments that challenge mainstream views of beauty and consuming. It demonstrates that an initiative can be both attractive and practical. (Odabaşı, 2024)

Improvements in technology have greatly enhanced ways to up cycle. Many professionals examine the use of NIR-HSI as a means to automatically classify and sort fabric samples. This research reveals that new imaging tools significantly support accurate and prompt procedures for recycling textiles, helping to solve a major obstacle in increasing up cycling. (Araujo-Andrade et al., 2021)

Up cycling is becoming an important way for businesses to advertise their products. This research, published in the Journal of Research in Progress & Creativity (in 2024), proposes that adding up cycled products to fashion collections makes a brand easier to identify, attracts more customers, and responds to both regulatory standards and ethical considerations. In addition, making people aware of the environmental advantages of up cycling can encourage these audiences to stay with a brand.

Up cycling may have advantages, but it still comes across several difficulties. Yusuff (2023) finds that technological issues, a lack of funds, and poor understanding among consumers make it hard for crypto to be used widely. To address these issues, we need technological development, useful policies, and public campaigns that help change people's views on fashion and shopping. (Yusuff)

4. Methodology

The study engaged in practice-based research to explore making useful and attractive interior decor products from textile waste. Using experimental techniques, the methodology resembles the structures and textures on the tree bark commonly found in Bagh-e-Jinnah (Lawrence Garden) of Lahore. The project worked towards sustainable design by giving old materials a new purpose and making them more useful and attractive.

Techniques Used

Many textile techniques were used to give barks a similar appearance and feel to the real thing. Multiple layers of recycled fabric were chopped into pieces and worked to create the look of aged tree bark. The French knot, running stitch, satin stitch, and zardozi were added using embroidery to give the pieces more character and a unique finish. The use of embroidery strengthened the shape of the textile material.

- A mix of fabrics was piled together and held with stitching and glue to create a multi-surface like the bark on a tree. I used a heat gun to distress polyester blends, which caused them to curl and take the form of bark. With this method, more details were included to fortify and hold various nodes together.
- **Appliqué and Beadwork**: We cut recycled fabric pieces into bark patterns and either stitched or glued them onto bases. Wooden beads and sequins were added to include both contrast and a more rhythmic appearance.

The original use of these techniques was on test samples, followed by their improvement during the prototype stage.

Materials Used

The materials selected were chosen for their readiness, sustainability, and how easily they could be altered. All of the materials used in the project—waste and recycled—were taken from what's left behind at textile factories and from thrift stores. Important sources for the assignment were Endless recently used recycled cotton fabric for creating base layers and their narrow stitching.

- Special papers—new methods of printing with more personality and sheen.
- Jute Rope and Fabric—Both added a natural finishing touch to the décor.
- Velvet and suede brought a rich effect, and both fabrics were often slashed and burned.
- Wooden Beads and Metal Sequins—Added to the fabric or design for noticeable contrast.

Acrylic and Fabric Paints—they are chosen for adding color, detail, and texture.

- Adhesives in a Glue Gun—Bond and support layered versions of the artwork.

Thanks to this diverse mix, it was possible to create artistic textiles from discarded resources.

5. Results

The outcome of the project was a series of **up cycled textile surfaces** converted into decorative and functional interior elements. The work reflected both ecological responsibility and artistic innovation.

Product Types

Three main product categories were developed:

1. **Wall Hangings**
   - These large-scale textile compositions were designed as independent art pieces. They embody organic textures and earthy colors, making them suitable for residential and gallery settings.

2. **Blinds (Roman-style Curtains)**
   - Functional blinds were constructed from vertically aligned up cycled panels, using jute and fabric layering. These offered both privacy and natural aesthetics, ideal for eco-conscious interior spaces.

3. **Space Dividers**
   - Freestanding textile panels mounted on wooden or metal stands were developed as room dividers. These pieces provided modular spatial division while showcasing the intricate design textures of up cycled bark-inspired surfaces.

Each product maintained the concept of bark as a metaphor for protection, endurance, and natural beauty.

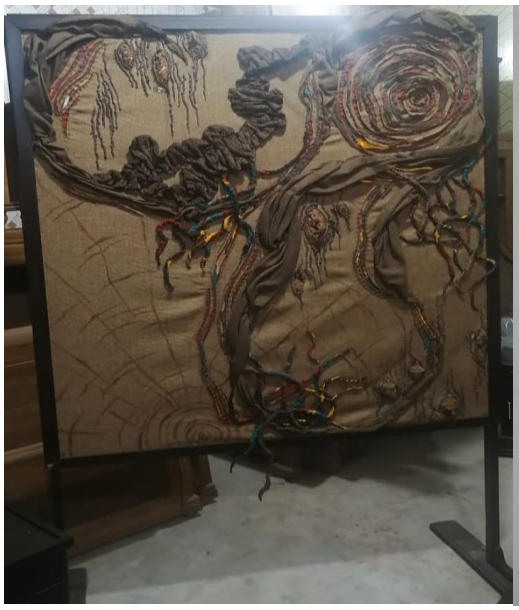
Space divider (size5by3.5feet) **Fig 1: Prototype of 1st Space divider**

Techniques: fabric slashing, coiling, burning, embroidery, embellishments

Space divider (size4by 5feet)

Fig 2: Prototype of 2nd space divider

Techniques: Fabric paint, embossing with heating, embroider and embellishment, patchwork



Space divider (size 5by5 feet)

Fig3: Prototype of 3rd space divider

Techniques: Fabric layering, coiling, slashing, embossing, gathering, paints

Design Innovation

The project's innovation lies in:

- The combination of **handcrafted textile arts** with **unconventional applications** like fabric manipulation and heat treatment on surfaces.
- Being a researcher and textile artist I create a multipurpose surface that can be used as curtains/ window blinds, decorative wall hangings, space dividers. I implement my space dividers later on I use the same surface on portable Amirah.

- **Decontextualizing discarded materials** as artistic elements of value.
- Introducing **bark-inspired aesthetic language** into interior textiles.
- Employing a **modular and multi-purpose product approach**, where a single surface could function as a curtain, artwork, or divider. This cross-functional design philosophy ensures adaptability and longevity—two key principles of sustainable design.

Final presentation of 3 layers of textile bark

Products prototype of 3 layered textile bark

I created this multipurpose textile surface and made a space divider then later on I used the same surface to make a portable Almirah.

Final Cost Analysis

A major objective was affordability without compromising on visual appeal. The cost breakdown is as follows:

Item	Estimated Cost (PKR)
Recycled and scrap fabrics	4,000 – 5,000
Paints, glue, threads, adhesives	3,000 – 4,000
Beads, sequins, embroidery tools	2,000 – 3,000
Structural supports (frames/rods)	1,000 – 2,000
Total per panel/product	**10,000 – 14,000**

Despite using low-cost materials, the final surfaces appeared high-end due to design sophistication and detailed handwork. This made the products accessible to a wider audience, supporting economic inclusivity within sustainable design markets.

6. Discussion

Adopting up cycling in textile design greatly helps save the environment because it replaces new materials with what's been discarded and cuts down on waste. A lot of the clothing we buy ends up in landfills or is burnt, since over 85% of all fashion products are wasted this way. By changing discarded clothes into useful objects, up cycling keeps them in use longer, saving new resources from being taken. (Cui et al., 2025)

In addition, up cycling helps a circular economy by focusing on using resources more wisely and reducing waste. When we up cycle, we reduce the need for water and energy in textile manufacture. Besides lowering our effect on nature, this helps people develop more environmentally responsible habits. Wikipedia contributors. (2023, November 1). Productivity. *Wikipedia*. https://en.wikipedia.org/wiki/Productivity

Aesthetic and economic values for society

There are other benefits, too: up cycled products help the environment and include interesting designs. The special qualities of reclaimed materials inspire designers to produce unique items that attract buyers interested in being different. It helps provide value to things people no longer need and also encourages designers to rethink traditional trends, Smith, J. (2023, March 10).

By up cycling, there is a better chance for people in these communities to create jobs and businesses. As an example, a project in Dharavi teaches women how to weave plastic, which increases their earnings and gives them a greater social status. These programs make it clear that up cycling can give an economic boost and help solve social problems. **(Wikipedia contributors)**

Market Potential:

Many people are choosing up cycled fashion as a response to caring about the environment and liking individual products. Presently, in 2023, the global up cycled fashion sector is worth about USD 7.6 billion and is predicted to reach USD 16.7 billion by 2032. More people are interested in sustainable fashion, which is why sales are up. Fortune Business Insights

Many brands are including up cycled items in what they offer their customers. Companies focused on up cycled fashion, such as ELV Denim and Loop works, have successfully brought their product to market, showing that up cycling is effective for mainstream businesses. It seems that up cycling is good for people, for the environment, and for the economy.

Conclusion

By up cycling, we blend caring for the environment with new and creative ideas in design. By turning old textile waste into something of value, up cycling helps the environment, builds the economy, and gives shoppers special choices instead of mass-produced products.

Because of the challenges around waste and overproduction faced by fashion, up cycling can lead the business toward a more reasonable and equal future. Using this approach can result in new ways of producing, consuming, and thinking that are good for both the community and the environment.

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