

**DEVELOPMENT OF HOME DÉCOR FROM POST- CONSUMER
WASTE BY IMPLEMENTING UPCYCLING AND TRANSFORMABLE
METHODS**



PROJECT WORK

*Submitted in Partial Fulfillment of the Requirement for
The Award of the Degree of*

MASTERS PROGRAMME IN FASHION DESIGNING

By
LISIEUX FRANCE
(Register Number: SM20MFD003)

Under the guidance of

Ms. LEKHA SREENIVAS

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ST. TERESA'S COLLEGE (AUTONOMOUS)

**DEPARTMENT OF FASHION DESIGNING
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CERTIFICATE

I hereby certify that the dissertation entitled “**DEVELOPMENT OF HOME DÉCOR FROM POST- CONSUMER WASTE BY IMPLEMENTING UPCYCLING AND TRANSFORMABLE METHODS**” submitted in the partial fulfillment of the requirement for the award of the Degree of Master’s Programme in Fashion Designing is a record of original research work done by Ms. Lisieux France during the period of her study under my guidance and supervision.

15/06/2022
Leikha Sreenivas
Name and Signature of the Guide

Vinitha Paulose
Name and Signature of *24.6.22*
the Head of Department

Honey S Nair
Name and Signature of the External Examiner



DECLARATION

I hereby declare that the matter in the dissertation entitled "**DEVELOPMENT OF HOME DÉCOR FROM POST- CONSUMER WASTE BY IMPLEMENTING UPCYCLING AND TRANSFORMABLE METHODS**" submitted in partial fulfillment of the requirement for the award of the Degree of Master's Programme in Fashion Designing is a record of original research work done by me under the supervision and guidance of, **Ms. LEKHA SREENIVAS**, Associate Professor & Centre Co-ordinator, Department of Fashion Designing, Women's Study Centre, St. Teresa's College [Autonomous], Ernakulam and that the thesis has not previously formed on the basis for the award of any degree work has not been submitted in part or full or any other degree/ diploma/ associate ship/ fellowship or the similar title to any candidate of any other university.

PLACE: ERNAKULAM

DATE: 23-06-2022



LISIEUX FRANCE

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ABSTRACT

The purpose of this research entitled “DEVELOPMENT OF HOME DÉCOR FROM POST-CONSUMER WASTE BY IMPLEMENTING UPCYCLING AND TRANSFORMABLE METHODS” is to enhance sustainable outcomes as well as to understand the level of awareness on sustainable fashion and its methods by focusing on upcycling and transformable designs. In this study, sustainable fashion, upcycling and transformable fashion and methods were discussed. Interviews and online surveys were employed to capture people’s opinions towards upcycling and transformable methods through customization. The project analysed the results acquired from the survey which was ideated afterwards. The study also conducted development of products- home decors from post- consumer waste and a training programme where the product development procedures were demonstrated to a selected target group.

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INTRODUCTION

1. INTRODUCTION

Fashion plays a major role in the global economy with annual revenues totalling nearing to trillions. However, it is also one of the most resource-intensive industries in the world. The fashion industry is one of the largest polluting in the world. Fashion has such a significant impact on communities around the world. It also has a huge climate change footprint, and therefore, the unsustainable practices or the methods adopted by the industry needs to be addressed. Textile production requires a lot of land for crops and uses a lot of water, energy, chemicals and other resources leaving often untreated pollution behind and has a highly negative environmental, economic and social footprint (Fletcher, 2008). As an industry, and as a culture, that spans across the world we need to have to look at reducing our consumption alongside moving towards more circular models of production which so many brands are trying to follow nowadays.

Large number of the materials that are commonly used today in the fashion industry are resource-intensive. Cotton, for instance, requires a huge amount of water and synthetic materials like polyester are made from non-renewable resources such as oil. Then there are other materials, like viscose, which on a massive scale is leading to deforestation and is therefore affecting the habitats of endangered species and ancient trees. So, it's crucial that we move towards researching and developing more sustainable materials and methods because it's critical to the future of the fashion industry as well as the planet.

Waste is one of the most urgent problems in the fashion industry. Billions of products are being produced and distributed every year and people tend to buy more clothes even if their closet is almost or already filled. The fashion waste is either being burnt or go to the landfills which is not a sustainable way of disposal. This represents a loss from a production effort which uses millions of tonnes of water and kilowatts of energy, and countless hours of human labour that could be salvaged. Waste stands as the collective responsibility of all fashion customers as we all engage with fashion just because of the simple fact that we all wear clothes; we're all involved in the world of fashion and it would be a waste if not addressed quickly. Today's conventional fashion and garment industry is linear by nature and in addition to the impact that raw material extraction for newly produced fibre production has, textile waste has become a major problem in the sector. Post - consumer waste is a material discarded after someone uses it. Post-consumer waste has served its intended purpose, passed through the hands of a final consumer, and has been discarded for disposal or recovery. Quite

commonly, it is simply the garbage that individuals routinely discard, either in the trash can or a dump, or by littering, incinerating, or pouring down the drain.

Due to the above-mentioned problems, the sustainable fashion and its methods plays a huge role as an olive branch between the fashion industry and the climate, nature, the whole earth as a whole.

Sustainable fashion is about meeting today's needs while ensuring that the way we go about meeting those needs meet future needs as well. Sustainable fashion refers to accessories and garments produced and accessed in a socially responsible and ecological manner. It combines both ethical and eco-conscious fashion. It is also an umbrella term for clothes that are created and consumed in a way that can be, quite literally, sustained, while protecting both the environment and those producing garments. Hence, cutting CO2 emissions, addressing overproduction, reducing pollution and waste, supporting biodiversity, and ensuring that garment workers are paid a fair wage and have safe working conditions, are all crucial to the sustainability matrix. The main aim of sustainability is to extract the maximum benefits from products by extending their life, before throwing them away. Sustainability has always targeted the idea of dematerialization, converting the linear path of materials (extraction, use, disposal in landfill) to a circular material flow that reuses materials as much as possible, much like the cycling and reuse of waste in nature.

To deliver on low price points for fast changing styles, the “real time” brands like ‘Shein’ rely on fossil fuel-based synthetic materials that are cheaper, adaptable, and more widely available than natural materials. The results of a research show that depending on the size of the factory the fabric leftovers and textile waste generated in garment production ranges from 25–40% of the total fabric used. Experiments show that 50% of that material can be upcycled into new garments and for some types of leftovers—mainly spreading loss and excess fabric—it can even be up to 80%. A circular fashion industry is defined as a regenerative system in which garments are circulated for as long as their maximum value is retained, and then returned safely to the biosphere when they are no longer of use. In a circular model, products are designed and developed with the next use in mind. Less than 1% of clothing is recycled into new clothing. The best thing we can do is buy less and reuse more.

Every manufactured garment is supposed to have an average life span which is considered to be approximately 3-4 years after which the garment is either considered too old or unfit to be used as it loses its suitability for the purpose or it becomes out of fashion. Almost half of the

garments we use in daily life are discarded even before they can be considered unsuitable to be used because of various other reasons like fashion, size or fit issues. The maximum amount of textile waste comes from household sources as the textile waste generated at pre consumer stage or industrial level are usually utilized in one form of the other.

Significance of the Study

Sustainable fashion and its related terms have been and continues to be a topic of conversation around the world. The precise negative environmental impact of the fashion industry remains unknown, but it is sizeable. The industry's boundaries spread globally and its multitiered supply chain remains complex and opaque. Combining the imperative of growth with accelerating product drops, long lead times, and global supply chains, all results in inevitable overproduction. Therefore, the study aimed to check the level of awareness people have about the sustainable fashion and relatable terms and methods in their mind by taking Kerala as target area, especially urban areas such as Ernakulam. The study also aimed at the prevalence of the need of addressing the post- consumer waste and the positive impact of sustainable methods can have on it, both in urban and rural areas; if practised. Developing products from post- consumer waste could help in extending the life- span of the particular fabric or the product that would in turn help

Owing to all these, the study “**DEVELOPMENT OF HOME DÉCOR FROM POST- CONSUMER WASTE BY IMPLEMENTING UPCYCLING AND TRANSFORMABLE METHODS**” is relevant and considered as a need of the hour.

OBJECTIVES:

- To conduct a study on the necessity or exigency of sustainable fashion and its methods upcycling and transformable methods, which can help in the making of a sustainable world.
- To gain a deeper understanding on the level of awareness people have about the sustainable fashion and its methods.
- To design and develop Home Décor from post- consumer waste by implementing upcycling and transformable methods and to provide training to create awareness on the same.

**REVIEW OF
LITERATURE**

2. REVIEW OF LITERATURE

2.1 SUSTAINABLE FASHION

As per Singha et al. (2020), they stated that a report by the fashion industry revealed that fashion generates 4% of global waste each year, contributing 92 million tons per year. Most of the clothing produced by fast fashion is inorganic and synthetic. As a result, they cannot break down properly and these chemicals in tissues contaminate the water. This redundancy problem can be solved by adopting different marketing strategies that take into account both environmental and socioeconomic aspects. This is ethically relevant and product reuse in the new "sustainable fashion" sector can increase the value and price of local produce and even play an important role in increasing the life of a fashion or textile or yarn. According to Gwilt & Rissanen (2012), the style industry, nowadays, is based on the short and green manufacture of the latest seasonal fashion-pushed merchandise for a recognized client in an aggressive marketplace. The endured cycle of buying, the usage of and disposing of favour apparel is primarily based totally upon a machine of manufacturing that has critical outcomes for our society and the environment and the fashion for instant style has generated an exponential upward thrust with inside the sale of favour clothes which can be frequently worn too little, washed too frequently and speedy come to be discarded. Although there may be a growing frequent attention of environmentalism and moral issues, we realize that the sphere of sustainable style can seem complex. They have stated that the fashion designers and purchasers are frequently harassed with the aid of using the language of sustainability and expert assets every so often do now no longer make it clean how humans can hook up with strategies of high-quality practice, developing obstacles for engagement with sustainability.

Pintu Pandit et al., (2020) states that sustainable fashion practices are environmentally friendly and help reduce the environmental impact associated with manufacturing, use and disposal compared to other traditional practices and products. The sustainable fashion industry offers products that are likely to save energy, natural resources and non-renewable energy. They believe that the properties of ecomode are determined by the renewableness of the raw material, the ecological footprint of the resource, and the amount of chemicals required to process the fibre. Eco-fashion textiles meet environmental and quality standards

for material recyclability and biodegradability, reducing the amount of chemicals released into the ecosystem.



Figure 1

Waste Clothes at Landfills

Kim & Lee (2016) suggested that the fashion industry is starting to introduce the concept of sustainable design, but in a perspective that is more focused on its ecological nature rather than sustainability itself; it takes the relationship of natural resources and eco- friendliness into account rather than mainly focusing on environmental resource conservation. They state that sustainable design is to design for the environment and people; a general concept that takes sustainable relationships among the economy, society, ethics and ecology into consideration. As per Bly et al., (2015), in today's fashion system, dominated by business models predicated on continual consumption and globalized production systems that have major environmental and social impacts, the consumption of 'sustainable fashion' takes on an almost paradoxical quality.

According to Kustenkova (2017), the sustainable fashion is a recent movement in the fashion industry that aims to reduce textile waste and environmental degradation while increasing the ethical treatment of workers; The goal is to slow down global production and consumption to create a more sustainable industry in the long run. With the development of more socially and environmentally responsible production and marketing practices, the sustainable fashion movement still has a lot of room to grow beyond its current reach and with the support of an ever-evolving information network and brand transparency, consumers will be better equipped than ever to make more ethical and potentially changeable purchasing decisions, changing the face of today's fashion industry. Son (2012) adds that the concept "sustainable"

is muddled up into numerous terms in the process of actualizing designs. Examples of such terms are as follows: environmentally-friendly design, ecology design, green design, well-being design, eco design, slow design and ecological design. With the rise of environmental awareness during the 1990s and the 2000s, eco fashion designs that started in the 1970s are going beyond just using natural materials and motives from nature. Since then, eco design has developed into sustainable fashions that seek to reduce carbon emissions during production, distribution and disposal process and to pursue ethical fashion, such as fair trade.

According to Lundblad & Davies (2015), the concepts of fashion and sustainability can seem like two inherently contradictory concepts. However, the rise of ethical consumption and behaviour has become evident over the years. Values and motives are important factors in the decision-making process and can provide insight into why people do what they do. Brandão & Costa (2021) adds that the sustainable fashion teaches people how to love their clothes again. Sustainable fashion doesn't support child labour. Around 170 million children are engaged in some form of garment work according to recent statistics from UNICEF, which is defined as "work for which the child is either too young – work done below the required minimum age – or work which, because of its detrimental nature or conditions, is altogether considered unacceptable for children and is prohibited". They also believe that the brands that truly follow sustainable & ethical practises are transparent about it and provide details on the factory, working conditions and manufacturing process. To evaluate the ethical factor of a fashion brand, only need to look for garments with certification label such Fair Wear Foundation, Fair Trade Certified, Ethical Trading Initiative or Certified B Corporation. These organizations protect the rights of garment workers in the global supply chain and ensure that there is no child labour. In addition, they ensure that workers are fairly paid for their work, often above prevailing market rates, and work in safe conditions.

2.1.1 FASHION CONSUMPTION

According to McNeill & Moore (2015), due to the rapidly changing world population, consumption habits and fashion trends, the textile and fashion industry has become one of the industries with a high global environmental burden. It is very important to overcome the possible negative impacts of textile manufacturing on the environment and to contribute to the sustainable textile and fashion industry by ensuring responsible production of textile products. lucky. For this reason, the selection and use of sustainable, renewable and biodegradable textile materials for each product produced in the textile industry can be

considered as the first step towards sustainable production. Fashion consumers can be categorized into one of three groups: 'Self' consumers, concerned with hedonistic needs, 'Social' consumers, concerned with social image and 'Sacrifice' consumers who strive to reduce their impact on the world. These different groups view fast fashion in conflicting ways and subsequent implications for marketing sustainably produced fashion products to each group are, thus, significantly different.

As far as the consumption of fashion is concerned, Gwilt (2020) has stated that once a garment has been purchased, the proprietor becomes accountable for its care and maintenance. Called the 'use phase, this stage entails the garment going through many unique activities, along with wearing, washing, drying and storing, and extends to repairing, adaption and alteration. Each character develops an apparel care and protection events primarily based on private patterns of use, which can also be distinct from those used with the aid of different people. However, a wide variety of research have shown that most of the environmental effects associated with garbage are created in the course of the use phase, largely due to the laundering process, which makes use of water and chemical detergents. Although a massive quantity of textile waste in unique can be attributed to wasteful manufacturing methods, waste can also be attributed to negative consumer care routines; early disposal of functioning garments and a lack of repair and alteration abilities. Garments are frequently discarded too shortly earlier than possibilities for restore or alteration are considered. Moreover, there are many different reuse and recycling routes for undesirable garments, helping to minimize/divert the amount of material waste reaching the landfill or incineration. Therefore, Gwilt insists that it is vital that designers recognize how garments are used and why they are discarded so they can start to remanufacture or develop new clothes that will help convey about elevated patterns of use.

Rathinamoorthy (2019) states that around 1% of the clothing materials produced are only recycled completely towards sustainable production. Researcher also mentioned that, previous studies estimated that more than half of fast fashion items produced was disposed of in under a year. As the momentum towards the sustainable fashion increased in recent years, the consumer`s knowledge on product is the key for the technologies to sustain. The customers are aware of the environmental implication of apparel manufacturing. However, the customers do not have the moral attitude to engage in a sustainable and ethical purchase. Customer attitudes and lifestyles are the most important factors that influence knowledge.

However, when integrated with sustained advanced knowledge, external influences did not significantly improve customer purchasing behaviour as expected.

Ozdamar Ertekin & Atik (2014) believes that with the further exploration, it becomes clear that there are two main factors that make the vanguard of the modern fashion industry frenzied consumerism and an obsession with globalization having the latest trends and access to mass production fuelled the flames of fast fashion and poses a daunting challenge to the burgeoning sustainable fashion movement. Like the two, the suppliers and the consumers are increasingly dependent on speed and the continued low-cost fast fashion of development without worrying about the ethical and environmental problems it poses. However, recently the fashion industry has been criticized for "exploiting workers, vandalizing", ecosystems, contributing to the depletion of natural resources and an increase in textile waste". Kustenkova (2017), believes that sustainable fashion is a growing area of the apparel industry with potential exponentially as consumers become more aware of unethical treatment of workers and eco-consumable production activities of the fast fashion industry. By slowing down consumption and production, the fashion industry can be developed more sustainably to future. To achieve the desired outcome of the movement, consumers must face realize that the non-transparent fast fashion giants they actively subscribe to are not doing a positive social or environmental impact. In addition to more educated consumers, businesses must develop multi-faceted marketing methods that go beyond keywords like "green" or "eco" and attract customers to their quality, comfort and brand name. Sustainable fashion has the potential to change the way people consume and the way businesses produce, and with the right balance of the two, enormously positive social and environmental impacts follow.

2.1.2 IMPACT

Muthu & Gardetti (2016) argues that the sustainability issues influenced by way of a garment's material include the full gamut of impacts: local weather change; unfavourable effects on water and its cycles; chemical pollution; loss of biodiversity; overuse and misuse of non-renewable resources; waste production; negative effects on human health; and negative social effects on producer communities. All materials affect ecological and social structures in some way, but these affects range in scale and kind between fibres. The end result is a complex set of trade-offs between particular fabric traits and precise sustainability troubles that have to be negotiated for each fibre type.

2.1.3 SUSTAINABLE FASHION & TEXTILES

Moorhouse & Moorhouse (2017), believes that celebrity support has had a major impact on the spread of sustainable design within the community. Mainstream fashion industry. Not just quite a few celebrities use their names Promote your brand, but instead engage as a designer, advocate, and entrepreneur. actress Emma Watson is a UN woman, goodwill ambassador, ethical fashion activist, and frequent wearer. Sustainable fashion at the hottest red-carpet event. Green Carpet Challenge created by Libya Firth is itself an initiative that encourages celebrities to wear ecological fashion on the red carpet. Raise awareness of sustainability. Music artist, producer and entrepreneur Pharrell Williams Creative director and co-founder of Bionic Yarn, a particularly sustainable textile company in collaboration with G Star, we will design and release the Raw for the Oceans collection. Farrell Earlier we talked about using his influence to help fashion brands switch to sustainable textiles.



Figure 2

Terms Related to Sustainable Fashion

2.1.4 SUSTAINABLE FASHION IN INDIA

According to Saha, et al. (2019), the fashion industry, one of the largest polluters in the world, raises environmental concerns by leaving a harmful impression. Green fashion is a new way of talking about "conscience fashion" and refers to the increasing number of ethical fashion companies that are trying to appeal to young mainstream fashion consumers by offering trendy products. They believe that while some researchers clearly identify

responsible consumer efforts towards green fashion, others argue that fashion-oriented and environmentally conscious consumers are not. actively participate in supporting green fashion. In a country like India, which is extremely diverse in terms of social, economic and cultural factors, investigating sustainability in fashion seems like an interesting proposition to study. The majority of respondents in this study found awareness of issues surrounding fair and ethical business practices as well as minimizing supply chain logistics/best practices as key characteristics. of sustainable fashion. It is clear that consumers are increasingly concerned with what they buy and whether they should buy or not. Therefore, fashion companies need to think about going green in sourcing materials and other business methods. One outcome of this study suggests that with increasing age and educational attainment, respondents are likely to become more interested in issues related to sustainability in the fashion industry. This serves as a wake-up call for the industry. The fact that across all income groups, respondents seem to prefer buying sustainable products indicates an acceptance of sustainable fashion products.

2.1.5 ETHICS & SUSTAINABLE FASHION

In accordance with Niinimäki, (2015), the sustainable fashion is a tricky problem. There is no simple truth about how to do things better or right, only different approaches to improving the current situation. Values and ethics are also the foundation of sustainable fashion, allowing us to broaden our discussions, look at problem areas more holistically, and incorporate ethical aspects into our discussions. Ethics is the basis of decisions related to sustainable design and manufacturing, even when considering business models and profit opportunities. It is worthwhile to continually consider the value base and further consider the impact of our design and industrial manufacturing processes on the environment, human health and society. The values behind the product and the company are the foundation for building good designs: ethical, environmentally friendly, and easy to fall in love with. This is how sustainable fashion will be created in the future. Chang (2010) suggested that designs would progress toward those open to recycling, seeking to use a minimum number of materials, use innocuous materials, save energy resources, and could be used semi-permanently and produce a minimum amount of waste.

Kwan (2011) has suggested that fashion design should aim to minimize damage to the environment during the entire process from production to consumption and should move towards improving the functionality, economic feasibility and beauty of the product.

Sustainable fashion design, which applies recycling and reusing methods of the existing eco designs, has made it ever more possible to create and develop a variety of styles and products with the development of science and technology. For example, fashion brands that took sustainable fashion design into consideration not only use design in creating products, but also reuse and recycle the same design so that a whole new product is created after the use of the initially created product.

2.1.6 SUSTAINABLE FASHION BRANDS

Vivienne Westwood designed a gown using fabric made from recycled plastic bottles that was worn by Lily Cole for the Oscar Awards in 2016. With approximately 36 million viewers, the Oscars Red carpet is an excellent platform for sustainable designers to promote their designs as both ethical and stylish. The Made in Africa project created by Westwood in collaboration with the Ethical Fashion Initiative of the International Trade Centre, a joint agency established by the United Nations and the World Bank, has been a massive success. In five years of joint work, the project has employed 1500 craftsmen in Kenya, receiving wages higher than the local average in addition to gaining skills, which can later be passed on states Köhrer & Schaffrin (2016).

Moorhouse & Moorhouse (2017b) states that for the Met Gala in 2016 Emma Watson wore a dress designed by Calvin Klein made from recycled plastic bottles in collaboration with Livia Firth's Green Carpet Challenge. Watson said, "Being able to repurpose this waste and incorporate it into my gown for the Met Gala proves the power that creativity, technology and fashion can have by working together".



Figure 3

A Garment by a Sustainable Brand



Figure 4

Sustainable Garments by Stella McCartney



Figure 5

Sustainable Fashion Campaign by Stella McCartney

2.2 UPCYCLING

Upcycling refers to the practice of creating a product made from of products, components or materials which have reached the end of their lifespan, whose quality and/or value is higher than the original element. The process allows for increased longevity of the product, thus reducing the overall need for newly produced raw materials and products, as well as a reduction in overall resource and energy consumption. By utilizing upcycling on a larger scale, industries could greatly limit environmental harm through the reduction of emissions from production and shipping of new products and materials. Given these theoretical benefits,

upcycling has received more recognition as a sustainable alternative to traditional production in recent years, as stated by Lehtinen (2021). Han et al., (2016), states that upcycling is an existing strategy applicable to fashion production, with discarded materials used to design and create higher value products, keeping them in productive use for longer. Upcycling enables sustainable design options for reusable technologies for maximum economic and environmental benefit, creating redesigned fashion products using used clothing and textiles. “Upcycling used clothing could transform textile waste into raw materials for new fashion items. (Janigo et al., 2017)”.

Bocken et al., (2016) states that upcycling plays an important role in the transition from a linear to a circular economy. These transitions aim to slow down, close, and minimize resource loops by eliminating waste and resources are used as long as possible by repurposing them into the production process. A full circular economy will be characterized by no waste to landfill and minimal use raw materials.

According to Remy & Swartz (2016), in just 20 years, clothing production has almost doubled as the average consumer buys more clothing each year. This is mainly due to the fast fashion phenomenon, which increases the number of low-priced clothing collections. For annual consumers, the constant change in fashion often means that clothing is simply thrown away after a season. This allows consumers to buy clothes like candies, buy more clothes than they need, and treat cheap clothes as almost "disposable" items that can be thrown away after 7-8 wears. According to Sung et al. (2019), Entrepreneurs can use low-cost waste to create value-added products and sell them at high prices based on their aesthetic and environmental value. The previous authors suggested three long-term interventions to help increase recycling; incentives for companies to accelerate, incentives for initiatives to enhance, research and enrich programs. As per Cassidy & Han (2017), upcycling is a one-of-a-kind type of recycling technique making use of the substances and components of discarded goods to seriously change them via sensible plan and skilled craftsmanship into new high-value products. Upcycling can provide an alternative turning end of lifestyles clothes and fabric waste into elegant products with an excessive retail cost and assisting the enterprise to boost extra sustainable manufacturing methods.

In accordance with Caldera et al. (2020), the United Nations Sustainable Development Goals aim to `do more and better with less`, with numerous calls to action arising from the business sector concerning the substantial reduction of targeted types of commercial and industrial

waste and over the last two decades, the concept of `upcycling` has increased in popularity as a targeted intervention to reduce material and energy use in business processes. Upcycling is recognized as one of the most sustainable waste management options in the circular economy. They believe that `upcycling` has emerged as a targeted intervention to reduce material and energy use in business processes through reusing, repairing, repurposing and upgrading waste material in a creative way. It has been increasingly recognized as a promising means of transitioning towards a circular economy. However, making the most of it is still considered a proper practice and many companies are still uncertain about how to make the most use to better manage waste and promote sustainable production and consumption.



Figure 6

Example of an Upcycled Garment made from materials of tents left behind

According to the authors Jennifer & Hill (2015), the repurposed apparel tells an even more complex tale than that of second-hand garments. Until recently, garments that have been appreciably altered from their authentic structure have been regularly neglected in museum collections, as it was believed that their modifications rendered them inauthentic. Today, however, analyses of such objects by means of pupils like Alexandra Palmer, 5 trend curator at The Royal Ontario Museum, Toronto, as properly as the include of repurposing techniques by means of high-end trend labels such as Maison Martin Margiela, have imbued altered objects with newfound significance. Such garb is now used to provide perception on the high cost positioned on textiles in the past, as nicely as to how that price has diminished over time. Examining remade garments also highlights a resourcefulness and ability that is all however misplaced in the present-day fashion industry. They believe that in many ways, these garments have acted as early fashions of sustainability.

Han et al., (2016) believes that upcycling in the fashion industry is highly dependent on the availability of fabric waste Material. Research on the difference between standard fashion design and production processes and upgrades have found that while standard design processes have flexibility for fabric source after product design, recycling process required Fabric sourcing must be done before any conception due to the occasional amount of fabric scraps available. Even if awareness of the environmental impact of fashion is low among the general public, the question of sustainability is increasingly at the centre of public attention and consumers are increasingly demanding products with a low environmental and social impact. In fact, the pressure from consumers and especially of non-governmental organizations (NGOs) and the media has acted and continues to act as a stimulus for the adoption of sustainable behaviour in the fashion sector.

In accordance with Singh et al., (2019), a lack of consumer awareness and knowledge leads to negative market demand for upcycled products. This could also lead to a negative perception of used materials, final product quality and price in upcycled products from the general public. A lack of quality protocols and standards for upcycling is another barrier faced by the upcycling industries. Thus, for some consumers, upcycled products have close associations with poor quality, reduced durability and low cost-effectiveness.

2.2.1 CIRCULAR ECONOMY

Circularity relates to the intention to minimize waste and keep textile products within a cycle of use throughout the process of design, manufacture and consumption until they are returned safely to the biosphere once they have no further use (Brismar, 2017; Niinimäki, 2017). Mishra et al. (2020) says that unsustainable consumption and wasteful practices of fashion have recently attracted attention from practitioners and scholars. However, research in this area is limited. The main drivers of the closed-loop mode value chain are collaboration with partners, innovation, waste management systems, customer retention, and changing usage patterns. They believe that redefining existing value propositions and transforming various elements of the business model are essential to integrating CE principles: reduction, repair, reuse and recycling into the current business model.

As per the stand of Kirsi Niinimaki (2019), while the linear model results in an oversaturated and oversized fashion system with big environmental impact, it is imperative that we develop better use of resources and change the system. It is being stated that we have to create a better balance and use all resources more wisely. Closing the loop and building a new

understanding of how fashion can be redesigned in the context of a circular economy and can be more sustainable was one of their goals. A circular economy approach in fashion aims to develop a more sustainable and closed-loop system where the goal is to extend the use time of garments and maintain the value of the products and materials as long as possible. This means that all materials will be recycled in several rounds. Products are designed to be included in a system where all aspects support circularity. The original design needs to take account of several lifecycles. Materials need to flow within the system and waste needs to be collected and appreciated as a valuable material for recycling and material recovering. All products need to be collected back after their useful time is over.



Figure 7

Circular Fashion

As Jacometti (2019) points out moving towards a circular economy means taking a system perspective on fashion, where all actors are included: designers, producers, manufacturers, suppliers, business people and even consumers.

2.2.2 POST- CONSUMER WASTE

Lacy and Rutqvist (2015) divides waste into four different categories. The first is wasted resources, where all materials and also energy are entirely lost if the product cannot be continually regenerated. The second is wasted lifecycles, where products have artificially

short lifecycles, and might even be disposed while they are still functional; a phenomenon called early disposal. The third category is wasted capacity, where the full potential of the product is not used, seldom use for example. The fourth category is the wasted embedded values, where all resources and materials from the disposed product are not recovered and put back into use. There exists a lot of both pre- and post-consumer textile waste, as explained earlier in this chapter. It has been found out that up to 25–30% of textile material is lost from the supply chain during fabric and garment production. This pre-consumer waste is mainly from cutting and mill waste and does not include the larger leftover materials (deadstock) from when the production season is changing.

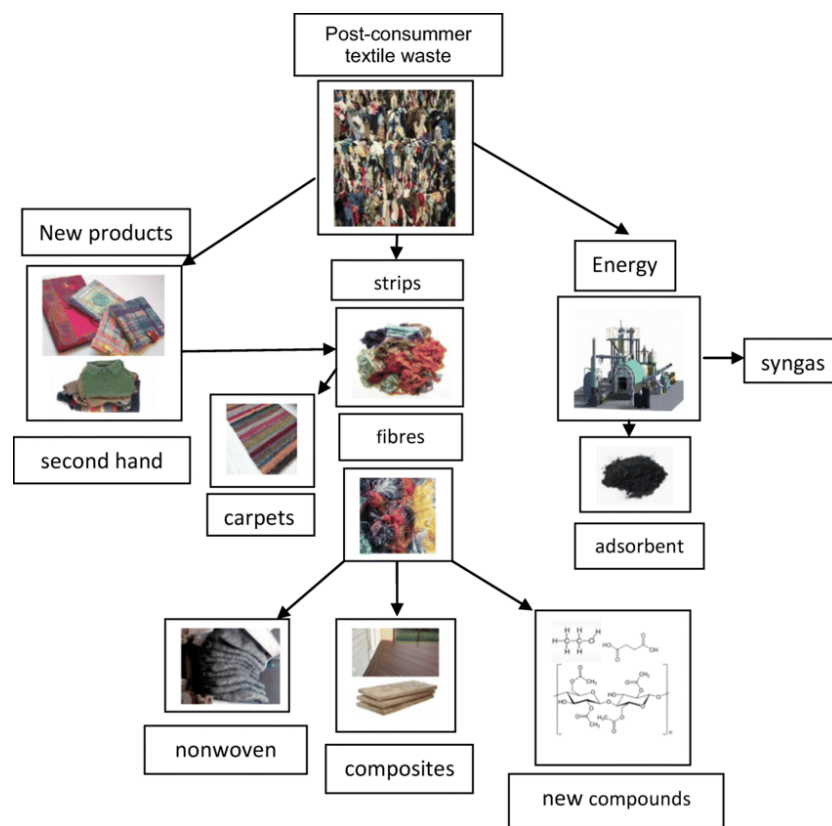


Figure 8

Post- consumer Waste

Cutting is the major stage among the various processes of garment production where most of the fabric waste/leftovers is generated. The amount of fabric loss in the cutting process depends on many aspects. During the cutting process two main types of fabric losses occur—marking loss and spreading loss as stated by Nayak et al., (2008). Aus et al., (2021) believes that the fabric leftovers generated during the sewing stage are usually related to sewing damages and defects in the fabric. While some of the defects can be corrected, oil stains from

sewing machines, uneven panels or other permanent defects result in rejecting the whole garment. That means the majority of the textile waste involves partial or complete garments that have been separated during quality control. The frequency and therefore the total amount is directly in correlation with the quality of the sewing process of the manufacturer depending on the suitability of the fabric and other materials, the competence of the sewers and the quality of the machinery.

Textile waste is one by-product of garment manufacturing, and usually it is deemed unusable for its original purpose. Fabric waste and leftovers are generated at various stages of the garment production process and their volumes and causes can differ significantly. One of the main obstacles to the use (and upcycling) of leftover material in the fashion and textile industry is the lack of data about the textile waste generated in the garment manufacturing. The volume of textile leftovers is systematically underreported and thus underestimated by the industry as pointed out by Runnel et al. (2017).

As per Saeidi & Wimberley (2017), the leftover generation and fabric loss from garment production (mainly from the cutting and sewing process) is relatively well known and the manufacturers are making considerable efforts to optimise their processes and avoid or minimise waste.

Runnel et al. (2017) strongly states that only a very little research has been done to analyse and estimate the amount of fabric waste that is related to other problems with fabric quality as well as manufacturing and resource planning.

2.3 TRANSFORMABLE FASHION

As Rahman & Gong (2016) points out many consumers are happy with the fast fashion style, wide range and affordability. However, other consumers and environmentalists have begun to question this fast fashion system, including the issue of overconsumption and disposable clothing. As a result, many fashion professionals and scientists have developed different strategies and methods to minimize fabric waste and extend product life through innovative designs. Transformable-designed apparel products provide an alternative option to consumers wishing to change to different styles without purchasing new products.

As stated by Lang & Wei (2019), convertible garments offer more than one functional and / or alternative aesthetic style through a variety of operating methods. It is recognized in the fashion industry as a sustainable alternative to reducing excess clothing consumption. Koo et al. (2013) believes that the novelty and the need for novelty has led consumers to frequently buy new clothing and dispose of a variety of unused clothing. Only about 38% of young consumer wardrobes are worn regularly.

According to Koo & Ma (2015), transformable garment is a dress that can change its style, such as in length or silhouette, can be worn in different ways and in various contexts. Transformable garments have great potential to prevent and minimize waste in a product's lifecycle by encouraging consumers' natural engagement in sustainable fashion acts. As per Na et al. (2011), a new concept that was introduced in the fashion system to respond to climate change is "multi-function"; it refers to a product that is changeable according to various purposes, uses and taste.

As Sharda and VK Kumar (2012) puts it, the layout of a product may be carried out maintaining environmental issues into consideration. A thorough studies approximately long-time style traits is vital in designing the prolonged existence cycle of the product. A fashion dressmaker can include easy and handy strategies to convert a product for the pleasant utilization ensuing in discount of environmental risks in an extensive way. They believe that in today's situation with worldwide attention on sustainability, extending a stylish product's existence past the known horizon will simply have an effective impact. Including the element of sustainability in coaching itself offers college students a much broader attitude to assume layout in an extra holistic way and to end up touchy and realistic toward surroundings at the same time as designing. Kirsi Niinimäki (2013) believes that the fashion discipline is far behind, for example: industrial design in producing scientific environmental knowledge of designer's use, trying new design methods to solve problems in more creative ways, or engaging consumers in sustainable transformation processes. By definition design for environment include environmental consideration and specially life cycle thinking. The sustainable design approach adds to the aforementioned the ethical and social dimensions of the product, in its manufacturing, use and disposal phases.

In accordance with Irovan et al. (2016) convertible wear represents the current group in the range of modern garments and offers a wide range of possibilities for acquiring multifunctional forms. Convertible products include garment ensembles designed using a

variety of both traditional and non-traditional techniques and methods. They stated that the morphological transformation techniques are based on the principles of reconstruction and transformation, facilitating the conversion of one product form to another and the conversion of elements within the same form.

As Hazel (2013) puts it, in the existing types of transformable fashion design, garments can be worn in multiple ways, garment components can be taken apart and reassembled into any other possible forms, or even able to shift or conflate garments into functional objects. There has no restriction on fabric selection of a transformable garment, but fastenings such as zippers, snaps, buttons, strings, etc will be widely used among all types of transformable clothing. Transformable design can be categorized into five types: modular design; reversible design; folding and tying design; multi-functional design; and high technology design. Gong & Rahman (2015) states that in the transformable design - individual clothing components are connected together by fasteners such as zippers, hook and eyes, Velcro tape, and/or buttons. Each component can be removed and re-configured to create a different clothing style at the whim of the consumer. For example, if the basic shape is a long 2 robes, the garment can be transformed into a long dress by removing the sleeves, or it can be transformed into a short skirt, a vest, and other styles by attaching/detaching different parts of the garment. Pockets and decorations can also be added to, (or removed from) the garment and different fabrics, patterns and/or colours can be used to replace individual, original pieces. They added that the sustainable benefits of the transformable design concept are evident in the fact that an original garment can be transformed into a wide array of styles to serve different purposes as well as to prolong the lifespan of a product.

Gong (2021) states that the traditional and transformable garments share the same first three stages of garment lifecycle (raw materials, industrial production and transportation). In contrast, the transformable garment lifecycle shows a clear difference in its last two stages. However, the fourth stage (consumer use) is different than the traditional model, as the transformable garment design allows the re-circulation of use and prolong the lifespan of a garment by replacing the garment parts. As a result, the number of disposable materials can be reduced in the fifth stage. According to Rahman & Gong (2016), the major benefits of convertible garments are a) increased potential and versatility of consumer use, b) variety of styles, c) reduced waste, d) endurance of garment life, and e) potentially increased consumer satisfaction. is. They strongly believe that the convertible wear can also promote consumer involvement in sustainability practices. Instead of educating consumers about sustainability

through the media and publications, convertible wear acts as an active agent for the transition to ecosystems by involving consumers by directly participating in fashion production.

Traditionally, the concept of functional clothing design addresses the ability of clothing to perform multiple functions-from aesthetic to basic protection. According to Gupta (2011), 'Functional clothing' can be defined as a generic term that includes all such types of clothing or assemblies that are specifically engineered to deliver a pre-defined performance or functionality to the user, over and above its normal functions. It can also be clothing that performs a purely aesthetic function like enhancing body shapes.

Son (2012) added that the items are called "transformer items" as their forms are changeable according to weather changes. The adjustable sleeves of a jacket or blouse, detachable vest and lining of a jumper, and detachable hood of a jacket, are examples of multi-function items. New terms such as "two-way", "changeable", "transformable", and "diversification" have been introduced in the fashion system with the rise of environmental issues; the concept "multi-function" is implied within all such terms.

In accordance with Gong & Rahman (2015), to promote transformable design, mass customization is the most appropriate marketing strategy. Because each component of the garment can be produced in different fabrics (such as leather, cotton, linen, jersey, etc.) and in different colour and patterns, the item can be sold in individual pieces instead of a whole package. This allows consumers to buy a basic garment shape, choose and purchase different component pieces they like, and create their own style to meet their specific needs. Furthermore, they have added that if some parts of the garment are ripped or destroyed during consumption, the same garment parts can be replaced and the consumers do not need to dispose the entire garment. Smith (2001) believes that mass customization is an emerging, alternative production and business strategy that combines advantages from both customization and mass production. This approach can also better support sustainable fashion practices in the industry. It has been identified that mass customization is a new way of viewing business competition, one that makes the identification and fulfilment of the wants and needs of individual customer paramount without sacrificing efficiency, effectiveness, and low cost.

Zipper was invented for facilitating the opening and closing of articles and initially used at the opening of garments. Presently it is feasible to abandon conventional structuring method of garments, use the characteristics of zipper to restructure outdoor clothing and form unusual

clothing design. Based on opening, closing and separating functions of zippers, multiple functional clothing designs can be realized, enabling raw materials for one product to satisfy the function of raw materials for two or more products, says Wang et al. (2013). Hazel (2012) states that there are already some designers who have made exploration and trials on multi-functional transformable designs, such as an Italian design label Mandarina Duck designed the 'Jackpack' which is able to transform into a jacket. Furthermore, Japanese designer Masaaki Sato's 'Henshin' collection (tank-to-tote, sailor shirt-to-shoulder bag, and raincoat-to-garment bag, etc.) which stands as examples of transformable designs.

**RESEARCH
METHODOLOGY**

3. RESEARCH METHODOLOGY

This section explains about the research procedures adopted for the research study “Development of Home Décor from Post- Consumer Waste by Implementing Upcycling and Transformable Methods”. The methodology taken up to achieve the objectives of the research study is briefed under the following three heads.

The research methodology chapter has been organized into 3 stages.

- The first part explains about the survey carried out through questionnaire and interview where I identified a target group to understand the level of awareness about the sustainable fashion and related topics in people’s mind.
- The second part explains the analysis of the survey result.
- The third part explains about the ideation process- the development of products, where I redesigned the unused fabrics and garments into useful home decors by upcycling and implementing transformational methods in a few products and the training provided where I identified 5 women to provide training by demonstrating the product development method.

3.1 SURVEY

To elicit the information on the research study, the primary data was collected through the following methods- Questionnaire method, Interview method.

3.1.1 QUESTIONNAIRE

In the research study, a survey was conducted among 60 number of women, selected through simple random sampling, via E-questionnaire. The prepared questionnaire intended to collect information on personal details, socio- economic status, the attitude people towards the concept of sustainable fashion, duration between purchasing of clothes, the methods of disposal, interest on the topic.

A total of 60 respondents were participated in the survey. The format of the questionnaire included basic information and key questions. E-questionnaire was developed and for collecting the information, it was circulated through WhatsApp.

The questionnaire survey was conducted according to the following heads.

3.1.1.1 Selection of area

3.1.1.2 Selection of samples

3.1.1.1 Selection of Area

Kerala was selected as the area for the study to get responses from both rural and urban areas. The prevalence of sustainable fashion is more important in the urban areas, compared to that of rural areas, where people are exposed to variety and assortments of garments. Ernakulam is an example of the same.

3.1.1.2 Selection of Samples

A total of 60 women responded for the survey with the age group spanning from 18- 60 years. The survey was open to women only. The women who responded belong to the three designations, namely- students, working women and home- makers. The subjects were selected by simple random sampling. The information was collected through the questionnaire method.

3.1.2 INTERVIEW

In the research study, a survey in the form of interview was also conducted. The participants were subjected to an unstructured and indirect oral interview method. Some of the developed products were exhibited at the expo with an aim to create awareness among the people on sustainable fashion, its importance and to understand their knowledge on the same by in. The information received was noted. The participants in these interviews were asked to state their personal opinion about sustainability in the fashion industry.

The interview was conducted according to the following heads

3.1.2.1 Selection of area

3.1.2.2 Selection of samples

3.1.2.1 Selection of Area

The interview was taken at the expo- Jaiva Karshikolthsavam 2022 (Organic Fest 2022) conducted at the Townhall, Ernakulam from 10th to 12th April 2022.



Figure 9

Townhall, Ernakulam

3.1.2.2 Selection of Samples

The interview was open for all genders who came by. Equal consideration was given for both the genders and questions were asked accordingly but the responses from the women were given more priority as the target group for the research study was women.



Plate 1

Women participants at the interview

3.2 ANALYSIS OF DATA

Questionnaire was made with the help of Google Forms, distributed through social media, WhatsApp and. The necessary data was collected through questionnaire and interview methods. The data was checked for coding prior to the analysis. The collected data was analysed using the percentile test with the help of Google sheets.

3.3 PRODUCT DEVELOPMENT

The development of prototype was carried out through the following heads:

- 3.3.1 Collection of Raw Materials
- 3.3.2 Material Preparation
- 3.3.3 Designing/ Redesigning the Product
- 3.3.4 Development of the Product
- 3.3.5 Training

3.3.1 COLLECTION OF RAW MATERIALS

3.3.1.1 Collection of Fabric

The materials were brought by the members itself who came for the training. The trainees were asked to bring any used-up garments or left- over fabrics they had in their possession, according to their wish. The collected raw materials consisted of garments which were torn-out, ravelled, with the prints which are about to fade away; kameez, shawls, bedsheets, saree; left- over cut pieces from stitched garments which were kept aside after the use, etc. were on the list of collected materials.



Plate 2

Collection of Fabric

3.3.1.2 Collection of Trims

Threads used for sewing were polyester threads. Fasteners used were zippers, sewing threads, decorating accessories- mirrors, jute lace. Other accessories include embroidery hoops.

3.3.2 MATERIAL PREPARATION

3.3.2.1 Sorting of The Collected Materials

The materials collected, as mentioned above, belonged to different categories. Some of them were stitched (Salwar, Kameez, Saree blouse, Kurtis, Maxis, etc.) which had to go through the deconstruction procedure and some of them were unstitched garments (Saree, Shawl, Bedsheets, etc.) which didn't require deconstruction. Hence, the collected materials were sorted accordingly. The clothes received were all pre-washed.

3.3.2.2 Deconstruction of Stitched Garments

As mentioned earlier, the collected materials consisted of some stitched garments which were kept as unwearable. Hence, for the study, the stitched garments were subjected to

deconstruction. The stitches were removed with the help seam ripper, for the next step.



Plate 3

Deconstruction Process



Plate 4

Cutting the Fabric

3.3.3 DESIGNING/ REDESIGNING OF THE PRODUCT

Designing was done for the materials collected from the unstitched category and the redesigning was done for the materials collected from the deconstructed garments which were in the stitched category. The designing of each product was carried out according to the availability of the fabric, combination of prints and patterns and most importantly what product could be made with the provided clothes. The products were designed with the thought of making it as simple as it can be so that it would be easy and less tiresome to make these sustainable products, especially for the women who are busy with their works at office or at home.

3.3.4 DEVELOPMENT OF THE PRODUCT

The products developed and its procedures adopted are discussed below:

3.3.4.1 Sample 1: (Bed Lamp Cum Holder)

For the construction of the product, three embroidery hoops, jute lace and the fabric were used. The fabric used was the border of a used-up silk saree. The border was cut carefully using the scissors and folded and stitched to make strips out of it. These strips were attached

to the embroidery hoop at both the ends using hand stitching, and then sewing the sides of one strip to another. The hoop was already prepared beforehand wherein the three hoops were kept in an overlapped triangular shape; attached to one another by tying at the joints with the help of a thread and covering it with the jute lace. Hemming, the basic running stitches, was the method adopted for this prototype development.



Plate 5

Used-up Garment- Saree



Plate 6

Materials used for Bed- lamp Cum Holder



Plate 7

Making of the Strips



Plate 8

Attaching Strips to the Hoop

3.3.4.2 Sample 2: (Hoop Wall Décor)

For the construction of the product, embroidery hoops and the remaining strips from making of the above-mentioned bed-lamp. The strips were stitched along the sides of the hoop and kept intact at the back using the basic hemming. The strips were added only till the middle portion of the hoop as per the design.



Plate 9

Materials Used for Hoop Wall Décor



Plate 10

Stitching of the Strips

3.3.4.3 Sample 3: (Cushions)

For the construction of the product, it was decided to take the ‘pallu’ portion of the same saree mentioned above. It was paired along with a second fabric. Hence, two types of fabric were used for this product. Both the fabrics were cut accordingly and stitched. As far as the inner stuffing is concerned, only waste materials were solely used and the cover given was made of muslin- left- over cut pieces of the muslin taken from the fashion department.



Plate 11

Material for the Cushion Stuffing



Plate 12

Used- up Garment- Saree



Plate 13

Left- over Cut- piece used in Cushion Development

3.3.4.4 Sample 4: (Magazine Holder Cum Table Runner)

For the construction of the product, two types of fabric were used- a black & white printed material and a black material. The former one was subjected to deconstruction before the development process and the later was taken from the left- over cut pieces recieved.

The printed cloth was cut according to the design, chosen as the cloth for the base of the magazine holder. The fabrics were cut after leaving space for the seam allowance. The black material was chosen for the holding fold. A small loop was given at the top of the base as for

the purpose of hanging. After the stitching process, mirrors were stuck on to the fold for the purpose of aesthetics. After stitching one side, an identical base portion is stitched and attached to the current base. This would make the product transformable. The two folds are attached only on one side of the base so that it can serve two purposes.



Plate 14

Materials used for Magazine Holder cum Table Runner

3.3.4.5 Sample 5: (Wall Hanging)

For the construction of the product, a yellow printed fabric, jute lace and an embroidery hoop were used. The fabric had undergone the deconstruction process as the fabric was taken from a used- up Asymmetric kurti. It was cut into long strips and using the ruffle presser foot, it was made into ruffle strips. This method only demands the trainee to stitch along the middle part, along the straight line; and attaching it to the hoop using hand stitching (knotting); product doesn't require any other complicated stitches. The ruffle strips were then finished by burning the edges. The hangings were attached to the hoop's four side using the jute lace.



Plate 15

Fabric Used for Wall Hanging



Plate 16

Ruffled strips and hoop for Sample 5



Plate 17

Finishing the Edges



Plate 18

**Making Ruffles Out of
the Strips**



Plate 19

**Attaching ruffles to the
Hoop**

3.3.4.6 Sample 6: (Drum Pendant Lamp)

For the construction of the product, two different used-up clothes were taken, hakoba cloth and brocade fabric along with jute lace. The former one is a cut- piece left behind after the stitching of a kameez. The later was taken from the used-up curtain. Both of the fabrics were taken and cut according to the pattern. The fabrics were cut into equal pieces and stitched by keeping one fabric besides the other. After stitching, one side of the fabric was attached to the embroidery hoop to form the shape of a pendant lamp. The hangings were attached using the jute lace.



Plate 20

Used- up Material Used for Drum Pendant Lamp

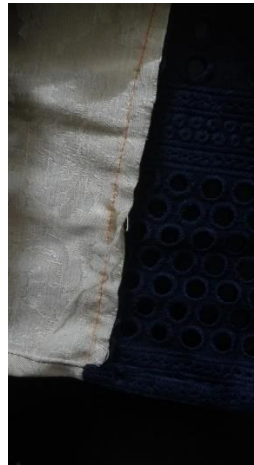


Plate 21

Attaching Hakoba to Brocade

3.3.5 TRAINING

Training was provided to women belonging to urban and rural area. As for the urban demographic profile, 1 home- maker and 5 non-teaching staffs from the college were selected. Training was carried forward by demonstrating the development of the products using basic sewing skills aided by sewing machine, hand needle and thread. After the training, feedbacks were acquired from each one of them.

RESULTS

&

DISCUSSION

4. RESULTS & DISCUSSION

The data collected regarding the study entitled “Development of Home Décor from Post-Consumer Waste by Implementing Upcycling and Transformable Methods”, is discussed under the following heading:

4.1 SURVEY BY QUESTIONNAIRE

As per the first objective, which was to conduct a study on the necessity or exigency of sustainable fashion and its methods upcycling and transformable methods, the results recorded are noted below.

4.1.1 Assessment of Demographic Profile of the selected subjects:

4.1.1.1 Designation

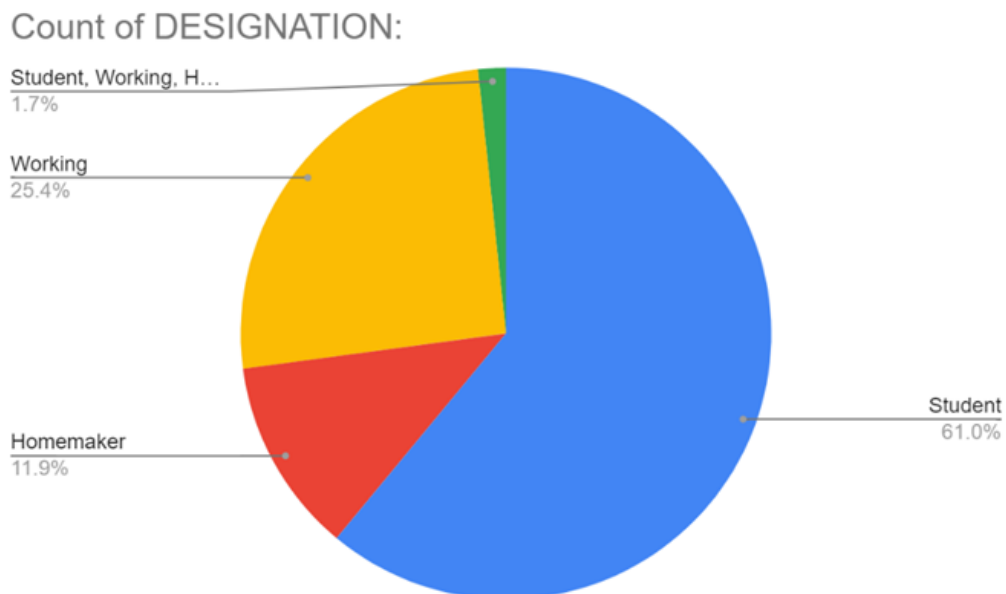


Figure 10

Pie chart depicting the designation of participants

Out of 60 participants, 61 % of the participants were students, 25.4% were working women, 11.9% were home- makers and 1.7% were both students and working women.

4.1.1.2 Age

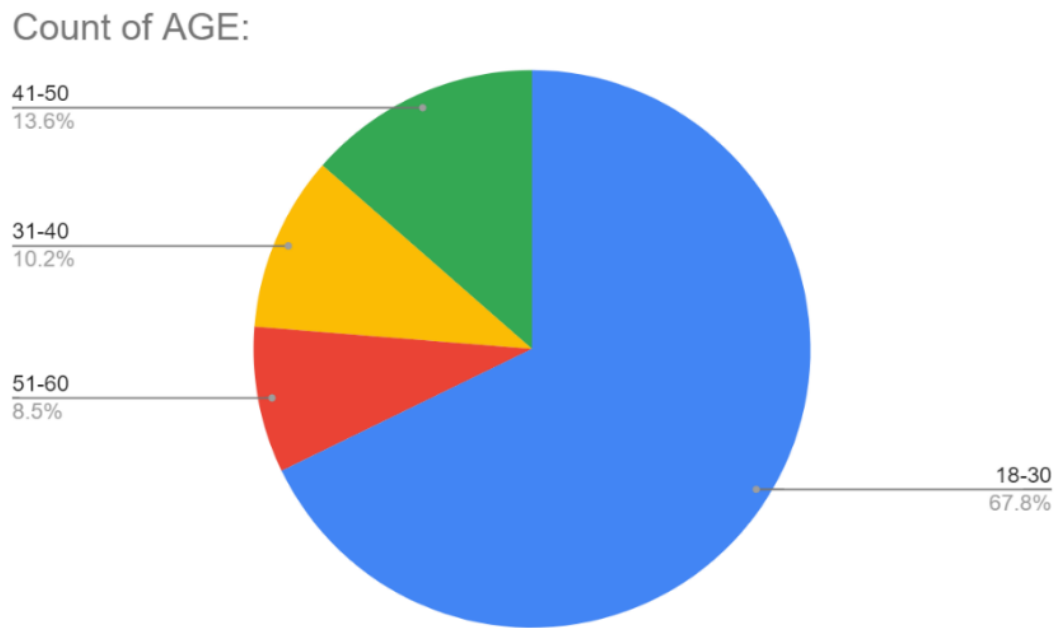


Figure 11

Pie chart depicting the age

Out of 60 participants, 67.8% of the participants were in between the age group 18- 30 years, 13.6% were in between the age group 41-50 years, 10.2% were in between 31-40 years and 8.5% were in between the age group 51-60 years.

4.1.1.3 Gender

Out of 60 participants, 100% of the participants were women as women were kept as the target group for the study.

4.1.1.4 Place

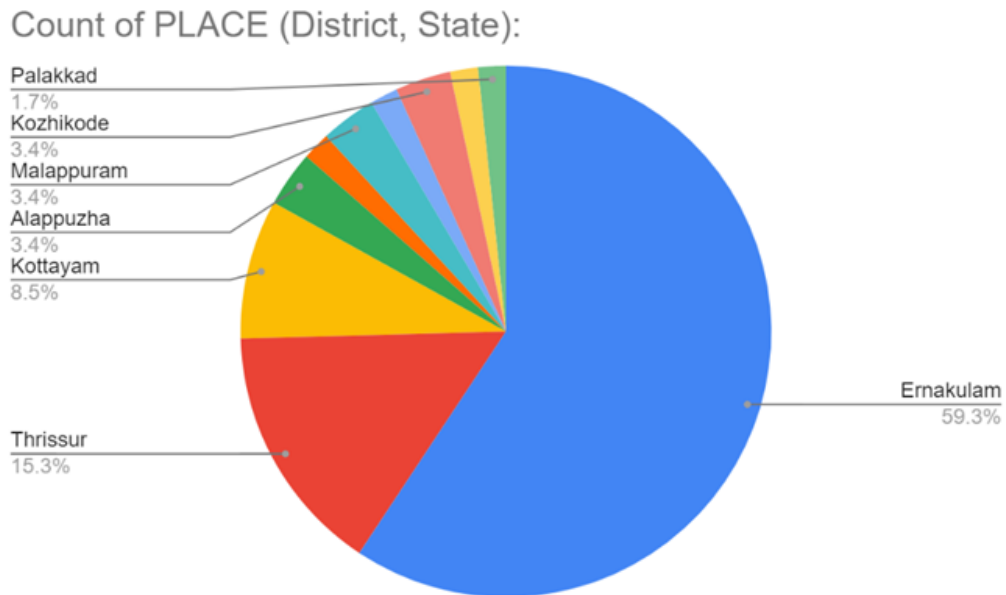


Figure 12

Pie chart depicting the place

Out of 60 participants, 59.3 % of the participants were from Ernakulam, 15.3 % of the participants were from Thrissur, 8.5 % of the participants were from Kottayam, 3.4 % of the participants were from Alappuzha, Malappuram and Kozhikode each and 1.7% were from Palakkad.

4.1.2 Assessment of Prevalence of Study

4.1.2.1 Duration of the Purchase

Count of How often do you purchase clothes?

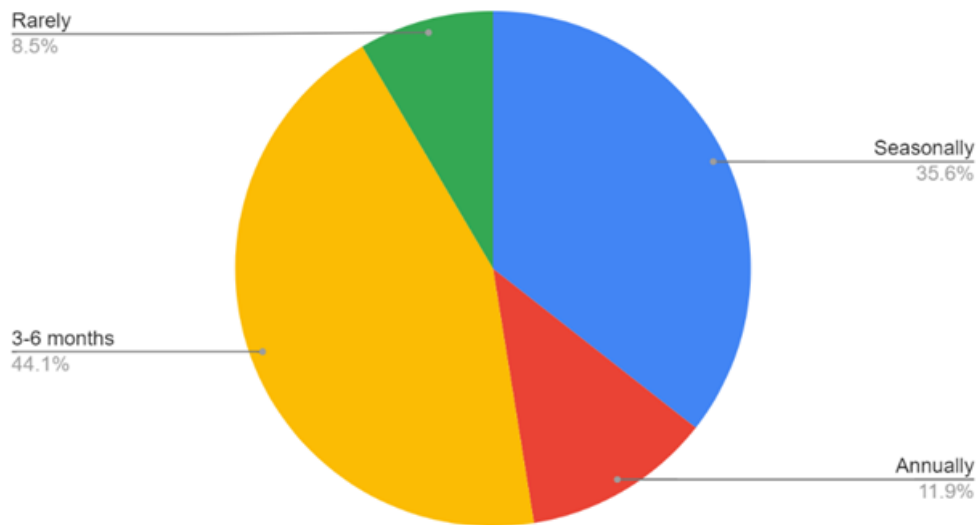


Figure 13

Pie chart depicting the duration of purchase

Out of 60 participants, 44.1% of the participants purchased the clothes within the duration of 3-6 months, 35.6% bought clothes seasonally, 11.9% purchased annually and 8.5% bought rarely.

4.1.2.2 Awareness on the Subject

Count of Have you heard about upcycling of clothes before?

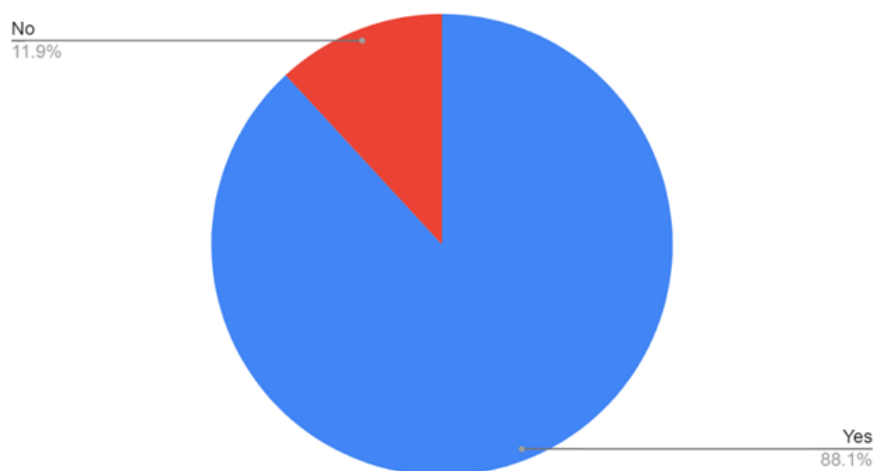


Figure 14

Pie chart depicting the awareness on the subject

Out of 60 participants, 88.1% of the participants are aware of the subject, the term upcycling and 11.9% were unaware of the same.

4.1.2.3 Methods of Disposal

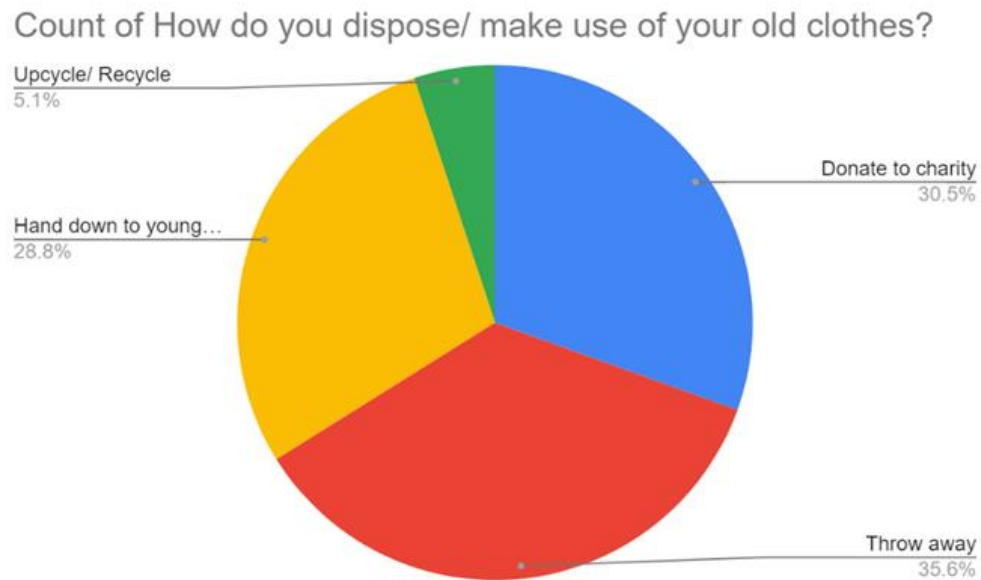


Figure 15

Pie chart depicting the methods of disposal

Out of 60 participants, 35.6% of the participants dispose their clothes by throwing away, 30.5% donate to charity, 28.8% hand down to their younger family members and 5.1% upcycle/recycle their clothes.

4.1.2.4 Interest in gaining the knowledge through social media

Count of Are you interested in watching videos on Upcycling/ transformable methods?

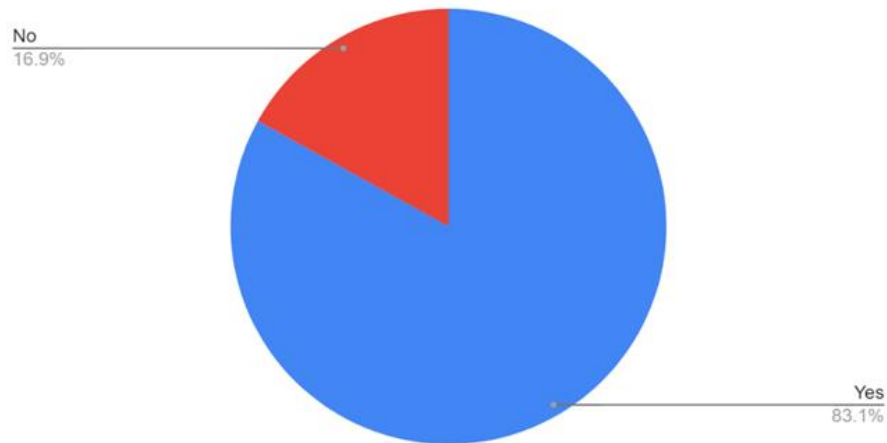


Figure 16

Pie chart depicting the interest in gaining the knowledge through social media

Out of 60 participants, 83.1% of the participants are interested in watching the videos relating the subject and 16.9% were found to be uninterested.

4.1.2.5 Trail of Sustainable Methods in Old Clothes

Count of Have you tried applying any upcycling/ transformable methods on your old clothes?

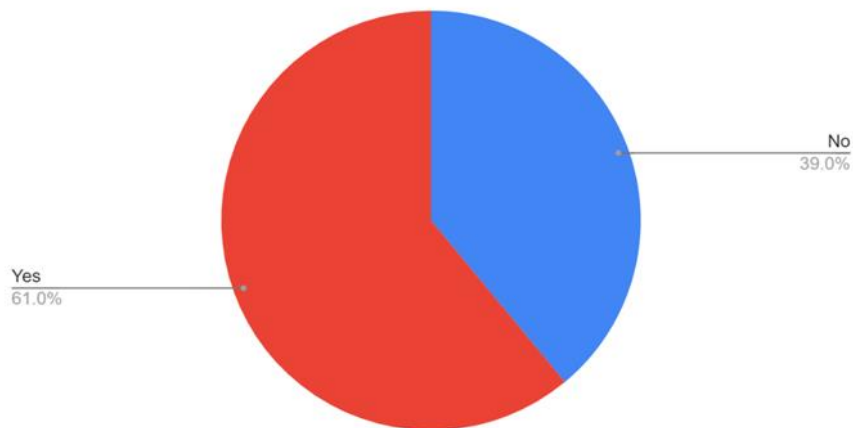


Figure 17

Pie chart depicting the trial of sustainable methods in old clothes

Out of 60 participants, 61% of the participants have already tried applying the sustainable methods in their old clothes and 39% have not tried.

4.1.2.6 The Interest of Participants in Learning the Methods

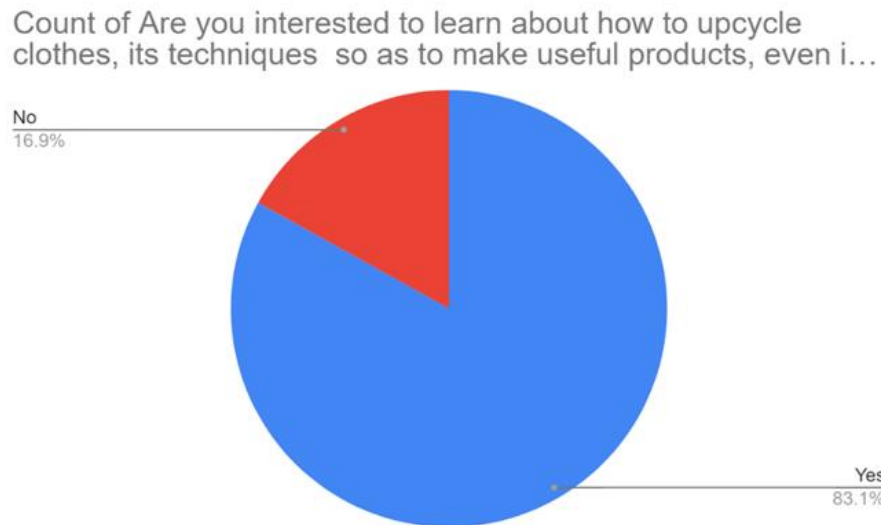


Figure 18

Pie chart depicting the interest of participants in learning the methods

Out of 60 participants, 83.1% of the participants were interested to learn about the sustainable methods and 16.9% were found to be uninterested.

4.1 SURVEY BY INTERVIEW

As per the objective of the study, which was to gain a deeper understanding on the level of awareness people have about the sustainable fashion and its methods, the results recorded are noted below.

The responses received during the interview were quite similar to that of the questionnaire survey. Majority of the people responded that they dispose their clothes by throwing away and donating to charity came at the second place. Out of the 50 people, approximately, who I got to interview, 3 people noted that they hand it down to their family members. Since the survey was conducted at an urban place, Ernakulam, the people were mostly from the localities and hence they noted that being working or busy with the life, they had no extra time to follow sustainable methods or apply the same to their old clothes.



Plate 22

Stall Provided at The Expo

Another information received was most of the participants who came by were not the natives of Ernakulam. Some of them came here for the job and hence staying here temporarily, others were non- natives but settled in Ernakulam due to their jobs. Participants staying here temporarily were residing in flats/ apartments and hence stated that they had no space nor time for practising the sustainable fashion and methods. Also, the clothes they purchase are typically user- friendly type; easy- to- wash, wrinkle- free, etc. Hence, due to the above- mentioned situations, they prefer to throw their clothes away to the landfills. Being a non- native and having living far away from the family members, they are deprived of the opportunity to hand down their used- up clothes to their younger family members.



Plate 23

Products Exhibited at The Survey

-Cushion



Plate 24

Products Exhibited at The Survey

-Magazine Holder cum Table Runner

It was recorded that most of them, especially the working participants, buy clothes seasonally as the workspace or the situations demand. Through what I observed at the expo, the consumer acceptance of sustainable fashion could depend on their education level, financial capabilities and living styles. Through the conversation I had with the participants, it was noted that the educated consumers were more likely to consider the long-term benefits of their purchases and would buy sustainable products as mostly being financially well, whereas consumers with a lower education only tend to consider the short-term benefits without much concern for sustainability and its practices as its products are quite expensive comparatively. This proves that the pollution caused by the fashion industry to the mother nature, especially in the urban areas (Ernakulam) is higher than the rural areas and need to be addressed.

4.2 IDEATION

From the results received from the survey, it was understood that the pollution caused by the fashion industry is comparatively higher in the urban areas than the rural areas. Hence, as a solution for the same, it was decided to develop few products from post- consumer waste applying the sustainable methods- upcycling and transformable methods. The product development was demonstrated to the trainees during the training provided for the selected non- teaching staffs. The products were made following the steps which are simple and easy to grasp so that it would be easy for the trainees as well as for other persons who wish to do the same.

4.3 PROTOTYPE DEVELOPMENT

As per the objective of the study, which was to design and develop Home Décors, as a solution, from post- consumer waste by implementing upcycling and transformable methods and to provide training to create awareness on the same, the results are noted below. 6 products were developed from post- consumer waste by applying the sustainable methods- upcycling and transformable methods.

4.4.1 Sample 1: (Bed Lamp Cum Holder)

A bed-lamp cum holder was made with three embroidery hoops and the upcycled silk fabric.



Plate 25

Bed- Lamp cum Holder- Side View



Plate 26

Bed- Lamp cum Holder- Top View

4.4.2 Sample 2: (Hoop Wall Décor)

Wall decors were made using the embroidery hoop and the upcycled silk fabric. A total of two hoop decors of them were made.



Plate 27

Hoop wall Decor

4.4.3 Sample 3: (Cushions)

Two cushions were made from the two post- consumer waste fabrics taken.



Plate 28

Cushions

4.4.4 Sample 4: (Magazine Holder)

A magazine holder cum table runner was made from the upcycled fabrics, with mirrors for aesthetic purpose. The product could be used in two ways and hence it serves two purposes.

The product turns into table runner when opened and kept, else it could be hanged on the wall as magazine holder.



Plate 29

Magazine holder



Plate 30

Table Runner

4.4.5 Sample 5: (Wall Hanging)

A ruffled wall hanging was made with an embroidery hoop and the upcycled ruffled fabric. The product was made



Plate 31

Wall Hanging

4.4.6 Sample 6: (Drum Pendant Lamp)

A drum pendant lamp was made using the embroidery hoop and the upcycled fabrics.



Plate 32

Drum Pendant Lamp

The developed products were found to be cost- effective; which could be made without much complexity. It could be considered as a small step towards a greener sustainable future.

4.5 TRAINING

Training was provided to women belonging to rural areas of Ernakulam. As for the urban demographic profile, a few non-teaching staffs were selected from the college. They were selected as they had rural roots but works at the urban area. Also, selecting non- teaching staffs could be considered as a step towards women empowerment. Also, teaching people from rural areas could be more helpful in spreading the idea of sustainable fashion and related methods, specially by word of mouth.

Training was carried forward by demonstrating the development of the product using basic sewing skills aided by sewing machine, hand needle and thread. The materials were brought by the trainees itself. Each participant was shown the demonstration of at least one product as a whole (mainly the development of the product of which the materials provided by the

particular staff) and the whole product development were explained to all of them in brief and made sure that they understood the idea and the purpose behind.

4.5.1 INFORMATION ABOUT THE PARTICIPANTS

The information about the women who came for the training is given below in the Table- 1

TABLE -1

INFORMATION ABOUT THE TRAINEES

SL.NO.	NAME OF THE PARTICIPANT	DESIGNATION	AGE
1.	MS. SHINY FRANCIS GOMEZ	NON- TEACHING STAFF	47
2.	MS. AMBILY	NON- TEACHING STAFF	28
3.	MS. GRAICY	NON- TEACHING STAFF	57
4.	MS. STEENA	NON- TEACHING STAFF	39
5.	MS. PRESTEENA ELDRIYA	NON- TEACHING STAFF	25
6.	MS. SUJAYA SANTHOSH	HOME- MAKER	52



Plate 33

Ms. Graicy with Cushion



Plate 34

Ms. Sujaya with Magazine Holder

Cum Table Runner



Plate 35

Ms. Shiny with Wall Hanging



Plate 36

**Ms. Eldriya with Pendant Drum
Lamp**



Plate 37

Ms. Steena, Ms. Ambily and Ms. Graicy with Bed-Lamp Cum Holder

4.5.2 EVALUATION OF THE PRODUCTS BY THE TRAINEES

The feedback received from the participants after demonstrating the finished products are given below in the Table- 2

TABLE- 2
FEEDBACK RECEIVED AFTER DEMONSTRATION OF THE FINISHED PRODUCTS

Name Of the Participant	Bed Lamp cum Holder	Hoop Wall Decor	Cushion	Wall Hanging	Drum Pendant Lamp	Magazine Holder Cum Table Runner
Ms. Shiny	A	A	A	A	B	A
Ms. Ambily	A	A	A	B	A	A
Ms. Graicy	A	B	A	C	B	A
Ms. Steena	A	A	A	B	A	B
Ms. Eldriya	A	A	A	C	B	A
Ms. Sujaya	A	A	A	B	A	A

A- Very Good

B- Good

C- Average

D- Poor

Feedback form responses were measured in Likert Scale, ranging from Very Good to Poor. From the Table, it is understood that the products with highest ranking are Bed-Lamp cum Holder and Cushion. Hoop Wall Décor came in the second place followed by the Magazine Holder cum Table Runner. The product with lowest ranking is Wall Hanging and the Drum Pendant Wall Lamp came at the second- last place.

SUMMARY

&

CONCLUSION

5. SUMMARY AND CONCLUSION

The present study entitled “Development of Home Décor from Post- Consumer Waste by Implementing Upcycling and Transformable Methods “can be summarized as follows.

Since it is understood that fashion plays an important role in the global economy, being one of the most resource-intensive industries in the world and one of the largest polluting industries, sustainable fashion has such a significant impact around the world. Sustainable fashion is about meeting today’s needs while ensuring that the way we go about meeting those needs meet future needs as well. Being a designer, the current study was taken as an owe to the world to minimise the problems caused by the fashion industry, even by a small step towards sustainable green future.

The aim of the current research study was to analyse the level of awareness people have on the much-discussed topic- sustainable fashion and its related methods which was understood through the surveys taken via questionnaire and interview. The development of the products from the post- consumer waste and the training provided by demonstrating the procedures to the selected non- teaching staffs and the home- maker was found to be complimenting to the results received from the surveys.

Six different types of home decors from post- consumer waste were made by implementing upcycling and transformable methods. The products include bed- lamp cum holder, hoop wall décor, cushions, magazine holder cum table runner, wall hanging and drum pendant lamp. After the training, feedbacks were taken from the staffs on the products. Bed- lamp received the highest ranking and the Wall Hanging received the lowest ranking. Fashion meets function; the study aimed to make products that provided both aesthetic and functional use to the everyday lives; products which could be made through easy steps using ordinary stitching machines, threads and needles. The upcycling of the products helped to redirect the leftover material or post- consumer waste back into the production of new upcycled products.

5.1 RECOMMENDATIONS

According to this research and the researches from the theoretical overview, upcycling and transformable methods are a most important factors in making the world sustainable.

Upcycling of post-consumer textile waste has various advantages as it requires less energy and minimum carbon dioxides emissions as compared to any other type of processing. Hence, different types of sustainable products could be made taking post- consumer waste as the main focus.

It was also interesting to see the different types of responses of people towards the sustainable fashion. There are two captivating methods: upcycling and transformable methods discussed in the paper. It would be useful if people are made aware, be it rural or urban area, on the different sustainable methods which could be implemented on their old clothes. A good majority of women respondents opined that their method of disposal of used-up clothes is throwing away followed by donating to charity. Hence, it proves the exigency of understanding the actual level of awareness the people have about the sustainable fashion. Sustainable fashion's presence is necessary in this era.

5.2 LIMITATIONS

The survey and development of questionnaire was held online which makes the research study partially distinctive and non - direct procedure. Another limitation could be that the interviewees may have responded in a way that were not completely truthful, in order to please the interviewer. Having asked the subjects which were related to personal life, often times, interviewees responded in a way that suggested they were not being completely truthful in order to satisfy the interviewer. The study was limited to Kerala and between women only and the training was limited to only to a few members. Despite those limitations it is believed that enough data needed to provide valid and reliable findings were collected, and that the results of the research did show underlined patterns and common characteristic of what the study was all about.

5.3 FUTURE RESEARCH

Future research could be extended to the males of different age group, on the same topic, as this study is concentrated only on women. There could be more scope in exploring other types of home- decors made from post- consumer waste. Research can also be conducted on the attitude of the people towards buying sustainable fabrics, the reasons behind the slow

acceptance of upcycling in urban areas. Research could also be done in urban and rural areas separately. Maybe if proper training and promotions are given to people, preferably by demonstrating, especially in rural areas where the word- of- mouth is spread quickly, regarding the topic sustainable fashion and its methods, the positive impact it would make; the path to make the world sustainable, in terms of fashion, could be made more easy than predictable.

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APPENDIX

7. APPENDICES

APPENDIX 1

SURVEY QUESTIONNAIRE

- NAME:
- GENDER:
- DESIGNATION:
- AGE:
- MOB. NO.:
- LOCATION:

1. ARE YOU INTERESTED IN SUSTAINABLE FASHION?

YES/NO

2. ARE YOU AWARE OF THE CONSEQUENCES OF NOT FOLLOWING SUSTAINABILITY IN FASHION INDUSTRY?

YES/NO

3. HOW OFTEN DO YOU BUY CLOTHES?

- A. MONTHLY
- B. SEMI- ANNUAL
- C. YEARLY
- D. ON OCCASSIONS/ FESTIVALS

.....

4. WHAT DO YOU DO WITH YOUR OLD PRODUCTS?

- A. MAKE NEW PRODUCTS
- B. BURN/ THROW AWAY

C. DONATE

D. NONE OF THE ABOVE

5. WHICH DO YOU PREFER?

- UPCYCLED

- SUSTAINABLE PRODUCTS OR NEW PRODUCT

6. ACCORDING TO WHICH ASPECT DO YOU BUY PRODUCTS?

A. USE/ FUNCTIONALITY

B. APPEARANCE/ AESTHETIC PURPOSE

C. BOTH A & B

7. DO YOU KNOW ABOUT UPCYCLING?

YES/NO

8. HAVE YOU TRIED TO UPCYCLE YOUR OLD CLOTHES?

YES/NO

9. HAVE YOU SEEN ANY DIYs ON UPCYCLING/TRANSFORMABLE FASHION?

YES/NO

10. DO YOU GET TIME TO WATCH DIYs OR MAKE YOUR FAVOURITE PRODUCTS?

YES/NO

11. HAVE YOU TRIED APPLYING ANY TRANSFORMABLE METHODS TO YOUR OLD CLOTHES?

YES/NO

APPENDIX II

INFORMATION ABOUT THE TRAINEES

Sl.NO.	NAME OF THE PARTICIPANT	DESIGNATION	AGE
1.			
2.			
3.			
4.			
5.			
6.			

APPENDIX III

FEEDBACK RECEIVED AFTER DEMONSTRATION OF THE FINISHED PRODUCTS

Name Of the Participant	Bed Lamp	Hoop Wall Decor	Cushion	Wall Hanging	Drum Pendant Hanging	Magazine Holder Cum Table Runner

A- Very Good

B- Good

C- Average

D- Poor