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Assessment of Consumer Preference for Upcycled Textile Products

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Abstract*— Fashion industry contributes to environmental pollution, with increasing consequences all around the world. Circular economy can be a guideline for the fashion industry, encouraging product development focused on sustainable products. This study focused on development of twelve innovative useful products from textile wastes collected from 20 tailoring units. The upcycled products were evaluated for their acceptability, utility, creativity and aesthetic appearance. Evaluation of product assessment by consumers indicated that none of the products were rated poor. The popular product was fancy bag in terms of overall acceptability. Fancy bag, table sheet, slippers and pencil pouch were rated excellent for creativity. The highest score on utility was for pencil pouch, fancy bag, cell phone pouch and slippers. As for aesthetic appearance, slippers and hair accessories and jewelry were rated excellent. Hence, fabric waste generated from tailoring units can be upcycled into useful products rather than discarding in landfills or burning them up. The Government can initiate ways to popularize upcycled products promoting its environment friendly value. Collection centres for textile wastes can be set up for sorting the waste according to the end use it can be put to.

Index Terms*— Product evaluation, Sustainability, Textile waste, Upcycled products

I. INTRODUCTION

Fabrics occupy a very important place in our present day society since they satisfy one of the essential necessities of mankind. India generates around 62 million tons of wastes out of which major contributor is textile industry[1]. As many of the textile products are made with the intention of short usage period, the quality is low and consumption is high. This has led to scarcity of raw materials too. Hence a solution to this problem is inevitable. Recycling and upcycling are done to tackle this problem to a certain extent.

Textile reclamation was originally intended for efficient utilization of resources, whereby waste garments could be reconstructed into cheap clothes for disadvantaged societies and other application such as wipes and flock fillings for upholstery. The second reason for textile recycling came into existence due to pressure on environmental protection due to industrialization. The intensity of textile recycling is determined by the value of the recycled products and the level of wastes generated [2].

In contrast to recycling which is the process of converting waste materials into new materials and objects, upcycling is reuse of discarded objects or material in such a way as to create a product of higher quality or value than the original. Upcycling is better than recycling and proves to be environmentally sustainable. It helps in zero waste management and also reduces the impact of textile production.

The concept of sustainable fashion was developed because of the environmental concerns generated by textile industry [3]. The fashion which understands the needs of today as well foresee the needs of the future ensures sustainability.

In view of all this, the present study, explored into the quantum of textile waste spawned at local tailoring units , which is the pre consumer waste and their mode of disposal. The study also tried ways of upcycling the waste into beneficial products and appraised their impact on consumers.

II. METHODOLOGY

The method for study consisted of Sample selection, Research tool, Field work and Data analysis

The tailoring shop owners and tailors operating from their own homes were selected for the study . They were selected by convenient sampling method from 1km radius of the college campus.

An interview schedule was prepared to obtain information on the daily business and the amount of textile waste created on a weekly basis. The schedule included seven questions. Out of which four questions were open ended questions and rest were close ended and multiple choice.

Personal details like name of the respondent, age were included at the beginning of the questionnaire. English language was used for preparing the schedule in order to aid better comprehension.

The respondents were contacted at their homes and shops. Though the questions were framed in English, the researcher asked the questions in the local language i.e. Malayalam to all the respondents. All of them were cooperative in answering the questions. The researcher noted down the responses of the respondents promptly in English. The raw data obtained from the questionnaire was coded, tabulated and percentages were calculated.

Twelve creative products like pencil pouch, flower vase, wall hangings, table sheet, photo frame, footwear, hair accessories

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and jewellery, girls frock, fabric braided belt, diary covers, cell phone pouch and fancy bag were made from the textile wastes collected from the shops and tailoring units in houses. For product evaluation developed 20 women consumers were chosen between the age group of 19-21 years by convenient sampling method.

The products were assessed for their creativity, utility and aesthetic appearance on a scale of 1-4 and an average scale point was obtained for each product. The frequency of grades as Excellent, Good, Fair and Poor were assessed for each item and analyzed.

III. RESULTS AND DISCUSSION

Upcycling of textiles is an upcoming trend already well known in foreign countries.

In the pre survey consisting of personal interview with 20 owners of tailoring units, 11 units were registered shops and 9 worked from their own homes. 85% of the owners were females and the rest were males. On an average 70 percent of the tailoring units got a weekly order 1-5 garments, followed by 20 percent with 5-10 garments and 10 percent with order of 10-15 garments.

Among the 20 tailoring units surveyed it was found that only 15 percent of them reused the textile waste. Small pieces of fabric waste were used in filling pillows and cushions and upcycled the rest into either new garments or parts of a garment. 85 percent of the tailoring units discarded the waste by either burning them up or selling them to other vendors.

The textile waste collected from the tailoring units were made into varied products like pencil pouch, flower vase, wall hangings, table sheet, photo frame, footwear, hair accessories and jewellery, girls frock, fabric braided belt, diary covers, cell phone pouch and fancy bag (Table1).

The products were assessed for its overall appearance and also for its creativity, utility and aesthetic appearance on a 4 point scale by 20 consumers and average was calculated for each product. All the 12 products had a rating between 3.2 to 3.9 on a 4 point scale and also the frequency on grade (excellent, good, fair and poor) classification. The wall hanging had the lowest score of 3.2 and the fancy bag rated 3.9 as the highest score (Fig.1). Table sheet, slippers and pencil pouch were close behind with a score of 3.8.

The frequency of grades (Excellent, good, fair and poor), indicated that none of the products were rated as poor. For individual criterias, four products were rated best for creativity viz. Bag, table sheet, slippers and pencil pouch (Fig 2). Pencil pouch, fancy bag, Cell phone pouch, diary cover and hair accessories and jewelry scored high on utility. As for aesthetic appearance, slippers, hair accessories and jewelry and cell phone cover were rated excellent.

Table 1. Innovative products made from textile wastes

Product code	Products
1	Pencil Pouch
2	Flower Vase
3	Wall Hanging
4	Table Sheet
5	Photoframe
6	Slippers
7	Hair Accessories and Jewelry
8	Girls Frock
9	Fabric Braided Belt
10	Fabric Diary Cover
11	Cell Phone Pouch
12	Fancy Bag

Fig.1 Innovative products made from textile wastes

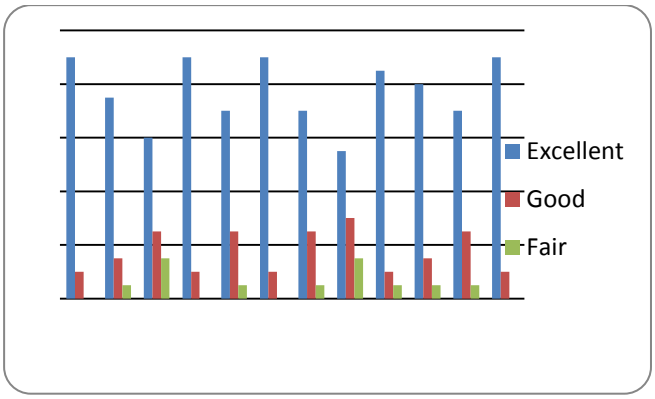

Fig.2 Product Evaluation on Creativity

According to Rapsikevičienė *et al* [4] the textile industry and congruently fashion industry share a significant impact on water resources, natural resources and inputs of pollutants into the atmosphere, in addition to the amount of waste

entering the landfill. According to the Ellen MacArthur Foundation [5] we use the earth's resources to manufacture products, we make them useful and when we no longer need them, we throw them away. But nowadays, due to technology, we have the knowledge and tools to help us create an economy suitable for the 21st century i.e., designing waste and pollution, keeping products and material in use, and regenerating natural systems. Hence the fashion consumers and stakeholders need to evaluate present status quo, according to the principles of sustainability and circular economy [6], which can be a guideline for the fashion industry, promoting product development focused on sustainable products and recyclability.

Fabric waste has become a significant problem for the fashion industry in terms of growing waste management costs and its image due to the problem of fast fashion and consumption [7]. But practical solutions of consuming the waste back into the production process are not being widely pursued. Upcycling is one such method which not only deducts the amount of waste that gets tossed but it also stops the demand for more production of items that will potentially meet the same landfill. Upcycling allows for the use of pre-existing material and also the final product is of a greater value. He developed products such as apparels & accessories which use itself within the same system that causes it, which is substantiated in the present study. Chavan [8] examined the process of achieving environmental sustainability through recycling of textile wastes. The recycling of textile waste can serve as a means of providing solutions to many economic, environmental and social issues. West and Smith [9] addressed the issue of sustainability in the apparel industry from the specific perspective of repurposing materials for use in costume development. Current issues in sustainability in the apparel industry that are a focus for this research include waste from production as well as post-consumer waste.

Sung [10] considered upcycling as one promising means to reduce material and energy use, and to engender sustainable production and consumption. For this reason and other foreseeable benefits, the concept of upcycling has received more attention from numerous researchers [11] and business practitioners in recent years. This has been seen in the growing number of publications on this topic since the 1990s. Thorstensson [12] studied the penetrating power of upcycling of waste materials and examined the potential of selling upcycled textile products. She interviewed retailers and manufacturers selling upcycled products. Two factors contributed to the selling of upcycled products- the consumer's attitude and the vendor's dedication which is evaluated in the present study.

The large amounts of fabric waste produced by textile tailoring units can be upcycled into useful products rather than dumping in landfills or burning them up. Upcycling can be taken up as a cottage industry creating job opportunities for many, thereby helping in waste management and for economic growth. The Government can initiate ways to popularize upcycled products promoting its environment friendly value. Textile waste collection centers can be set up for sorting the waste according to the end use it can be put to.

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