

Design & Development of Sustainable Embellished Fashion Ensembles For Alpha Women

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Abstract

The recent years have witnessed an upsurge for funky and quirky yet affordable and eco-friendly fashion ensembles among millennials and generation Z.

Accordingly, designers are in the quest of coming up with design collection that are affordable, sustainable and appealing to the common masses. There is an ardent need of switching over to sustainable principles and approaches to avert the deleterious environmental impact posed by conventional textile and fashion supply chain. The sustainability can be incorporated at various phases of supply chain such as raw material procurement, adoption of eco-friendly manufacturing, transportation and packaging options. Furthermore, usage, care and disposal of end products by consumers also strongly influence the fate of garments during the end of their useful life. Many high end brands are prioritizing sustainable principles and catering to demands of consumers by transition from conventional raw materials and dyestuff procurement, surface ornamentation, usage of trims and embellishments, labeling and packaging to eco-friendly options. Accordingly, the usage of sustainable and recycled fibres, organic dyes, sustainable substitutes for animal based leather like corn and mushroom leather and sustainable manufacturing and ornamentation techniques like 3D printing, sublimation printing and digital printings are revolutionizing the fashion arena and are considered to be commendable steps towards environmental and social well-being. The latest ornamentation techniques are not only eco-friendly unlike age old traditional dyeing and printing techniques involving the utilization of hazardous and toxic chemicals dye stuff, auxiliaries etc but also offer an array of motif and color way for the designers to explore and experiment with myriad of design elements.

The present study was undertaken with an intent to design and develop sustainable, funky fashion ensembles for millennials utilizing recycled polyester and eco-friendly embellishment technique namely sublimation printing.

The market survey and unstructured interviews with teenagers and professional alpha females enabled identification of street fashion trending among millennials. An array of vibrant, quirky and funky motifs aiming alpha women who embrace cotemporary and fusion styles were created for development of virtual and physical garment and accessory prototypes. The designed ensembles were subjectively evaluated in terms of their functional attributes, comfort, aesthetic appreciation and sustainable concepts by respondents chosen for the study.

Keywords: *Accessories, Alpha, Apparels, Embellishment, Funky, Printing, Quirky, Sublimation, Sustainable.*

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1. Introduction

The fashion industry has witnessed a major transformation as far as raw material selection, manufacturing processes, packaging, labelling and transportation of end products is concerned owing to sustainable aspirations of stakeholders at various stages of fashion supply chain. Accordingly, the apparel and accessory manufacturers along with associated embellishment job providers ensure that all the processes are carried out following sustainable routes [1]. In view of that, innovative and sustainable techniques like sublimation printing, digital and 3D printing are revolutionizing the fashion arena. Heat transfer, also referred to as thermal printing or thermal-transfer printing is a user friendly and sustainable printing technique involving transfer of digitally created motif or art work on sublimation paper to textile substrate or garment via specially designed heat transfer printing machines [2, 3]. Aesthetic appreciation and value addition is plausible for a myriad of apparel and accessory styles employing aforesaid ornamentation techniques. The present study has been undertaken to design and develop sustainable, funky fashion ensembles for millennials utilizing recycled polyester and eco-friendly embellishment technique namely sublimation printing and assessment of commercial viability of the design collection thereof by subjective evaluation in terms of their functional attributes, comfort, aesthetic appreciation and sustainable concepts by respondents chosen for the study.

2. Materials & methods

a. Materials

A range of raw materials, trims and notions were procured for the study. Canvas fabric was procured online while 100% recycled polyester fabric was procured from local factory in NCR. Trims, notions and sublimation paper were procured from local market. The procured canvas and recycled polyester fabrics were used to stitch tote bags and t shirts in house.

b. Methods

The procured raw materials were tested for their physical properties namely aerial density, fabric thickness and fabric cover. The motifs, mood board and story board were prepared using adobe illustrator and Photoshop. Heat transfer method was used to transfer the printed motifs on sublimation paper onto textile substrate. The prepared motif was printed on a special release paper using toner. The printed image was placed on textile substrate and pressed under high temperature for time duration ranging from 60-180 seconds. The release paper was peeled away as the motif was transferred to the substrate. The detailed workflow for design and development of fashion ensembles is presented in Table 1. Various textile substrates of varying fibre composition were sublimation printed to achieve the best results in terms of motif clarity, sharp edges and vibrancy of colors. The trials are being shown in Table 2.

3. Design & development process

The unstructured interviews and market surveys assisted in the design process via selection of motifs, color ways and trends in streetwear. Consequently, mood board, story board and motif to narrate the theme of design collection were developed. Thereafter, the designed motifs were transferred on the sublimation paper. The t shirts were stitched using recycled polyester fabric in-house utilizing single needle lock stitch machine and serger machine. The exact location of motif placement on t shirt was identified and the sublimation paper with printed motif was then placed on the desired position to be finally placed on the bed of transfer printing machine. Likewise, the printed motifs selected for laptop sleeves and tote bags were first transferred through sublimation paper on fabrics to be later converted into totes and laptop sleeves. Figures 1 shows the motifs for the design collection. Figure 2 shows the physical prototypes developed utilizing the sublimation printing.

Table 1 - Workflow for design and development of fashion ensembles

Raw material procurement

Pretreatment & Objective evaluation of procured materials

Identification of target respondents for motif ranking & trends in street fashion

Market survey & unstructured interviews for trending apparel & accessory styles & motif preferences

Identification of motifs and styles of apparels & accessory line to be developed

Motif preparation in synch with ranking & subjective trials

Moodboard, storyboard & virtual prototype development




Accomplishment of sublimation printing on procured materials

Pattern making for apparels and accessories following standardised measurement tables & physical prototype development

Sewing room operations & trim attachment

Subjective evaluation of developed fashion ensembles

Table 2- Sublimation Printing Trials on various textile substrates

Sr. no.	Fabric construction	Duration (min)	Temperature °C	Impression	Visual examination of motif
1.	Twill woven 60: 40 PET/C blend	2	200	moderate (fabric burn)	
2.	Twill woven 50:50 PET/C blend	2	200	Light	
3.	Twill Woven 30:70 PET/C blend	2	200	very light	



4.	Twill woven 100% Cotton	2	200	Negligible	
5.	Twill woven 100% PET	1	100	Prominent	



Figure 1 – Motifs created for design collection





Figure 2 – Physical prototypes developed using Sublimation printing

4. Results & Discussion

A range of motifs were shown to subject to rank as per their liking. The most preferred motifs were those narrating the story of alpha women, balancing their persona with wit and charm. Consequently; a design collection "Chic vis a vis Alpha" comprising embellished T-Shirt, laptop sleeve and tote bag was developed to be subsequently evaluated subjectively by respondents. The results of subjective evaluation suggested that subjects liked the design collection and found it quite affordable. Sublimation printed laptop sleeve was the most likeable and utilitarian accessories as per the subject.

The subjective evaluation and market survey by subjects aged 18-30 years assisted in finalizing the garment and hand bag styles along with motif to be printed on the fashion ensembles. Crew neck and polo T-shirts were preferred by the subjects while as far as handbag styles were concerned; they preferred an embellished laptop sleeve and tote bag for easy donning & doffing during mundane activities. 54% respondents preferred printing as the most appealing embellishment techniques for their apparels and accessories in contrast to 20% & 17% who preferred dyeing and embroidery respectively as the most likeable embellishment technique. 54% respondents preferred funky motifs for laptop sleeve in contrast to traditional and caricature motifs. 66% respondents preferred funky prints for tote bags while 29% respondents preferred traditional motifs to be printed on their tote bags. Respondents found the designed ensembles affordable and were keen to buy laptop sleeve in price range of Rs 500-800. Almost all the respondents found the design collection relatable, likeable and affordable with t shirts and laptop sleeves the most preferred among fashion ensembles.

5. Conclusion

The worldwide clamor for eco-friendly and sustainable practices in textile supply chain necessitates switching over to innovative technique of garment manufacturing and their embellishment. Sublimation printing is a promising and eco-friendly avenue that eliminates the requirement of toxic dyestuff and auxiliaries used in traditional printing technique.

The present study was undertaken with an intent to design and develop sustainable, funky fashion ensembles for millennials utilizing recycled polyester and eco-friendly embellishment technique namely sublimation printing. The market survey and unstructured interviews with teenagers and professional alpha females enabled identification of street fashion trending among millennials. An array of vibrant, quirky and funky motifs aiming alpha women who embrace cotemporary and fusion styles were created for development of virtual and physical garment and accessory prototypes. A design collection "Chic vis a vis Alpha" was developed and evaluated subjectively by subjects aged 18 -25 years. The designed ensembles were subjectively evaluated in terms of their functional attributes, comfort, aesthetic appreciation and sustainable concepts by respondents chosen for the study. Result of subjective evaluation suggested that design collection was likeable among the subjects. They were appreciative of the motif selection which portrayed Alpha Women. Embellished laptop sleeves were the highest rated functional as well as aesthetic accessories by the respondent.

References:

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