Designing and Constructing Detachable Western Wear Using Jali Pattern as Theme

By

Nikita Pegu

(21PTF010)

A Thesis Submitted to the

Avinashilingam Institute for Home Science and Higher Education for Women Coimbatore-641043

In Partial Fulfillment of the Requirement for the Degree of

MASTER OF SCIENCE IN TEXTILE AND FASHION APPAREL

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Certified as a Bonafide Research Work

13/5/23

Signature of the

Head of the Department

Signature of the

Supervisor

DECLARATION

I declare that the dissertation entitled " **Designing and Constructing Detachable Western wear using Jali Pattern as Theme**" submitted by me for the degree of Master of science (M.Sc.) is the record of work carried out by me during the period from 2022 to 2023 under the guidance of Dr. G. BAGYALAKSHNI, M.sc., M.Phil., Ph.D., Associate Professor, Department of Textiles and Clothing. Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore-642 043 and has not formed the basis for the award of any Degree. Diploma, Associate ship. Fellowship. Titles in this University or any other similar institution of higher learning.

Nikila Raj

Signature of the candidate

CERTIFICATE FROM THE SUPERVISOR

I certify that dissertation entitled " **Designing and Constructing Detachable Western wear using Jali Pattern as Theme** " submitted for the degree of Master of Science (M.Sc.) Textiles and Fashion Apparel by Nikita Pegu is the record of project work carried out by her during the academic year 2022 to 2023 under my guidance and supervision and this work has not formed the basis for the award of any Degree, Diploma, Associate ship. Fellowship. Titles in this university or any other University or Institution of Higher Learning.

13/5/23

Signature of HOD

Signature of the Supervisor with designation

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INTRODUCTION

1. INTRODUCTION

Globalisation and technical development have led to an increase in the diversity of fashion apparel. Consumers typically buy new apparel products out of a need for novelty and newness, while also getting rid of a variety of unworn clothing. Approximately, only about 38% of young consumers' wardrobes are regularly worn (Koo *et al.* 2014). More specifically, fast fashion speeds up consumer's acquisition and makes it possible for consumers to obtain more style with lower quality and at lower cost (Cao *et al.* 2014), which in turn increases landfill waste. The concept of 'fast fashion' has been promoted and embraced by many apparel retailers (Mihm, 2010). According to some studies (Forza & Salvador, 2002; McAfeee, Dessain & Sjoeman, 2004), the 'fast fashion' business model is widely adapted by fashion companies because it can enhance their competitiveness, reduce manufacturing costs, and shorten the production lead time. Fast fashion business accounts for approximately 20% of the total apparel market in the United Kingdom, Defra (2008).

Due to proliferation of fashionable clothing at affordable prices, consumers tend to purchase more clothing items than what they actually need (Banim & Guy, 2001; Woodward, 2001).In a similar vein, McAfee *et al.* (2004) also point out that many clothing items offered by the fast fashion companies are expected to be worn less than 10 times. Thus, it is reasonable to believe that the massive clothing and textile waste (Fletcher, 2008; Hawley, 2008) is created by the aforementioned factors. According to the U.S. Environmental Protection Agency's (EPA, 2009) estimation, textile waste accounts for approximately 5% of all land fill space. Given the emphasis on 'quick fashion' techniques, it appears that before the twenty-first century, many fashion shops did not give sustainability a lot of thought.H&M launched their new 'conscious' collection and made its commitment to zero discharge of hazardous chemicals in 2011(Diderich, 2011; Greenpeace 2013).

Sustainable fashion is an approach towards sourcing and designing clothing which maximizes the benefits to the industry and society. It should also at the same time reduce the impact on the environment. Today, sustainability has become a way of doing business rather than just a concept. Many brands and companies have now embraced the concept of sustainability and implemented it in their business. These companies have understood that integrating social and environmental issues with business will yield long term benefits to the company and society at large. It is important that brands which practice sustainable fashion are committed to make sustainability profitable and desirable in the fashion industry.

Consumers are attracted always to good designs and fabrics (https://www.fibre2fashion.com/industry-article/7238/ ethical-and-sustainable-fashion). Because of the nature of the apparel industry, sustainability has become a widely discussed issue. The survival of the apparel sector is becoming increasingly challenging without being sustainable (https://www.sustainyourstyle.org/old-environmental- impacts). Garments that may serve several purposes foster a closer bond between the wearer and the garment. This can be accomplished through several fashion methods. Clothing that may be worn for extended periods of time and on different occasions reduce waste generation by reducing the need for consumers to purchase new clothing, and thereby lessen the flow of materials in the fashion industry (https://www.fibre2fashion.com/industry-article/7593/ convertible-clothing-getting-rid-offashion-stereotypes, H. Koo, 2012).The life cycle of a garment can be extended through different sustainable strategies such as- using durable, organic and recyclable textile materials, redesigning and repairing the used or unwoven garments.Vartan (2008) suggests that redesigning and repairing is a way to reduce the total consumption of clothing.

According to Farrer (2011), transformable garments can be linked to consumers through design versatility to achieve sustainability. Transformable clothing brings new insights into sustainability and introduces new ideas to meet consumer needs (Koo, Dunne and Bye, 2014). The term "transformable clothing" refers to clothing that has two or more functional and aesthetically pleasing alternate styles. For example, a garment can be transformed into different styles through various transformable techniques such as, transformable garment using hook and eye fastness, transformable garment using zippers, reversible garment and detachable garment. Transformable garment are the new fad and the option of affordable clothing and the variety in choices that it offers may help this fad to soon rule the global fashion industry. With respect to those who spend less in clothing, these garments are perfect and environmentally conscious people are glad since garments which can transform will consume less fabric to produce a multi-style garment.

Transformable designed apparel products provide an alternative option to consumers wishing to change to different styles without purchasing new products (Rahman and Gong 2016). Consumers' demands have been diversifying, which makes it harder to predict due to rapidly changing trends and fashion tastes (Knag and Park-Poaps 2010). Being transformable allows the aesthetics and functionality of the items to be converted into multiple styles and functions to meet consumers' need for novelty and versatility (Koo et al. 2014; Rahman and Gong 2016). Transformable design enables a piece of clothing to be turned into many

appearances to meet various individual wants and purposes. So it makes sense to say that transformable garment deign, which involves changing, re-arranging and replacing the garment's components, is a sustainable fashion alternative. This trend is expected to increase the use intensity, extend the lifespan of apparel products and reduce disposal (Koo et al 2014), which may be a potential solution to the problem of excessive apparel consumption faced by the fashion industry.

Koo, Dunne and Bye (2014) introduced modular design, characterized by small components that can be worn independently, separated, or replaced with other components to create and unlimited number of combinations. Gwilt and Rissanen (2011) pointed out that buying, using and disposing of fashionable clothing is based on a production system that has severe consequences for our society and the enivironment.Farrer (2011) started that consumers' tend to purchase more clothing when they have clothing that cannot meet their needs. Adding more variable modules to clothing allows consumers to have more possibilities to change the shape of the clothing themselves, which may slow down consumers' abandonment of clothing (Niinimaki and Hassi, 2011). The parts that can also be disassembled and freely combined make recycling part of the clothing modules easier and reduce the cost of secondary processing. Locker (2008) suggests that transformable clothing can transform its aesthetics and functionality into multiple appearances and functions to meet the needs of different consumers', which may provide a potential model shift.Peter (2018), agrees that transformable clothing meets several environmentally friendly fashion design aspects. Moreover transformable design approach can be easily integrated into the mass customisation process for example garment parts can be produced and offered in different fabrics, colours and patterns. In order to (re) create a fashionable style that suits their individual needs and tastes, customers can purchase a basic outfit and put on extra mix-and-match garment elements or fabric pieces.

Customers from industrialised countries are so far more likely to purchase a transformable dress since it is a realistic notion. Youngsters who find it difficult to find the time to search for outfits for various occasions find the concept of transformable clothing t be particularly interesting. Customers in developed nations are more willing to experiment with fashion than those in underdeveloped nations, where most people still buy clothes the same way they always have. Designers and fashion houses have worked on the concept of transformable apparels and today they are in trend. With not very high budgets, consumers prefer garments which cost less as well as serve different purpose. One garment which can be

perfect for work or a casual wear is what customers look for. Transformable clothing is still a new idea, but customers have started to look forward to it.

According to designers like Colorado's fashion designer Kristin Glenn "People are becoming more conscious about overconsumption and versatile garments are an important part of any minimalist's or traveller's wardrobe." With the following specific objectives therefore an attempt is made to carry out a study on **"Designing and constructing detachable western wear using jali pattern as theme".**

- Create a design album
- Design and evaluate jali pattern inspired transformable western wear
- Prepare pattern for standard measurements
- Select suitable fabric and trims for constructing garment
- Construct final garment and display

REVIEW OF LITERAURE

2. REVIEW OF LITERATURE

2.1 Design, ideation for styling fashion garments

2.2 Transformable design process in garment designing

2.3 Pattern making importance and intricacy

2.4 Studies conducted on transformable designs

2.1 Design, ideation for styling fashion garments

Design ideation and processes have been fields of intense investigation for more than forty years (Cross, 2004).However; very little research has been conducted thus far in the field of textile and apparel design. Only recently has the research on ideation been extended to the field of textile and fashion design (e.g. Eckert & Stacey, 2000; Laamanen & Seitamaa-Hakkarainen, 2014; Lee & Jirousek, 2015; Mete, 2006; Petre, Sharp & Johnson, 2006) Many critical decisions are made in the early phase of design, usually called ideation or the conceptual design phase (Howard, Culley & Dekoninck, 2008).In this iterative process, various inspiration sources enable designers to move from their first vague images towards envisioning final ideas (Laamanen & Seitamaa-Hakkar-ainen, 2014:Peter *et al.*,2006). This preliminary design phase involves the initial generation and exploration of ideas to create new solutions. These undetermined alternatives emerge through the incremental transformations of a few kernel ideas (Goel. 1995).The initial generation and exploration of concepts for novel solutions occurs during the preliminary design phase. The multidisciplinary, collaborative, and inventive design thinking technique focuses on enhancing human well-being and aims to promote solutions for the development of goods and services. Combines a variety of tools, strategies, and approaches to find fresh approaches to issues that arise in projects and the creative process.

The goal of an apparel designer is to create aesthetically pleasing garments by manipulating design elements conditionally based on design principles (Davis, 1996). Design elements and principles are fundamental guidelines for designers in all fields. The characteristics of each element and principle are explained based on their own domain and categorisation in various fields (Pipes, 2003; Wong, 1972). Davis (1996) characterised the

theory of basic design elements for apparel design as space, line, shape, form, light, colour, texture, and pattern; and design principles as harmony, rhythm, contrast, emphasis, and proportion. These design elements and principles are concurrently applied on a clothing design and then changed as the apparel designer develops design ideas. Sometimes it is difficult to identify which types of elements or principles are being used because of their complex interaction within the design process. Apparel designers sometimes use the vague term 'design concept' as a synonym for 'inspiration' or 'beginning idea. However, a 'design concept' is the representation of a designer's abstract ideas of final entities, or garments in the case of apparel design. A design concept plays the important role of establishing the vision of a final product (Aspelund, 2010). Whether derived from a conscious intention or driven by subconscious sequential doodling, design concepts are developed through a process in which the designer perceptually and conceptually proceeds by processing information (Newell & Simon, 1972). The contribution of the cognitive creative process to concept formation has been noted in many fields of design process research. A pioneer of architectural design process research, (Schön,1963) explained, 'the formation of new concepts always requires us to break settled ways of looking at things, to "come apart" with respect to them, prior to the formation of a new concept'. Similarly, in the field of product design, Nagai, Taura, and Mukai examined concept blending in a simple creative product design task, focusing on how concepts are broken into sub concepts and how those are synthesised into a new concept. Accordingly, the close observation of how concepts are formed in a designer's mind (or a designer's idea sketches) throughout the actual design process is necessary to understand the design process.

Idea generation is essential for designing and developing any new product across the industry serving numerous market segments. This stage of development is crucial because it lays the groundwork for a designer to build appropriate options and then execute the best collection of options in order to produce the finished product. Design inspiration can come from a variety of places, such as nature, flowers, fruits, and more. Color, shape, texture, and all other pertinent information about the product can be gathered from these (https://www.viima.com/blog/idea-generation). Moreover, idea might be gathered from the past as well. Ideas are the key to innovation. Without them, there isn't much to execute and because execution is the key to learning, new ideas are necessary for making any kind of improvement. Ideas alone won't make innovation happen, as we need to be able to build a systematic process for managing those ideas. The point of ideation isn't about generating tons

of them but about paying attention to the quality of those as well (https://www.viima.com/blog/idea-generation).

Idea generation is described as the process of creating, developing and communicating abstract, concrete or visual ideas (https://www.viima.com/blog/idea-generation). Ideas form the base from which we start building up. They could be abstract, concrete, or visual. An idea generation technique is a creative process of coming up with solutions and ideas. It also involves developing these ideas and communicating them (https://alcorfund.com/insight/idea-generation-2/).

Design thinking frequently relies on the collaborative work process of ideas and has a number of tools that should be used to develop a fresh solution perspective. According to (Jonson, 2005), an idea in design represents a basic element of thought that can be visual, concrete or abstract. The designer's previous experiences and an acquired repertoire of various examples and images play a crucial role in problem scoping, ideation and prioritising (Lawson, 2005).

Ideation and inspiration sources are closely related. According to (Mete, 2006), the fashion industry particularly uses concrete and conceptual approaches to inspiration sources. Designers can be inspired by materials, fabrics or ideas are generated conceptually from nature, arts or other products (Dasgupta, Hammett-Stabler &McKelvey, 2011; Jones, 2011).Sources of inspiration refer to all conscious use of previous designs and other objects and images for the pursuit of design (Eckert & Stacey, 2000).Anything can inspire the birth of new design ideas and designers appear to use sources of inspiration for different purposes (Eckert & Stacey, 2000; Peter et al., 2006).Darke (1979) refers to a 'group of related concepts' or self-generated sources of inspiration in the ideation process as the 'primary generator'. It can be seen as the designer's individual style when certain identifiable elements, qualities or expressions are consistently used. Successful new products also contribute to utilise firm's raw material and distribution channel usage where it is possible to have lower unit costs and higher margins. Also, firms that have multiple successful products in their portfolios can command greater attention and priority treatment, such as preferred shelf space and payment terms, from wholesalers and retailer (Hines, Cheng & Grime 2007).

The creation of ideas is the activity of designers. Ideas are not typically "flashes of brilliance" or intuitive creativity, despite what many people believes. Researching concepts and trends, making educated assumptions, and testing out alternatives are all part of the laborious process of design.

The streets, nature, architecture, and works of art can all serve as sources of inspiration for new ideas. (Burns, L. D. & Bryant, N. O. (2002). The business of fashion: designing, manufacturing and marketing (2nd ed.). New York: Fairchild. The design process includes-

- Analysing customer needs
- Defining the design problem
- Ideating or generating ideas
- Selecting design criteria
- Implementing one or several prototypes
- Evaluating prototypes against design criteria
- Design sketches

Individual designers use all of these steps, but often develop an order that works best for them. A variety of methods can be used to generate design ideas. Brainstorming is one of the simplest and most effective methods of generating ideas (.Burns, L. D. & Bryant, N. O. (2002). The business of fashion: designing, manufacturing and marketing (2nd ed.). New York: Fairchild. Once we have a long list of options, we can start designing clothing and accessories based on these possible carrying strategies. Brainstorming helps us to get lots of ideas and to consider each one's merits.

A group ideation session can be especially successful at generating ideas that are innovative and "outside the box." Getting a group of people together to brainstorm or develop mind maps generates creative energy and "way out" ideas. "Way out" ideas sometimes identify a surprise kernel that sends you on the road to an innovative product design. In all ideation sessions, it is important to write down every idea, no matter how wacky. Then, go back and discuss the merits of each idea, discussing how the design might look, how well it would carry, and so on. The best ideas can be developed further during group discussion (Burns, L. D. & Bryant, N. O. (2002). The business of fashion: designing, manufacturing and marketing (2nd ed.). New York: Fairchild. Experimentation with materials finishes, stitching, or draping can also be used to generate design ideas. For example-

- Draping fabric on dress forms to create unique design variations.
- Folding and stitching material to create texture and
- Painting or printing fabric inspired by color, nature or street art.

Designers are free to use anything they can find in their local surroundings when the utilisation of sources is restricted, such as in an experimental research setting. Existing concrete sources and self-generated sources are the two categories into which inspiration has been split. Patterns, sketches, pictures, images of works of art, and materials for ornamental products are examples of concrete sources (e.g. yarn and fabric samples). Mental sources that are self-generated include memories, stories, and everyday natural sights. Ideas today come from more sources than just historical sites, flowers, fish, and other natural phenomena (Brannon.E.L. 2002). Today's designers are more likely to draw their inspiration from everyday life and a variety of realism-based events, such as local, national, or worldwide trade shows, shopping centres, street markets, etc. To express nostalgia through natural colours, washed twills, practical details, and rugged fabrics, Toni Strutz, design and product development of LEE JEANS, follows lifestyle trends such as adventure travel, mountain biking, rock climbing, camping, etc. and interprets them into denim-wear for each season (Brannon E.L., 2002).

Before designing & developing any product, the culture, norm, traditions, religion & region of any country must be considered. The textile product that will be designed & developed for such people whose lifestyle, educational background, economical condition, age & religion are vital issue (Brannon E.L).

2.2Transformable design process garment designing

Sustainability has recently risen to the top of several industries' main lists. Hong Huang (2021) mentioned that the clothing industry is already the world's second most polluting industry. Finding a new balance between innovation and sustainable development is crucial for modern designers. Innovation and environmental conservation are becoming common goals for many brands. Black (2008) suggests that fashion designers influence consumer behaviour and improve fashion sustainability. According to Farrer (2011), transformable garments can be linked to consumers through design versatility to achieve sustainibilty.Transformable clothing brings new insights into sustainability and introduces new ideas to meet consumers needs (Koo, Dunne and Bye, 2014).

The term "transformable clothing" refers to clothing that has two or more functional and aesthetically pleasing alternate styles. For example, a garment can be transformed into different style through various manipulative methods such as transformable garment using hook and eye fasteners, transformable garment using zippers, reversible garment and detachable garment. At times, surface embellishments and decorations can alter clothes without altering its shape or appearance. The transformable design concept is considered several things all in one; it is a type of sustainable design (Rahman and Gong, 2016), a reaction to environmental crisis and an indicator of the rapid growth of economic activity and human needs (Kasarda *et al*, 2007). Farrer (2011) pointed out that consumers tend to purchase more clothing when they have clothing that cannot meet their needs. A practical approach known as transformable design is a practical solution to it which enables a piece of clothing to be turned into many appearances to meet various individual wants and purposes (i.e. aesthetic, functional and psychological). As they may be regularly changed into various styles or looks, transformable clothing is predicted to enhance product usage frequency and lengthen its life cycle, thus lowering textile waste and overall manufacturing volumes. Adding more variable modules to clothing allows consumers to have more possibilities to change the shape of the clothing themselves, which may slow down consumers' abandonment of clothing (Niinimaki and Hassi, 2011). The components of the clothing modules that can also be disassembled and freely combined make recycling easier and lower the cost of secondary processing.

So, it makes sense to say that transformable garment design, which involves changing, rearranging, and replacing the garment parts, is a sustainable fashion alternative. By including customers directly in the (re)design process and promoting sustainable habits, it can act as an active agent for ecological change. Several advantageous effects are anticipated to be produced due to the adaptability and versatility of this kind of clothing.These would include: (1) The consumers proneness of wearing the garment may increase; (2) The life span of a garment will be prolonged (Black, 2008); (3) The products psychological obsolescence will be postponed (Fletcher, 2008); (4) The disposal of clothing waste in landfills will be delayed. Modular transformable clothing offers additional special advantages. The wearer can replace only the damaged area of the clothing due to its disassembly and reassembly capabilities, saving money on brand-new clothing.

According to Loker (2008), changeable clothing is likely to be worn in various ways in the life cycle of clothing, reducing the flow of new equipment and materials required for

consumption. The modular clothing is very simple to take apart. When stained clothes, only the dirty portions would be taken off and cleansed. Also, this design strategy is simple to include into the mass customization process; for instance, garment elements can be created and made available in a variety of fabrics, colours, and patterns.

Currently, some fashion retailers in the market are beginning to offer transformable clothing. 180DEGREES by Maria Prastakou, for example, creates and sells transformable clothing that can be worn in two or more ways. JOLiER, another Finnish transformable and sustainable fashion brand, offers consumers apparel with innovative multi-uses that are either transformable or reversible, based on the core values of transformability, size adjustability, and sustainable design. Ximena Valero Corporation, an international fashion brand based in Los Angeles, California, also offers consumers convertible clothing items that can be worn in a variety of ways and serve a variety of purposes. The Canadian fashion company WORKHALL studio is committed to transformable and purposeful clothing and sells transformable garments in its online store. Finally, for the consumer, transformable clothing provides greater flexibility and options for wearing various styles of garments while saving money and time spent shopping (Lang, C., & Wei, B., 2019).

Transformable clothing benefits both buyers and retailers. For instance, consumers who want to switch to other styles or functions without buying new products have another option with transformable clothing. Because the product may be transformed, the consumer can alter the current outfit to achieve a variety of desired or necessary styles rather than purchasing new products for various occasions. Also, stores gain advantages from the transformable design. A product may be more competitive in the market if it is convertible (Lang, C., & Wei, B., 2019).

The idea of transformable clothing has been put out as a way for merchants to meet the demands of consumers for novelty and variety, as well as a potential source of income for the sector. Transformable clothing benefits both consumers and retailers. Transformable garments, for example, offer an alternative option to consumers who want to switch to a different style or function without purchasing new products. Because the product is transformable, customers can modify existing garments to achieve various desired or required styles rather than purchasing new products for different occasions. Furthermore, retailers benefit from the transformable design. Convertibility allows a product to be more competitive in the marketplace. Transformable apparel has been proposed as a retail strategy

to meet consumers' need for novelty and versatility, as well as a potential revenue source for the industry (Lang, C., & Wei, B., 2019).

Though the concept of transformable design is an emerging trend that may offer opportunities for more sustainable fashion consumption, consumer perception of this concept is lacking. Existing research primarily focuses on the designers' perspectives on transformable apparel design strategies. More research is needed to determine whether consumers value this type of clothing and what factors may motivate them to buy transformable clothing (Lang, C., & Wei, B., 2019).

2.3 Pattern making- importance and intricacy

Clothing is essential for presenting oneself beautifully. Given its significance, a large clothing market has developed all over the world. Entrepreneurs and designers are collaborating to build massive fashion houses. In this case, new pattern creation is critical in the fashion industry. Before making any new clothes, a pattern must be created. Without a pattern, it is impossible to form an opinion about clothing. Because clothes of any design are produced commercially in the fashion industry (https://www.fibre2fashion.com/industry-article/5658/basics-of-pattern-making).

A pattern is a physical copy of various parts of a garment made by cutting board or hard paper using measurements taken from models or dress forms after sketching on it. A pattern is a design or template that is used to trace a part of a garment onto fabric before it is cut out and assembled. Paper is commonly used to create patterns. The pattern is the exact image of each part of a garment made with flat hard board paper. The creation of design and the construction of patterns for design components is the first step in apparel production. Furthermore, pattern making is one of the most important tasks in garment manufacturing. Pattern making converts sketches into garments, acting as a link between design and production. Each component of a garment is given its own pattern. Before cutting the fabric, these patterns are used to draw all the parts of a garment on fabric or marker paper. If lining or interlining is used in the garment, patterns are also used for that purpose (https://www.fibre2fashion.com/industry-article/5658/basics-of-pattern-making)

Pattern making in the garment industry is a highly skilled technique that requires exceptional technical abilities. To interpret a design with an understanding of garment construction, basic sensitivity is also required. Patternmaking is the first step in creating a

successful dress. This function connects design to production by creating paper templates for all components that must be cut for completing a specific garment, such as cloth, hemming, fusible, and so on (https://www.fibre2fashion.com/industry-article/5658/basics-of-pattern-making).

This pattern is used to cut the cloth, which is then used to make the garment. For industrial production, different patterns for different sizes are created, and a marker is created using these different patterns for large-scale production. Then many cloths are cut at once, and finally garments are made by a large number of garment workers. Pattern making is an individual art form that involves manipulating and shaping a flat piece of fabric to conform to one or more human figure curves. Pattern making bridges the gap between design and production. A sketch can be turned into a garment using a pattern, which translates the design into garment components. Patterns are original garments that are formed on paper or cardboard templates from which other garments of a similar style are copied, and the parts of the garments are traced on to fabric before cutting out and assembling. The design, for which the pattern will be prepared, as well as how many pieces of the pattern will be made, must be decided ahead of time. The body size of the person for whom the garment will be made must be taken; typically, the garment does not take any individual person's body size. They design clothing patterns based on specific sizes. One of the most important steps in successful dress design is pattern making. This pattern making function connects various designs to production by creating paper templates for all components such as cloth, hemming, fusible, and so on. This must be cut in order to complete a specific garment (https://www.textileschool.com/293/pattern-making/)

Methods of Pattern Making-

The emphasis here is on the type of communication initiated by the fashion designer that initiates the patternmaking method. Basically pattern making consist three methods-

- Paper Pattern Making
- Draping
- Digital Pattern Making

1) **Paper Pattern Making-**

A pattern-making system that uses measurements from a dress form or model to create basic foundation or design patterns. It is a two-dimensional fundamental method for creating a paper pattern. The pattern is mostly created on brown paper using the wearer's personal measurements. The garment created using the drafting method fits perfectly and to the wearer's satisfaction. Making one's own pattern is both economical and wise. Furthermore, by following the basic pattern, one can easily change the style. This type of pattern can be easily created by either drawing it by hand or using a computer that has been programmed to create these basic patterns based on the wearer's measurements. Measurements for total length, neck, chest shoulder, waist, hip and so on and ease and sewing allowances are marked on paper and construction lines are drawn to complete the pattern (Kamrun Nahar Naznin, Md. Tabraz, Summiya Sultana, 2017)

Uses of paper patterns:

- Paper patterns are very useful for both beginners and experts because there is no risk of the material being cut incorrectly.
- It is fundamentally very useful to the beginner because it is one of the best methods of learning than directly cutting the material.
- Paper patterns save time and labour because they can be saved and reused as needed.
- Paper patterns are simple to modify in order to achieve a perfect fit.
- If the basic paper pattern is used for garment manufacturing, changes to the design can be made quickly.
- If the basic paper pattern is used for garment manufacturing, changes to the design can be made quickly

2) **Draping-**

Draping can be thought of as a process that entails a thorough survey and study of the figure in order to develop a reliable fitting experience. Draping was originally referred to as modelling. This was the original method of making clothing patterns. Draping is a free approach that is always experimental to some extent and cannot be described as a precise technique. A two-dimensional piece of fabric is draped around a form, conforming to its shape, to create a three-dimensional fabric pattern. To make the garment more comfortable to wear, allowances for body

movement are added. The benefit of draping is that the designer can see the overall design effect, style, and silhouette of the finished garment on the body form before cutting and sewing the garment piece. It is, however, more expensive and time consuming than making paper patterns.

3) **Digital Pattern Making-**

A pattern-making system based on measurements taken from a dress form, model, or measurement chart provided by the buyer. This system primarily created one specific size pattern known as size or base size. Following that, grading on the basic size is completed, and all seizes patterns are sent to the marker for industrial bulk production. In industry, various types of pattern making software are used to create the pattern. It is one of the simplest methods and requires the least amount of staff compared to paper pattern making and draping (Kamrun Nahar Naznin, Md Tabraz, Summiya Sultana, 2017)

Patterns are used in the garment industry to cut fabric pieces and make the garment. Patterns are created primarily so that the same style can be easily duplicated and multiple pieces can be efficiently made. Making patterns ensures that you do not have to start from scratch when duplicating patterns. Pattern making is now simple thanks to technological advancements and the use of various computer software. Garment construction is simple when using these patterns. When we think of fashion, the first thing that comes to mind is either apparel or garments. As a result, garment construction is at the heart of fashion design. It entails a variety of processes such as understating machines, seam types, and garment stitching. Pattern making and garment construction skills are essential in garment manufacturing because these are the core areas of garment manufacturing. To perform pattern making, it is critical to understand the garment from every angle (https://www.fibre2fashion.com/industry-article/5658/basics-of-pattern-making)

2.4 Studies conducted on transformable garment

Lakshana S, Mariyam Adan, 2022 conducted a study on **"An Approach to Design Convertible Women's Wear Using Eco Friendly Textiles".** She quoted that- A highly debated and increasingly covered topic today is sustainability. Many clothing companies are transforming their approach in business and improvising their supply chains to reduce the overall environmental impact and improving social conditions in factories. There are many methods to make sustainable garments, out of which one of them is to make convertible

garments. They have the potential to change design and function which allows consumers to keep and use garments in a variety of ways. Transformable or convertible apparel offers functional and/or alternative aesthetic styles through various methods, which is considered a sustainable option in the fashion industry to reduce excess clothing consumption. In this paper, a convertible women's clothing collection is developed. It also analyses consumer preferences and intention to buy the clothing through a survey collected from a convenient sample of 50 respondents. The results of this study will benefit apparel designers, merchandisers, and retailers in developing and promoting convertible dresses (Lakshana s, Mariyam Adan , 2022).

Chanjuan Chen, Kendra Lapolla, 2021, conducted a study on **"The Exploration of the Modular System in Textile and Apparel Design".** He quoted that- The aim of this design research is to explore modular shapes and interlocking systems for apparel design using research through practice approach. As a transformable design approach, modular design features small standardized units that can be independently combined in various configurations to create different forms and provide multiple functions. However, there has been little hands-on integration of methods for developing more fitted garment designs and incorporating visually appealing surfaces, such as prints, within a modular system. By adopting Bye's description of a research through practice approach, the researchers for this study aimed to explore modular textile systems that would result in more fitted garments and aesthetically appealing surfaces. Through documenting and analyzing a range of data from the design process and outcome of four experimental designs, this study resulted in the development of advanced research through a Focused Knowledge Design Practice framework (Chen, C., & Lapolla, K. 2021).

Minjie Gong, Osmud Rahman, 2015, conducted a study on **"Transformable Garment: Sustainable Fashion and Mass Customization".** He quoted that- This exploratory research incorporates the publicly pressed ideas regarding minimal wardrobe adoption with academic research on transformable clothing to evaluate the understanding of sustainability awareness in college students' life. After their unknown exposure to the instructor's adoption of minimal transformable wardrobe, the students were surveyed regarding the perceptions of their instructor's appearance, transformable clothing, gender role in adoption, and reasons for their adoption. Qualitative analysis revealed the perceived benefits of the instructor's wardrobe adoption, including the themes of simplification, professional appearance, and saving time and money. Students expressed interest in

transformable clothing, which could reduce clothing consumption for themselves and other consumers. Gender differences were identified when adopting minimal wardrobe; environmental sustainability and increased work productivity were the main reasons to adopt minimal wardrobe for males and females, respectively. This study provides valuable insights into emerging fashion professionals' perceptions on minimal wardrobe adoption and transformable clothing, as well as, directions for future research (Gong, M., & Rahman, O, 2015).

Osmud Rahman, Minjie Gong, 2016, conducted a study on **"Sustainable Practices and Transformable Fashion Design- Chinese professional and Consumer perspectives.** He quoted that- Many consumers are contented with the fast fashion styles, abundant choices, and affordable price. However, other consumers and environmental advocates began to question about this fast fashion system, including the problems of overconsumption and disposable clothing. As a result, many fashion practitioners and scholars have been developing different strategies and methods to minimise the fabric waste, and prolong the product lifespan through innovative design. The objectives of this study are twofold: (1) to explore various techniques for creating transformable clothing and (2) to gain a deeper understanding of how individuals (entrepreneurs, designers, professors, and consumers) respond to their perceptions of transformable clothing, and issues of sustainability in China. This study consists of three stages – design experiments, in-depth interviews, and online surveys. In stage one, various design prototypes were developed, with one of them being selected as the visual stimuli for stages two and three. According to our results, many informants and online participants supported the concept of sustainable fashion as well as the idea of transformable garments. However, many professionals had numerous concerns regarding the production cost, practicality, adaptability, and saleability (Rahman, O., & Gong, M, 2016).

Helen Koo, Yoon Jin Ma, 2015 conducted a study on **"Exploration of Transformable Garment Design Strategies on Dresses for Sustainability".** He quoted that- According to a recent report, the global apparel market value was estimated at $1.7 trillion U.S. dollars in 2012 (Fashion United, 2015). In 2013, about 19 billion garments were consumed in the U.S., with each consumer purchasing an average of 64 garments and spending about $1,141 (Fashion United, 2015). Although people have individual wardrobes, only a small portion is worn regularly (Fletcher, 2008; Locker, 2008). Since fast fashion and overconsumption have been major trends for over a decade, introducing negative influences

to our environment, economy, and society, more designers and consumers have sought new ways to enhance sustainability (Fletcher, 2008; Locker, 2008). In addition to designing sustainable garments by using eco-friendly materials, upcycling, and zero-waste patternmaking, transformable garments can also satisfy consumers' various needs and wants with versatile looks and functions (Fletcher, 2008; Gwilt & Rissanen, 2011; Locker, 2008; Welters, 2008). Transformation can be considered in designs that can grow, change, renew, re-figure, reform, or restructure (Loschek, 2009). Transformable garments involve technologies that can convert them into different styles or silhouettes, thus reducing the need to purchase new garments and extend the garment's lifecycle (Fletcher, 2008). For example, 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. However, there is an overall lack of research about transformable garments. The extant research only addresses a limited item compared to the various kinds of products worn by individuals. Thus, the purpose of this research is to understand consumers' preferences and expectations for transformable dresses, focusing on the aesthetic aspects and exploring possible changeable design options for transformable dresses. Data were collected from a convenient sample of female college student consumers from four universities in the U.S. using an online survey technique. The survey questionnaire was self-developed based on a literature review, including items on transformable dress preferences and focusing on aesthetic aspects (i.e., color/pattern, size/fit, silhouette, garment type, and design details), fashion behaviors regarding wardrobe diversity, dress preference, purchase experiences, reasons for discontinued use of dresses, and demographic characteristics. The questions were mixed with open-ended and close-ended questions. A 7-point Likert scale was used (1=strongly disagree to 7=strongly agree) for the close-ended questions. The mean age of respondents was 19.6 years with a range of 18 to 54, of which 95% were below 24 years old. The majority of the respondents was White or European (73.4%) and were freshman (63.4%), with a monthly income of less than $1,000 (90.7%). They mostly purchased two to three dresses in the Spring/Summer (32.2%) and in the Fall/Winter (61%); in black (Koo, H., & Ma, Y. J, 2015)

Helen Sumin Koo, Lucy Dunne, Elizabeth Bye 2014 conducted a study on **"Design functions in transformable garments for sustainability".** He quoted that - This study was designed as a bottom-up approach to understanding what kind of changeable functions people

desire in transformable garments by analysing a wardrobe database, participants perceptions of garment varieties, and participants values related to transformable garments (specifically tops, the wardrobe garment with the most observed design variability). The wardrobe database was analysed using data quantification and descriptive analysis. Style-conscious professional women, ages 20-40, were interviewed; their perceptions and values related to design variability in tops was the focus. Versatility was the most important reason for preferring specific changeable design functions. Among candidates for changeable design functions, the most preferred functions were transforming colours or patterns and sleeve lengths. Participants had three expectations for transformable garments: functional (ease of matching, ease of layering, comfort, usability, ease of care, and durability), hedonic (fun and be able to experiment with various styles), and social (context aptness and modest. (Koo, H. S., Dunne, L., & Bye, E, 2014).

Neşe Yaşar ÇEĞİNDİR, Ceren ÖZ conducted a study on **"Transformable Dress Practices"**. He quoted that- The purpose of this study is to examine transformable dress designs that can be converted into multiple design with the same basic pattern under the umbrella of sustainable fashion in terms of design, usability and marketability. For this purpose, the study was carried out in two stages. First, a capsule collection was prepared for young women working in the upper-middle socio-cultural group, who will purchase the limited productions of national and international premium fashion brands focused on price / quality and care about sustainable fashion. In the study where the design process of the selected five dresses in this collection presented, the main idea is that each dress adapts to multiple sizes and, each dress forms can be created in different combinations from same garment pattern. Iterative design trials were carried out on the 38 size, ½ proportion and scale female miniature clothing form. How many different ways each dress can be used is calculated with the subset combination formula. In the second stage, prepared dresses; target consumer opinions about design-usability and marketability were obtained by sharing from one of the researchers' personal social media accounts.

From the opinions and comments of target consumers; although they do not decrease their shopping speeds, it is concluded that they like such designs, they are happy with their customisation; they can make emotional connection with dresses and find them marketable.

As a result of the combination calculations of clothes and target consumer responses, it was pointed out that the concept of sustainability can be adapted to ready-to-wear production with transformable designs (ÇEĞİNDİR, N. Y., & Ceren, Ö. Z. (2020).

METHODOLOGY

3. METHODOLOGY

In order to explore different methods, as well as to collect comments from a group of young females, a mixed-research methodology was employed for this study. Components of the study include design experiments and surveys. Various design prototype were developed with three being selected as the final designs for this study

The methodology pertaining to the study on "Design and Constructing Detachable Western Wear using Jali pattern as theme" is carried out as per the headings presented below

3.1 Design and evaluate jali pattern inspired transformable western wear

- Survey target group
- Conceptualization of idea
- Conceptual sketching

3.2 Prepare pattern for standard measurement

- Pattern making and cutting
- Prototype construction
- Fitting and modification

3.3 Select suitable fabric and trims for constructing garment

- Material preparation
- Fabric and trims purchasing

3.4 Construct final garment

- Final physical garment
- Garment evaluation

3.5 Visual display

3.6 Cost estimation

In order to explore different design methods, as well as to collect comments from a group of young females, a mixed-research methodology was employed for this study. Components of the study include design experiments and surveys. Various design prototypes were developed with three being selected as the finals designs for this study.

3.1 Design and evaluate jali pattern inspired transformable western wear.

Jali or Jali is a term used for partition or curtain walls with intricate geometric and ornamental perforations. Jaali was commonly used in India during the Mughal and Rajput architecture timeline and was mostly made of sandstone, marble, and clay (The Hindu Newspaper, 2018). Initial Jaali work had geometric patterns carved into stone and the Mughal introduced more floral patterns (Reki, M and Sekcuk, S.A., 2018).The characteristics of these patterns are such that each module is symmetrical and is repeated multiple times on a grid which gives the illusion of continuity. The patterns vary from simple six-point hexagons to 10-fold rosette (Abdullahi, Y., & Embi, M. R. B. (2013)

In the existing state of competitive market and textile design techniques, the designers need to acclimatize some contemporary practices to keep our heritage art, craft, designs and motifs alive. Designers and crafts persons today endure to discover, rejoice and reproduce our rich original substantial art and crafts of heritage with the numerous ways and forms of textile designs. This study would expedite the renewed stream of ideas in the area of contemporary styles in the textile deign by constructing novel and more resourceful connections between past and present. With the new advance ideas, the potentials to redesign the magical old classical

3.1.1. Survey target group

A survey was conducted to evaluate the consumer's perception on transformable clothing. Qualitative Research Methodology was applied in this study; the data collection tool survey method was used by preparation of questionnaire. The factors used in questionnaire are colour, fabric selection, silhouette, convertibility factor and overall design. The main intention was to gain information about the possibility of making sustainable clothing with the focus on transformable garments. The purpose of this survey is to investigate user's expectations and preferences for transformable design functions of transformable garment to extend the life cycle of the clothing. With transformable design elements added to a dress, a user can wear that one-dress more than once, encouraging sustainable consumption. Rather than looking for a new dress, users can wear their dress with one or even several new looks. The main intention is to learn about the positive and negative perceptions towards this specific design approach.

The survey questionnaire was self-developed based on the literature review and the questionnaire consisted of three sections. The first section about the informant's personal information. The second section was focused on the socio-economic status. The third section was about their opinions, awareness and perceptions towards sustainability and transformable garments. The questionnaire used for the survey is given in annexure.

Informant's opinions of transformable design were collected through this survey and the survey gathered the female consumer's opinions about purchasing transformable designs and well as sustainable fashion. Sample size of 125 between the age group of 20-26 was taken and the views of all the 125 samples were taken inorder to know whether they were familiar with transformable clothing. Participation in this study was voluntary and it took about 5-10 minutes to complete the entire survey.

3.1.2. Conceptualization of idea

Many critical decisions are made in the early phase of design, usually called ideation or the conceptual design phase (Howard, Culley & Dekoninck, 2008). Various inspiration sources enable designers to move from their first vague images towards envisioning final ideas (Laamanen & Seitamaa-Hakkar-ainen, 2014; Petre et al., 2006).This preliminary design phase involves the initial generation and exploration of ideas to create new solutions. An idea in design represents a basic element of thought that can be visual, concrete or abstract.

Within the fields of textiles and fashion, the dual space search model refers to the designer's manipulation of composition space and construction space (Seitamaa-Hakkarainen & Hakkarainen 2001). Visual display elements such as size, shape, colour and pattern are part of composition while construction space involves materials, texture and production procedures. Multiple visual elements are manipulated in order to provide aesthetically pleasing garments (Lee & Jirousek, 2015).Dasgupta et al(2011) note that, when developing design ideas, designers utilise the outline, cuts and texture of various garment elements. Designing visual elements (such as silhouette space, lines and cuts, shape, form, light, colour, texture and pattern) and principles (rhythm, scale, harmony, contrast and proportion) are essential guidelines for all textile design fields.

Transformable clothing offers consumers fresh and innovative ways to express their personality. It also addresses consumers' fashion needs while not necessitating additional purchases. This aspect of convertible garments would appeal to people who want to gain

fresh and creative fashion styles without having to purchase new products on a regular basis. The main idea is to create a design that can be worn in a multiple of ways according to the wearer. Total of 10 designs were created keeping the transformable motif in mind and they are presented as follows:

DESIGN 1-

This is a garment with detachable sleeves and convertible length which can be worn according to the wearer's choice.

DESIGN 2-

This garment can be worn in two ways. This is a dress with detachable top which can be worn along with pant and skirt.

DESIGN 3-

This is a garment with detachable top and pant which when detached can be worn as a separate garment.

DESIGN 4-

A transformable dress with an overcoat which when worn with the overcoat give a jali effect and when worn without the coat give a formal look. This garment also has detachable sleeves along with it.

DESIGN 5-

This is a garment with detachable sleeves and detachable top which can be worn along with pant and skirt

DESIGN 6-

This is a garment with detachable sleeves, and it can be worn in two ways. It has a detachable skirt and top.

DESIGN 7-

This is a garment with jali texture and along with it has a cape. The dress can be worn with or without the cape, it gives a stylized look when worn with cape.

DESIGN 8-

A garment with detachable ruffle sleeves and detachable top which can be worn with pants as well as skirt

DESIGN 9-

A dress with detachable off shoulder sleeves which can be worn along with the dress to give a stylized look or can be detached according to the wearer's choice.

DESIGN 10-

A garment with detachable top along with convertible length and detachable ruffle which can be attached with the skirt to transform the length and also can be attached with the top to give a stylized look.

3.1.3 Conceptual sketching

In conceptual design, sketching guides the search for structures, idea generation and testing of different solutions (Eisentraunt & Günther, 1997).Sketching is an integral part of design activity and the principal 'thinking tool' for the designer (Eisentraunt & Günther, 1997). When developing ideas, fashion designers produce many sketches, editing them selecting the best one for further development. Using various visual representations, a designer generates alternative solutions and tests them before bringing the designed product to production (Seitamaa-Hakkarainen, 2001).

Conceptual sketches produced are primarily meant for the designer's own feedback and they are typically rather rough representations of the main abstract idea. The type of sketching appears to indicate how explicit or complete design ideas are (Eisentraunt& Günther, 1997; Goel, 1995). Goel (1995) has analysed the role and development of sketching by distinguishing syntactic and semantic levels of drawings that can be transformed in a lateral or a vertical manner in the sketching process. Following Goel's idea (1995), Seitamaa-Hakkarainen and Hakkarainen (2000) abstracted two contrasting strategies of sketch development from the protocol data horizontal and vertical sketch development. Horizontal sketch development indicates the move from one design idea to a different one without articulating either in depth whereas vertical development results in a more articulated and detailed version of the same idea. Similarly, Lee (2017) observed that these are two phases in the fashion designer's sketching process. The first includes lateral transformation of sketches where the designer superficially interprets the inspirational source on paper without evaluating the ideas. During the second phase, the vertical transformation of the sketches includes refining, re-interpreting and re-grouping the sketches in order to articulate sketches that are more detailed.

To offer some insights of practical design solutions, two design methods were employed and ten designs were created. The design concept was primarily based on two sustainable design practices- zero waste design and transformable/detachable design.

- Zero-waste design practices

Zero-fabric –waste design (Rissanen, 2008) is a design method based on re-pattering, which an experimental practice undertaken during the pattern is making process in garment production. McQuillan (2011) proposed four approaches for zero-waste apparel design- these encompass tessellation, jigsaw, embedded jigsaw and multiple cloth

methods. In addition to these four approaches, Carrico and Kim (2014) proposed a fifth design practice called 'minimal cut'. Apart from these various approaches, in creating fashion without the creation of fabric waste, Rissanen (2008) discuss pattern making, fashion creation processes and less fabric wastage. It is important to note that there is approximately 10-20% fabric waste occurring during the clothing production process (Rissanen, 2008). Thus, one of the primarily objectives of sustainable fashion design is to reduce fabric waste.

- Transformable design practice

Transformable design is a practical solution which allows a piece of garment to be transformed into different looks to serve diverse individual needs purposes (i.e. aesthetic, functional and psychological).Due to the transformability and versatility of this types of garment, a number of positive impacts are expected to be created. These include: the consumers propensity of wearing the garment may increase, the life span of a garment will be prolong, the products psychological obsolescence will be postponed (Fletcher, 2008) and the disposal of clothing waste in landfills will be delayed.

The ten designs were evaluated by the textile design students (25) and three prototypes were selected for the final design development. Criteria's used for the survey is given below

- Design that focuses on extending the products life span.
- Consumer's interest in the design.
- Visual design elements which includes size, shape, colour and patterns.
- Construction space which includes materials, texture and production procedure.
- Principle of design that includes rhythm, scale, harmony, contrast and proportion.

3.2. Prepare pattern for standard measurement

3.2.1 Pattern making and cutting

Pattern making is the art of manipulating and shaping a flat piece of fabric to conform to one or more curves of the human figure. Pattern making is a bridge function between design and production. A sketch can be turned into a garment via a pattern which interprets the design in the form of the garment components. A pattern is the actual copy of different parts of a garment that is made by cutting board or hard paper by using measurements which has taken from models or dress form after sketching on it. According to this pattern cloth is cut and then garment is made. For industrial production different patterns are made for different size and a marker is made with these different patterns for a large-scale production. Then many cloths are cut at a time and finally garments are made by large number of workers in garments industry. Pattern making is an individual art, where manipulating and shaping a flat piece of fabric to conform to one or more curves of the human figure. Pattern making is a connection between design and production. A sketch can be turned into a garment via a pattern which interprets the design in the form of the garment components. Pattern is an original garments form on the paper or cardboard templates which other garments of a similar style are copied from which the parts of garments are traced on to fabric before cutting out and assembling (sometime called paper pattern).

DESIGN 1: A-Line dress with Overcoat and Detachable Sleeves

A-Line dress

Measurements required: Full length = 36 inch, chest = 38 inch, Shoulder width = 17 inch, sleeve length = 15 inch, round width = 9 inch

A-Line dress drafting procedure:

Back Part:

- 1-0: Full lentgh + $\frac{1}{2}$ inch
- 2-0: $\frac{1}{4th}$ chest – (1) inch
- 3-1: $\frac{1}{4th}$ chest + 1 $\frac{3}{4}$ inch
- 4-1: $\frac{1}{4th}$ chest + 4 inch
- 4-5: $\frac{1}{2}$ inch upward
- 6-0: $\frac{1}{12th}$ chest + $\frac{1}{4}$inch
- 8-0: $\frac{1}{2}$ shoulder width + ½ inch for seam
- 9 is squared down from 8-9
- 10-8: ½ inch down as the shoulder's slope. Bottom hem 1 ¼ inch extra to be kept for hem purpose

Front Part:

- 11-0: $\frac{1}{12th}$ chest + ¼ inch
- 12-9: 1 inch shape the front armhole from 8 to 3 through 12

Overcoat

Measurements required: Full length = 36 inch, bust = 38 inch, Shoulder width = 17 inch, sleeve length = 15 inch, round width = 9 inch

Overcoat drafting procedure:

Back Part:

- 1-0: Full lentgh + $\frac{1}{2}$ inch

- 2-0: $\frac{1}{4th}$ chest – (1) inch
- 3-1: $\frac{1}{4th}$ chest + 1 $\frac{3}{4}$ inch
- 4-1: $\frac{1}{4th}$ chest + 4 inch
- 4-5: $\frac{1}{2}$ inch upward
- 6-0: $\frac{1}{12th}$ chest + $\frac{1}{4}$inch
- 8-0: $\frac{1}{2}$ shoulder width + ½ inch for seam
- 9 is squared down from 8-9
- 10-8: ½ inch down as the shoulder's slope.

Front Part:

- 11-0: $\frac{1}{12th}$ bust + ¼ inch
- 12-9: 1 inch shape the front armhole from 8 to 3 through 12

Puff sleeves

Measurements required: Sleeve length = 15 inch and round width = 9 inch

Puff sleeves drafting procedure:

1-0: Sleeve length = 2 inch

2-0: $\frac{1}{8th}$ chest + $\frac{1}{4}$ inch

3-2: $\frac{1}{4th}$ chest + 2 inch

4-1: 2 to 3 (-) $\frac{3}{4}$ inch

5-4 is ¾ inch for shape

DESIGN2 – Palazzo Pant and Bustier Top with Detachable Sleeves

Bustier Top

Measurements required: Total length= 15 inch, chest= 34 inch, waist= 30 inch, shoulder= 7.5 inch, armhole= 7 inch, neck width= 4 inch, neck depth= 3.5 inch, back neck length= 3 inch

Basic bodice drafting procedure:

- 0-1: Full length 15 inch
- 0-2: Shoulder 7.5 inch
- 2-3: Armhole 7 inch
- 3-4: 2.75inch extends and join 2 and 4 within a curve
- 4-5: 1.5 inch and extends it the last i.e. full length
- 0-6: 4 inch neck width
- 1-7: 3.5 inch neck depth and mark point 8
- Join the point 8 and 6 with a curve

For the bustier top

Front

- First, trace the back and front bodice
- From the bust point, draw the bust radius for the contour guide
- Mark down the bust radius measurement from the bust point
- Using compass, draw the bust radius measurement around, from the bust point
- From the bust point extend horizontal line.
- From the horizontal line at bust point, mark up and mark down 3 /8 inch
- Connect these two marks at the bust point making a new dart
- From the side seam mark down 4/8 inch and mark in 4/8 inch
- Draw a slant line in the side seam blending towards the waistline
- For the under bust, mark out 3/16 on both sides
- From these marks, draw slant lines, blending towards the dart of the waist dart
- From the under bust marks, draw slight curves blending towards the end of the dart
- Connect the end points of shoulder and waist darts

- Draw the neckline for the bustier
- Mark up a curve from the 5/8 inch mark blending towards the bust radius at shoulder dart
- From the adjusted side seam, draw a slight curve towards the bust radius
- Connect and draw a curve blending towards the bust radius at shoulder dart
- From the shoulder dart at bust radius, mark out 4/8 inch on both sides
- Cut out the patterns

Back:

- Extend a horizontal line at the cross back notch
- Connect the end points of the shoulder and waist darts
- And extend slant lines from the waist dart legs, going towards the cross back line
- From the side seam mark down 4/8 inch and mark in 4/8 inch. Join the lines.
- For the back neckline of bustier, from the waistline at center back mark up 6 inch, the 6 inch mark will guide for the neckline
- Draw a slight curve from the side seam towards the 6 inch mark at center back
- Cut the patterns

Palazzo **Pant**

Measurements required: Full length, waist and hip

Palazzo **Pant drafting procedure:**

- 0-1: Full length
- 2-1: Inside leg plus 1 cm
- 4-2: One fourth seat plus 1.5 inch
- 5-0: Same as 4-2, join 4-5
- 6-4: $\frac{1}{12th}$ the seat
- 1-5: $\frac{1}{4th}$ inch hip circumference shape the 3 to 8
- 9-2: 2 inch and shape into 8 to 9
- For the back just add extra 1 $\frac{1}{2}$ inch for the crotch area to give extra lose fit
- Then cut into two piece in the straight grain of the fabric

Puff sleeves

Measurements **required**: Sleeve length = 15 inch and round width = 9 inch

Puff sleeves drafting procedure:

1-0: Sleeve length = 2 inch

2-0: $\frac{1}{8th}$ bust + $\frac{1}{4}$ inch

3-2: $\frac{1}{4th}$ bust + 2 inch

4-1: 2 to 3 (-) $\frac{3}{4}$ inch

5-4 is ¾ inch for shape

DESIGN 3: A body fit Dress with sheer cape

Measurements required: Full length = 30 inch, over bust= 35 inch, bust = 38 inch, waist = 34 inch, hip= 38

Body fit dress drafting:

- Measure around the over bust, bust, waist and hips
- Take the measurements and divide each one by 4, since we have 4 panels that make up the dress. Label the over bust measurement "A", the bust measurement "B",the waist measurement "C" and the hip measurement "D"
- Take vertical measurements between lines A, B, C and D.
- Label the line from over bust to the bust as line F, the line from the bust to waist as line G, from the waist to hips as line H and the total length of the dress as line I
- Draw lines A, B, C and D all extending from line I.
- Connect the free ends of lines A,B,C and D

3.2.2 Prototype construction

3.2.1 For design 1- A-Line dress with overcoat along with detachable sleeves

Stitching instructions for A-Line dress

- Cut the fabric according to the assembled pattern, pin and mark it along with the lining fabric
- Mark up the dart properly, press it and sew it properly
- Place the right sides of the fabric together, mark 1 inch away from the edges and sew it
- Finish the raw edges of the neckline and sleeves to give it a clean look
- Trim the raw edges inorder to achieve neat finish
- Finally press the garment

Stitching instructions for overcoat

- Cut the fabric according to the assembled pattern, pin and mark it along with the lining fabric
- Mark up the dart properly, press it and sew it properly
- Place the right sides of the fabric together, mark 1 inch away from the edges and sew it
- Taking the midpoint of the fabric, from the bottom mark 18 inch upwards drawing a straight line
- From the midpoint mark2 inch towards the side seam and connect it to the midpoint. Cut it according to the measurement and the sew the raw edges to give neat look
- Finish the raw edges of the neckline and sleeves to give it a clean look
- Trim the raw edges inorder to achieve neat finish
- Add decorative buttons to enhance the look
- Finally press the garment

Stitching instruction for sleeves

- Trace the pattern on the fabric and cut it
- Start by closing the inseam of the sleeve. Pin the right sides together and sew
- Sew the elastic at the end of the sleeve

3.2.2 For design 2-Bustier top and Palazzo pants with detachable sleeves

Stitching instructions for bustier top

Front

- All the pattern are cut out from the fabric
- The sheer fabric is pinned along with the lining fabric and is pinned properly before sewing
- Sew the sheer fabric on the lining fabric 1/8 inch away from the edge for both and front and back
- All the parts are sewn separately by taking 1/8 inch away from the edge
- To attach the front panels first, face the right sides of the panels together and match the bust point notches and pin it
- Press the seam open for more clean lines
- Attach both of the front finished panels together to complete the front bustier i.i. the mid seam where the bust contour is located
- Sew it with 4/8 inch of seam allowance

Back

- Face the right sides of the back together
- Pin the panels together before sewing
- Sew the back panels with 4/8 inch sewing allowance
- Once finished sewing the back bustier panels, press it
- Finally attach the side seams of both front and back parts of the bustier
- Lastly press the seams open to give a clean finish to garment

Stitching instructions for palazzo pants

- Trace the pattern on the fabric and cut it
- Finish the darts and pleats on the back and front
- Attach the side seam of one side
- Finish the inside leg seam
- Finish the hemline of bottom
- Attach the elastic to the pant

- Trim off the raw edges

Stitching instructions for sleeves

- Trace the pattern on the fabric and cut it
- Start by closing the inseam of the sleeve. Pin the right sides together and sew
- Sew the elastic at the end of the sleeve

3.2.3 For design 3- Body fit dress with sheer cape

Stitching instructions for Body fit dress

Front

- Cut the fabric according to the assembled pattern, pin and mark it along with the lining fabric
- Place the right sides of the fabric together, mark 1 inch away from the edges and sew it
- Finish the raw edges of the neckline and sleeves to give it a clean look
- Trim the raw edges inorder to achieve neat finish
- Finally press the garment

Back

- Cut the fabric according to the assembled pattern, pin and mark it along with the lining fabric
- Zipper is attached in between of the two separate pieces of the fabric and sew it
- After stitching the zipper, facing the right sides of the fabrics front and back together stitch it.
- Finish the raw edges of the neckline and sleeves to give it a clean look
- Trim the raw edges inorder to achieve neat finish
- Finally press the garment

3.3. Select suitable fabric and trims for constructing garment

3.3.1Material Preparation

Suitable fabric and trims were selected and bought for constructing three garments. After selecting the trims and materials the first step is to identify the right and wrong sides of the fabric. The side of the fabric that will face out is referred to as the right side; the other side is called the wrong side. Identifying the right and wrong side of the fabric will help to successfully cut out and sew pieces together.

Second step is to press the fabric, even if the wrinkles look insignificant, they will distort the fabric enough to throw off sizes and shapes when it comes time to sew. Smoothing wrinkles and creases makes it easier to cut the fabric properly.

Third step is to pin the fabric and fabric, the fabric is lay out on a hard, flat surface. When pinning two pieces of fabric together, insert pins perpendicular to the stitch line, inside the seam allowance. This will prevent puckering and protect the fabric from getting any uneven stitches.

Lastly cut the fabric using sharp sewing shears and make long smooth cuts.

3.3.2 Fabric and trims usage

Material and trimmings used for design 1- A-Line dress with overcoat and detachable sleeves along with costing are given in Table I

Table I-Fabric and trims usage cost for design 1

MATERIAL,TRIMMINGS AND FASTENERS	QUANTITY(Meters)	PRICE (Rs)
Blue material	$2\frac{1}{2}$	250/-
Jali textured material	3	1500/-
Cloth buttons	5	25/-

Material and trimmings used for design 2-bustier top and palazzo pants with detachable sleeves along with costing are given in Table II

Table II-Fabric and trims usage cost for design 2

MATERIAL,TRIMINGS AND FASTENERS	QUANTITY (Meters)	PRICE(Rs)
Jali textured material	5	750/-
Lining	5	150/-
Elastic	1	15/-
Hooks	4	10/-

Material and trimmings used for design 3- body fit dress with sheer cape along with coasting are given in Table III

Table III-Fabric and trims usage cost for design 3

MATERIAL,TRIMMINGS AND FASTENERS	QUANTITY(Meters)	PRICE(Rs)
Main fabric	2.5	425/-
Lining	2.5	250/-
Velcro	1	15/-
Zipper	1	15/-

3.4. Construct Final Garment

3.4.1. Final Physical Garment

Design 1: A-Line dress with overcoat and detachable sleeve

PLATE 1: A-Line dress with and without overcoat

PLATE 2: Detachable sleeve

Design 2: A bustier top with palazzo and detachable sleeve

PLATE 3: Bustier top with palazzo pants

PLATE 4: Detachable sleeve

Design 3: A body fit dress with sheer cape

PLATE 5: A Body fit dress with and without sheer

PLATE 6: Sheer cape

3.4.2. Garment feedback survey

The survey was conducted in visual inspection the sample was shown to the textile design students. then asked for feedback in rating form. It was conducted around 25 members

Table IV- Garment feedback survey

	Excellent	Good	Average	Bad
Colour Combination	15	10	0	0
Design	16	9	0	0
Type of the garment	12	13	0	0
Cost analysis	14	11	0	0
Texture of the fabric	17	08	0	0

From table IV it is clear that the level of respondents satisfaction was judges to be very much satisfied by the highest percentage for all products. color combination excellent 15 per cent, good 10 per cent, for design excellent 16 per cent, good 9 per cent. for type of garment excellent 12 per cent, good 13 per cent, for cost analysis excellent 14 per cent. good 11 per cent and lastly for the texture of the fabric excellent 17 per cent, good 8 per cent.

3.5. Visual Display

Design 1: A-Line dress with overcoat and detachable sleeves

PLATE 7: A-Line dress with and without overcoat

PLATE 8: A-Line dress with detachable sleeves

Design 2: A bustier top with palazzo pants and detachable sleeve

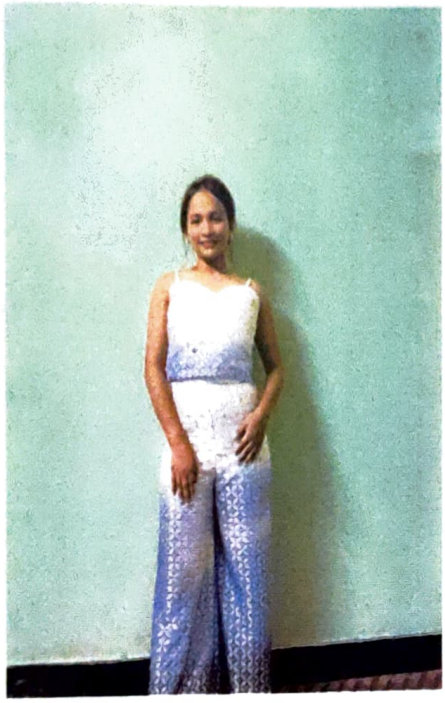

PLATE 9: Bustier top with palazzo pants

PLATE 10: Bustier top with palazzo pants
and with detachable sleeves

Design 3: A body fit dress with sheer cape

PLATE 11: A body fit dress with sheer cape

PLATE 12: A body fit dress without sheer cape

3.6 Cost estimation

A cost sheet is a complete record of each design and is used to cost the garment.

Table V-Cost Sheet for design-1

Fabric information	Style information
Resource – CPC, Town hall	**Style** – Contemporary style
Colours – Blue and White	**Size** – M
	Colours – Blue and White
	Price- Rs1595/-

Design illustration

Table VI-Total Material Cost for design-1

MATERIAL	QUANTITY(Meters/Pieces)	PRICE (Rs)
Blue material	$2\frac{1}{2}$	250/-
Jali textured material	3	900/-
Cloth buttons	5	25/-
Thread	2	4/-
	Total	**1179/-**

Labour cost = Rs 150 (3.5 hrs)

Profit (20%) = Rs (1179+150) X (20/100)

= Rs 266/-

Total = Rs (1179+266+150)

Selling price = Rs 1595/-

Hence the selling price for design 1 i.e. A-Line dress with overcoat and detachable sleeves is Rs 1595/-

Table VII -Cost Sheet for Design-2

Fabric information	Style information
Resource – CPC, Town hall	**Style** – Contemporary style
Colours – Blue, white and golden	**Size – M**
	Colours- Blue, White and golden
	Price- 1300/-

Design illustration

Table VIII-Total Material Cost for design-2

MATERIAL,TRIMMINGS AND FASTENERS	QUANTITY (Meters/Pieces)	PRICE(Rs)
Jali textured material	5	750/-
Lining	5	150/-
Elastic	1	15/-
Zipper	1	15/-
Threads	2	4/-
	Total	**934/-**

Labour cost = Rs 150 (3hrs)

Profit (20%) = Rs (934+150) X (20/100)

= Rs 217/-

Total = Rs (934+217+150)

Selling price = Rs 1300/-

Hence the selling price for design 2 i.e. palazzo pants and bustier top with detachable sleeves is Rs 1300/-

Table IX-Cost Sheet for design - 3

Fabric information	Style information
Resource – CPC, Town hall	**Style** – Contemporary style
Colours- White and red	**Size-** M
	Colours- White and Red
	Price- Rs 1031/-

Design illustration

Table X-Total Material Cost for design- 3

MATERIAL,TRIMMINGS AND FASTENERS	QUANTITY(Meters/Pieces)	PRICE(Rs)
Main fabric	2.5	425/-
Lining	2.5	250/-
Velcro	1	15/-
Zippers	1	15/-
Threads	2	4/-
	Total	**709/-**

Labour cost = Rs 150 (3 hrs)

Profit (20%) = Rs (709+150) X (20/100)

= Rs 172/-

Total = Rs (709+172+150)

Selling price = Rs 1031/-

Hence the selling price for design 3 i.e. A body fit dress with sheer cape is Rs 1031/-

RESULTS AND DISCUSSION

4. RESULTS AND DISCUSSION

The findings of the research entitled **"Designing and constructing transformable western wear using jali pattern as theme"** are discussed under the following heads:

4.1 Socio Economic Profile of the Respondents

4.2 Knowledge and aptitude of the Respondents

4.1 SOCIO-ECONPMIC PROFILE OF THE RESPONDENTS

Socio-Economic profile of the respondents are given in Table 4.1.1

TABLE XI-SOCIO-ECONOMIC PROFILE OF THE RESPONDENTS

Variable	Aspects	Percentage of Respondents (n=120)
Age	22-23	19
	24-25	76
	26-27	5
Educational qualification	Undergraduate	5
	Graduate	8
	Post graduate	87
Occupation	Employed	80
	Self-employed	20

Age

The age profile of the respondents revealed that the majority of 76 percent of the respondents were between the age group of 24 and 25 years, 19 percent were between the age group of 22-23 and the least of 5 percent were between the age group of 26-27.

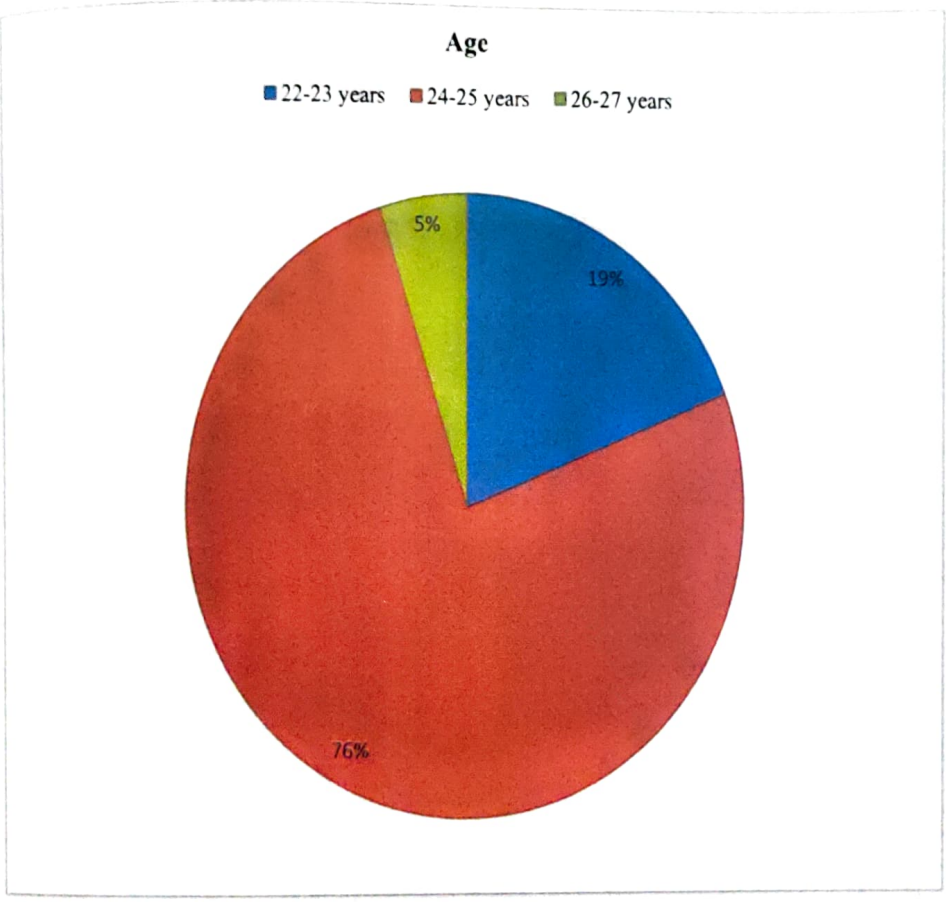

Figure 1: The Respondents group of age

Educational Qualification

The education profile of the respondents showed that 87 percent of the respondents have completed their post graduation, 13 percent are under graduate

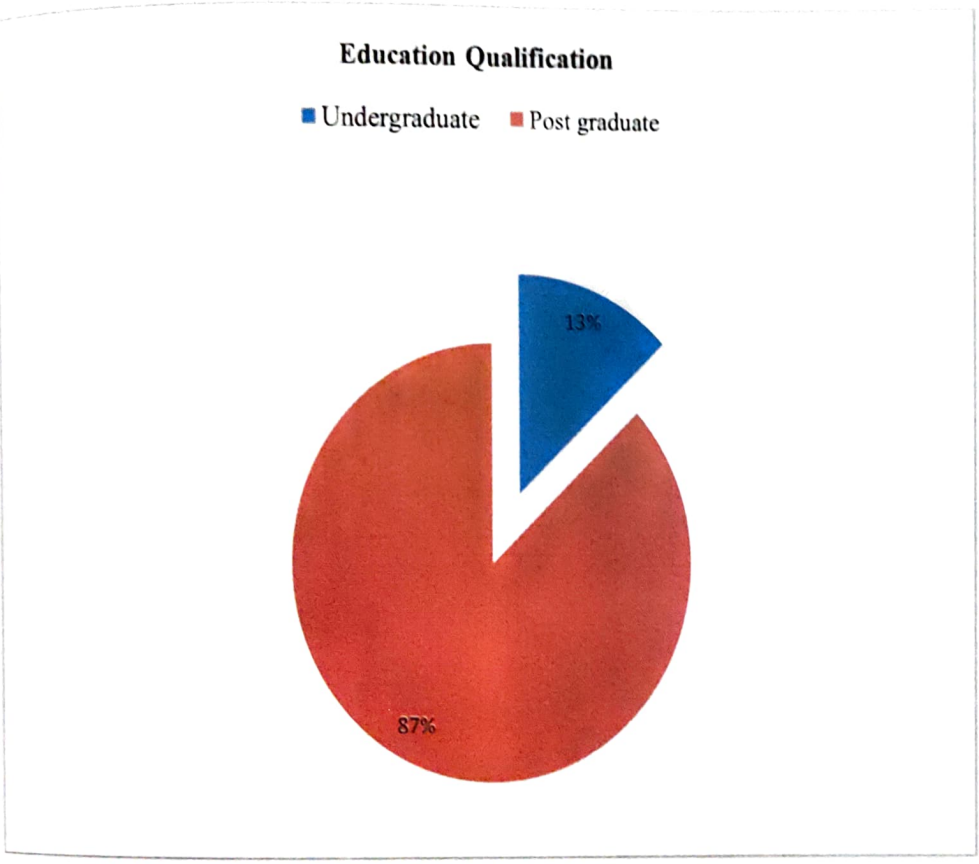

Figure 2: Educational qualification of the respondents

Occupation

The occupation profile of the respondents showed that 80 percent were employed and 20 percent were self employed.

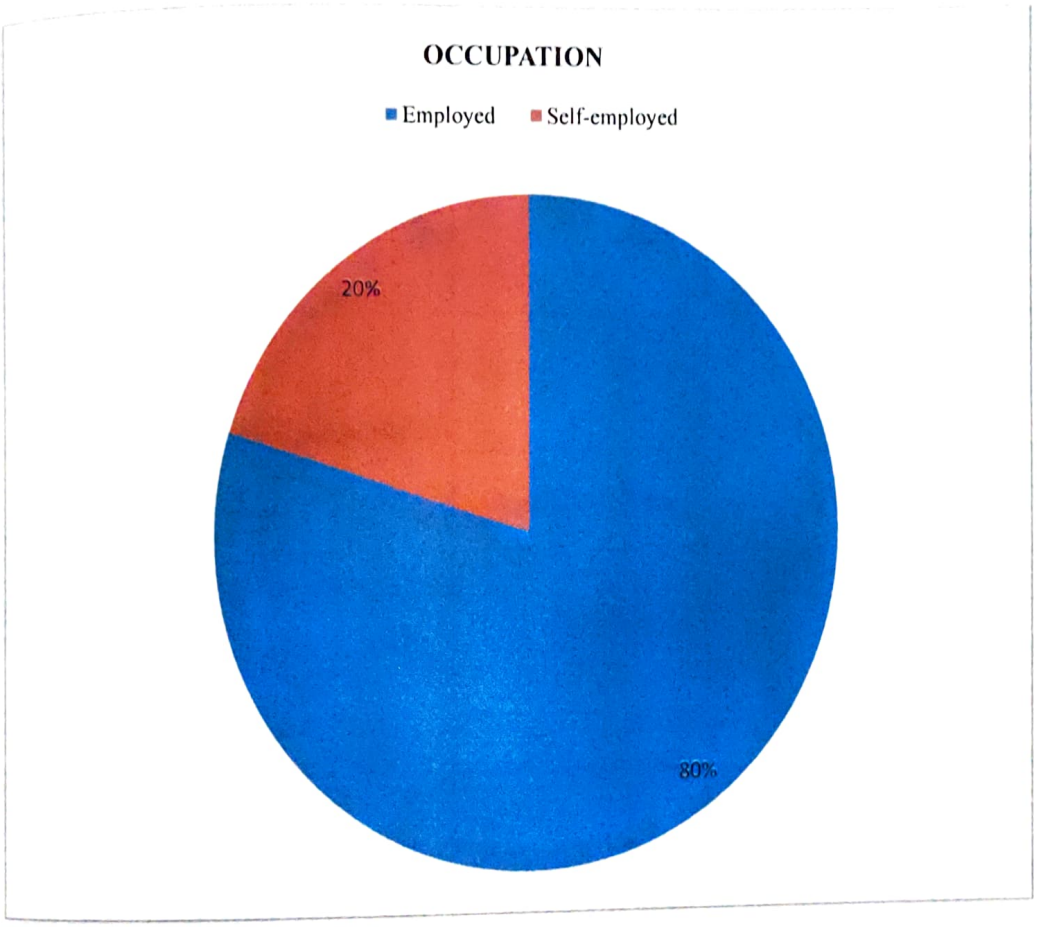

Figure 3: Percentage of respondents occupation

4.2 KNOWLEDGE AND APTITUDE

Details of the awareness of the respondents towards the research entitled **"Designing and constructing transformable western wear using jali pattern as theme"**

Table XII-KNOWLEDGE AND APTITUDE

Variables	Aspects	Percentage of Respondents (n=120)
Awareness about transformable clothing	Yes	97
	No	03
Any transformable garment purchased by the respondents	Removable sleeves	05
	Detachable collars	08
	Detachable garments	63
	Reversible garments	24
Usage of the transformable feature	Very often	10
	Not very often	90
Pay attention on sustainability while purchasing any garment	Yes	99
	No	01

Variables	Aspects	Percentage of Respondents (n=120)
Purchased any customizes garments	Yes	91
	No	09
Preferable fashion style for transformable garment	Casual	41
	Retro	04
	Classic	08
	Contemporary	47
Preferable features for customized garments	Collars	13
	length	51
	Color	11
	Accessories(Zippers, buttons)	25

Variables	Aspects	Percentage of Respondents (n=120)
Favorable element to add in transformable garment	Color	20
	Shape	28
	Texture	27
	Pattern	25
Preferable silhouette for transformable garment	Close fitted	57
	Flare	43
Preferable transformable technique for the garment	Transformable garment using snap fasteners	32
	Transformable garment using zippers	14
	Reversible garments	22
	Detachable garments	32

Variables	Aspects	Percentage of Respondents (n=120)
Favorable type of fabric	Cotton	15
	Silk	29
	Chiffon	10
	Any type	46
Trustable quality items that come at an affordable price	Yes	96
	No	04
Annual spending on family clothing	20,000-30,000	19
	40,000-50,000	09
	60,000-70,000	71
	80,000-90,000	01

Awareness about transformable garment

The data shows that 97 percent of the respondents are aware of what transformable garments are and only 3 percent are not aware of it. This shows that majority of the respondents are aware of what transformable garments are.

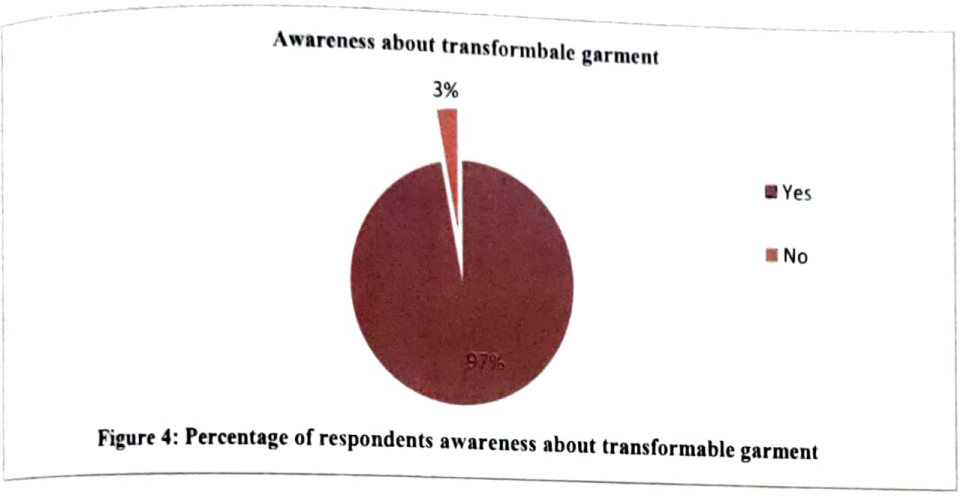

Figure 4: Percentage of respondents awareness about transformable garment

Any transformable garment purchased by the respondents

The data shows that 63 percent of the respondents are more inclined detachable garments and the rest following 24 percent, 8 percent and 5 percent are inclined towards reversible garment, detachable collars and removable sleeves respectively

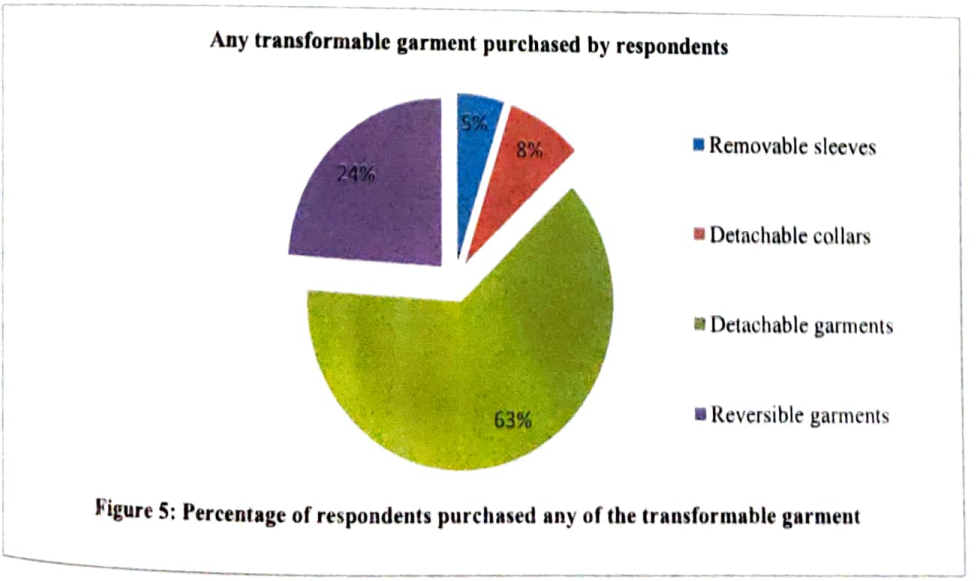

Figure 5: Percentage of respondents purchased any of the transformable garment

Usage of the transformable feature

The data shows that 90 percent of the respondents do not use the transformable feature very often and only 10 percent of it uses it. Thus it shows that majority of the respondents do not use the transformable feature very often.

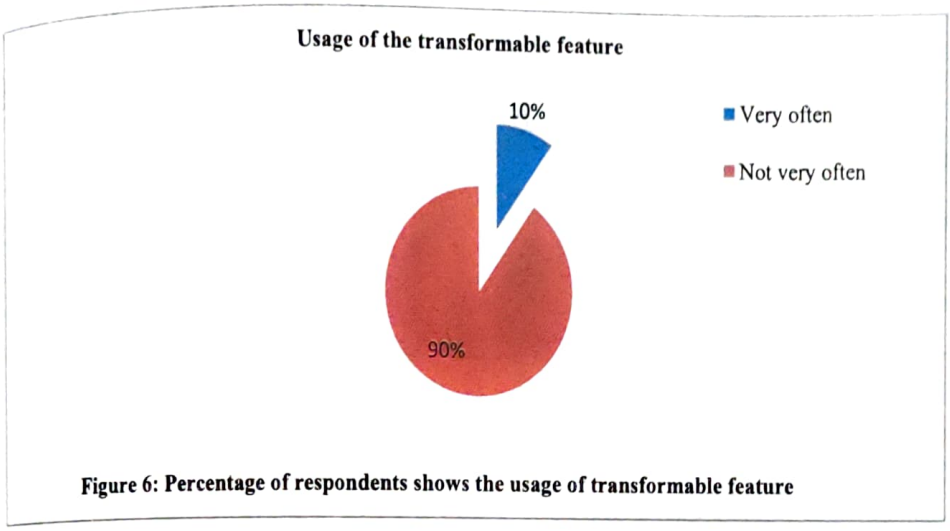

Figure 6: Percentage of respondents shows the usage of transformable feature

Pay attention on sustainability while purchasing any garment

The data shows that 75 percent of the respondents pay attention to sustainability while purchasing any garment and 25 percent of it do not pay attention to it

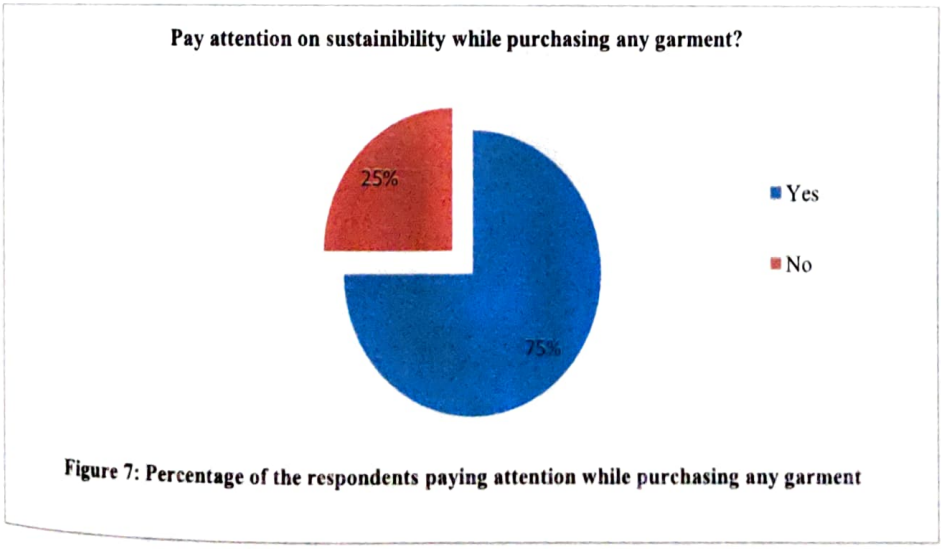

Figure 7: Percentage of the respondents paying attention while purchasing any garment

Purchased any customized garments

The data shows 91 percent of the respondents that means majority of the respondents have purchased customized garments expect 9 percent of the respondents.

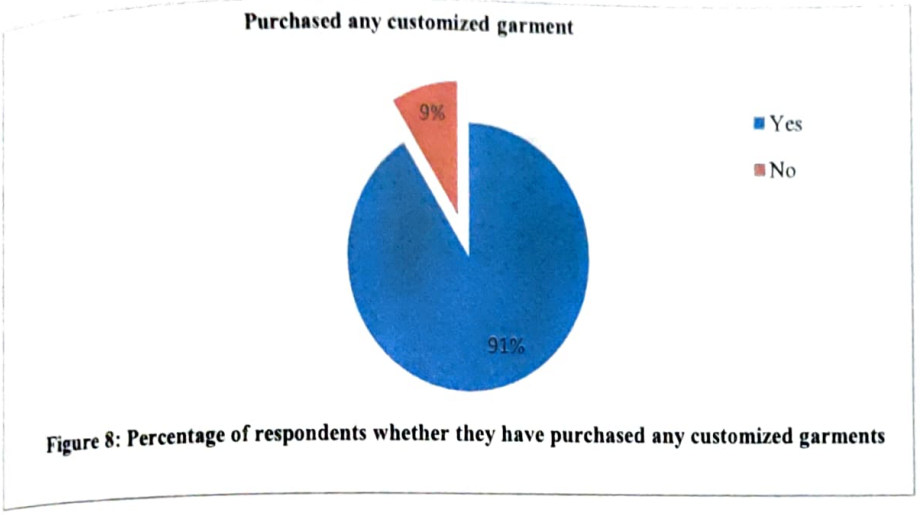

Figure 8: Percentage of respondents whether they have purchased any customized garments

Preferable fashion style for transformable garment

The data shows that 47 percent of the respondents that is majority of the respondents prefer contemporary fashion style and the others 41 percent, 8 percent and 5 percent i.e. casual, classic and retro respectively.

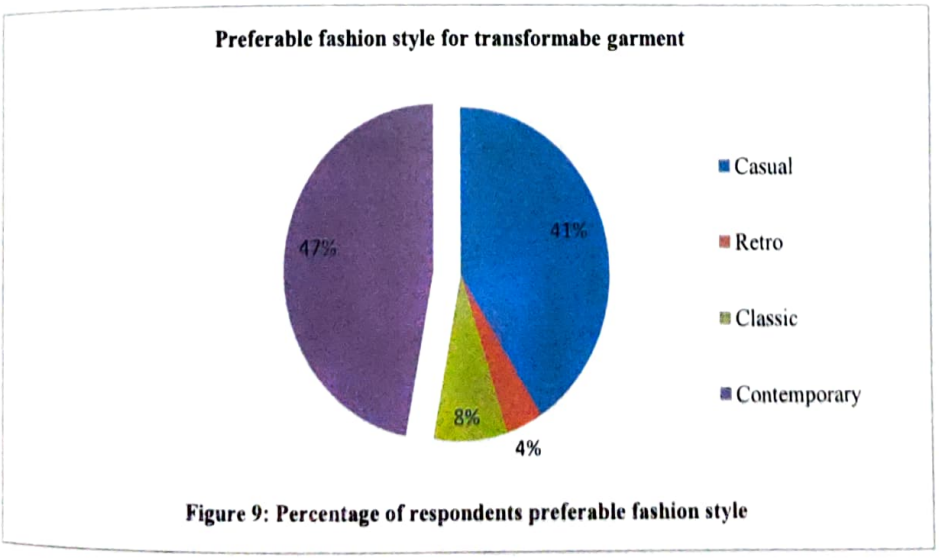

Figure 9: Percentage of respondents preferable fashion style

Preferable feature for customized garments

The data shows that 51 percent of the respondents would like to change the length of the garment, 25 percent of the respondents would change accessories, 13 percent of the respondents would like to change the collar and the rest 11 percent of the respondents would to change the color.

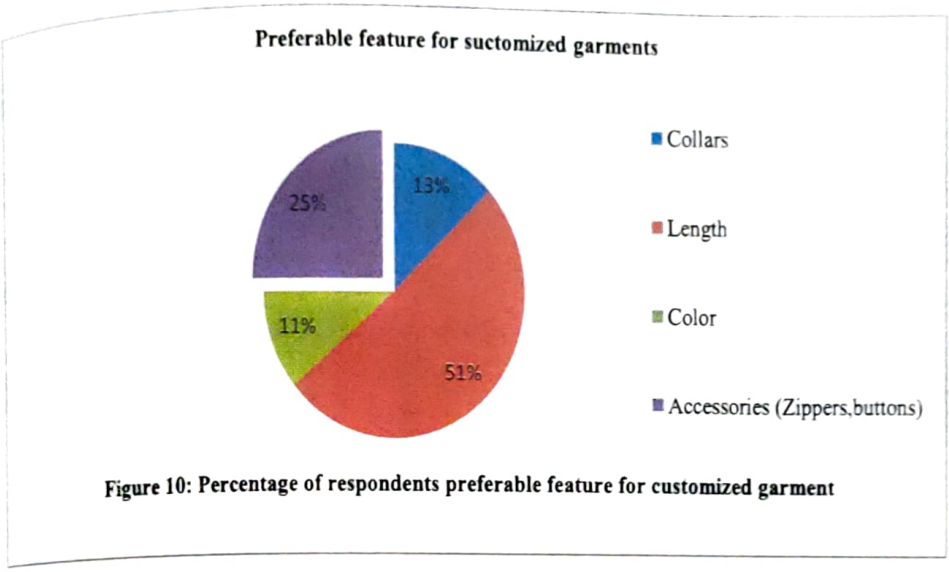

Figure 10: Percentage of respondents preferable feature for customized garment

Favourable element to add in the transformable garment

The data shows that 28 percent of the respondents would like to add shape in transformable garment, 27 percent would like to add texture, 25 percent would like to add pattern an d the rest 20 percent would like to change the color.

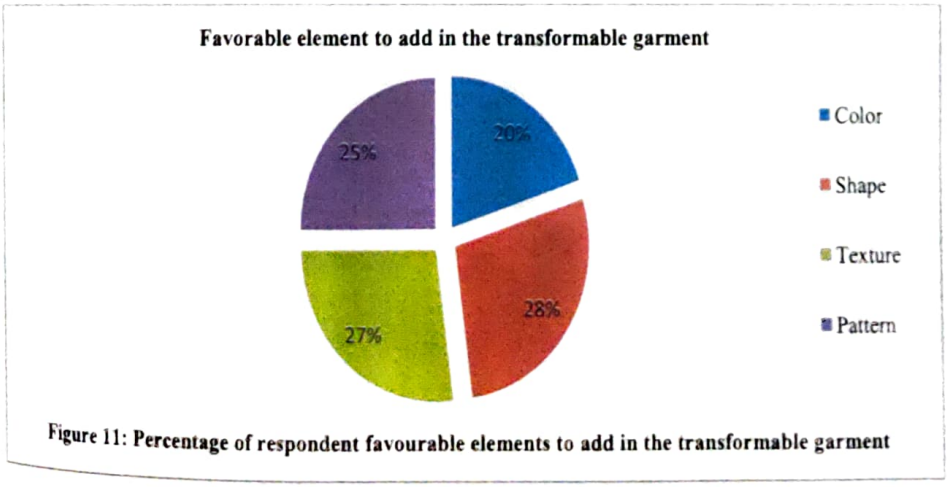

Figure 11: Percentage of respondent favourable elements to add in the transformable garment

Preferable silhouette for the transformable garment

The data shows that majority of the respondents i.e. 57 percent of the respondents prefer flare silhouette and the rest 43 percent of the respondents prefer close fitted silhouette

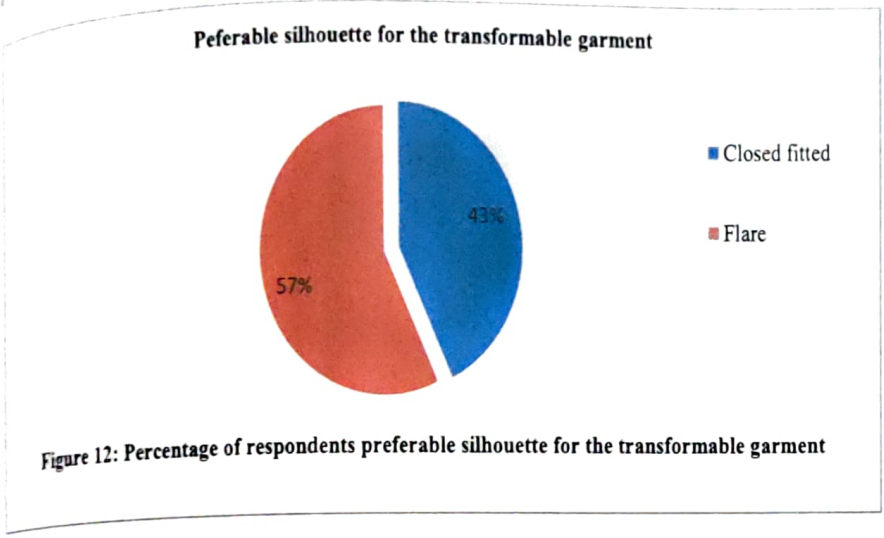

Figure 12: Percentage of respondents preferable silhouette for the transformable garment

Preferable transformable technique for the garment

The data shows that 32 percent of the respondents prefer detachable technique and the other 32 percentage prefer using snap fasteners, 22 percent prefer reversible technique and 14 percent prefer using zipper

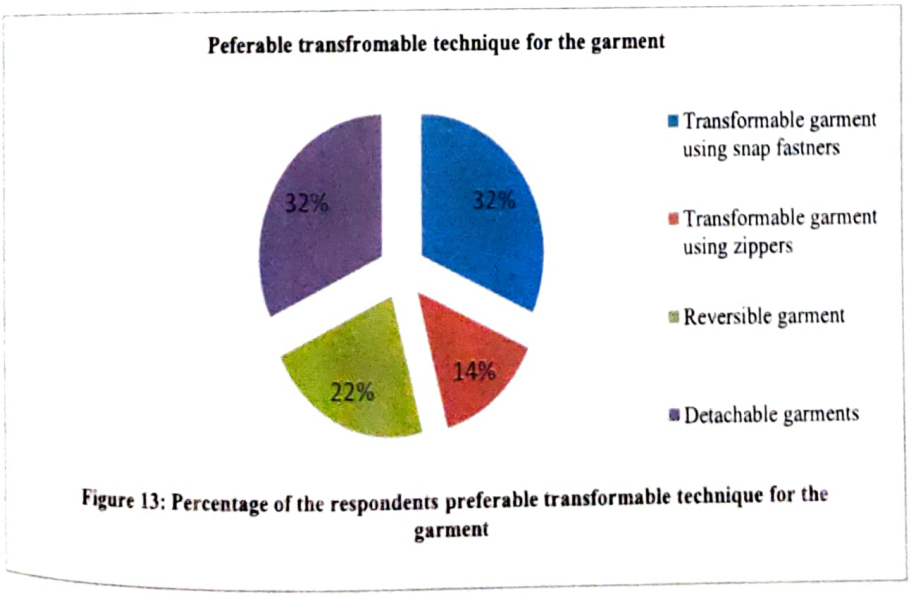

Figure 13: Percentage of the respondents preferable transformable technique for the garment

Favourable type of fabric

The data shows that 46 percent of the respondents are okay with using any type of fabric, while the other 29 percent prefer silk, 15 percent prefer cotton and only 10 percent prefer chiffon

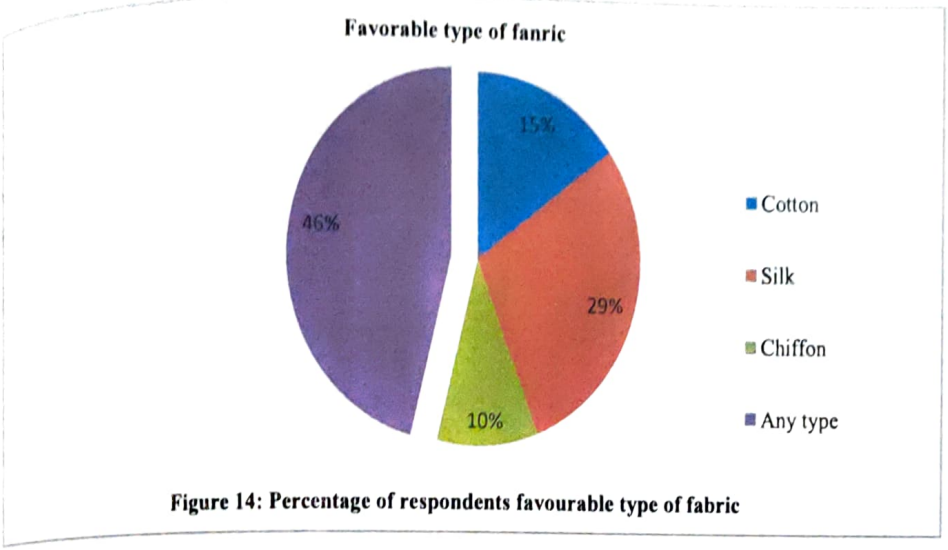

Figure 14: Percentage of respondents favourable type of fabric

Trust ability over quality items that come at an affordable price

The data shows that 96 percent of the respondent would trust quality items that come at an affordable price other than the rest 4 percent.

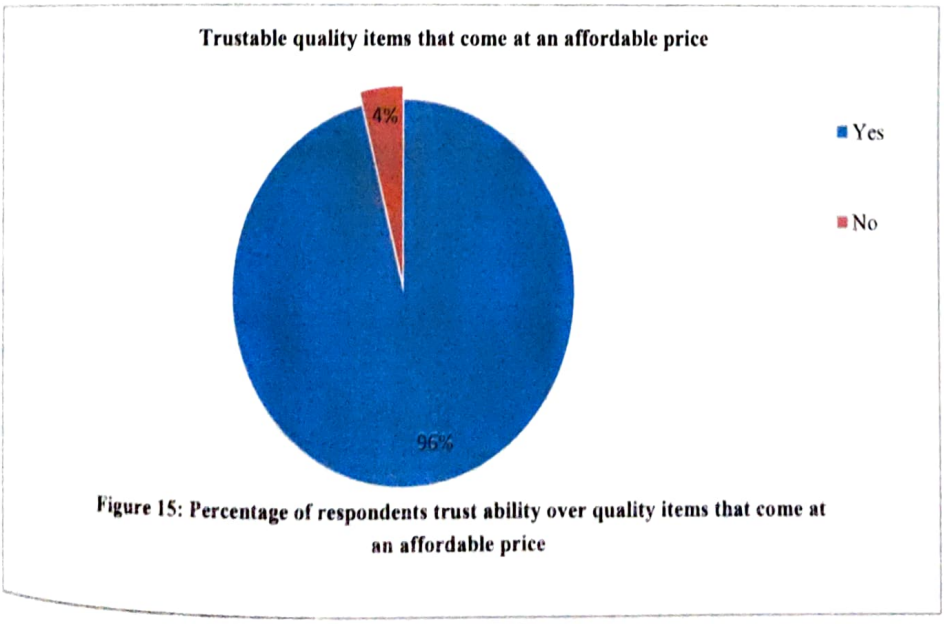

Figure 15: Percentage of respondents trust ability over quality items that come at an affordable price

Annual spending on family clothing

The data shows that majority of the respondents i.e. 71percent of the respondents spend Rs60, 000 to 70,000/- on family clothing followed by the rest 19 percent, 9 percent and 1 percent that spend Rs20,000/- to Rs30,000/- to Rs 40,000/- to Rs 50,000/- and Rs 80,000/- to Rs 90,000/-

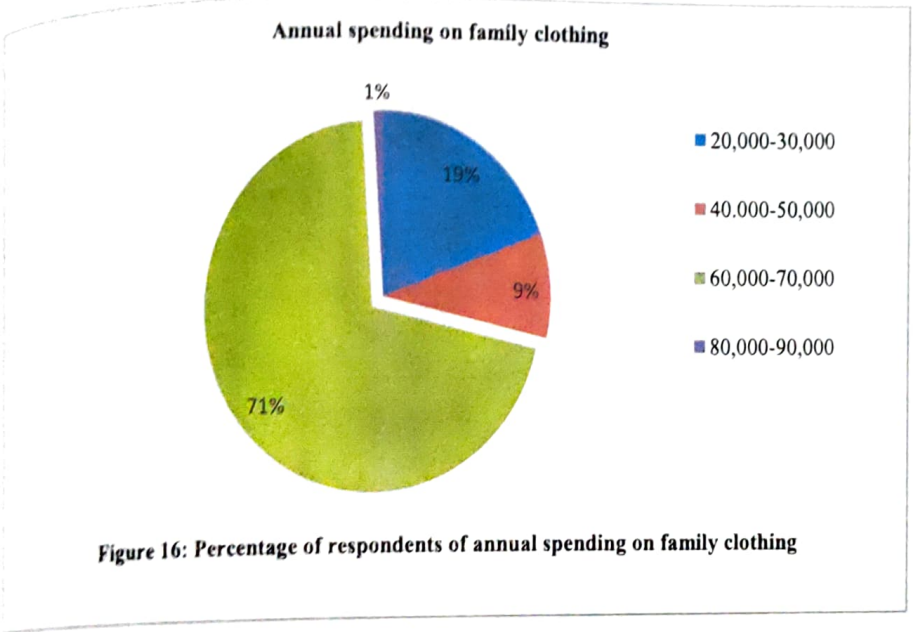

Figure 16: Percentage of respondents of annual spending on family clothing

4.3 DETAILED DISCUSSION OF THE FINALIZED GARMENTS

1) Design1: Zero fabric waste + transformable design

Figure 17: Zero fabric waste + transformable design

The first design is a one-piece dress based on both zero waste and transformable approaches. As illustrated in (Figure 17), the garment has an overcoat with a design of jali effect on it which when put over a plain dress can transform the garment with jali effects over it. The garment also has detachable sleeves along with it, which can be worn according to the wearer's own choice. Thus it helps in zero fabric waste and also supports sustainable fashion as it reduces overall clothing consumption by changing, re-organizing and replacing the garment parts.

Design2 – Transformable design+ detachable element

Figure 18: Transformable design+ detachable element

The second design (Figure 18) is a two piece garment with transformable approaches along with detachable element. The garment has detachable sleeves along with it which can be worn and styled according to the wearer's own comfort and choice. The garment has a detachable top and pants which can be mixed and matched with different outfits according to the wearer's choice. This helps in promoting sustainable fashion as it helps to reduce overall clothing consumption by changing, re-organizing and replacing the garment parts. The transformable and detachable features allows a consumer to purchase a basic garment with additional mix-and-match garment parts or fabric pieces to re-create a refreshing look according to their personal needs and preferences.

Design 3- Transformable design+ detachable element

Figure 19: Transformable design+ detachable element

The third design is a one piece garment with detachable cape over it. The garment has a jali effect over it and the cape too has jali effect all over it. The cape can be worn and removed according to the choice of the wearer. Thus the garment parts can be re-organised and replaced. This helps in sustainability and zero waste of fabric and also allows a basic piece of garment to be transformed into different looks to serve diverse individual needs and purposes.

SUMMARY AND CONCLUSION

5. SUMMARY AND CONCLUSION

SUMMARY

"Sustainability" has become very important in a variety of businesses in recent years. Finding a new route between innovation and sustainable development is unavoidable for current designers. To achieve sustainability, transformable clothes can be linked to consumers through design adaptability. Transformable clothing introduces fresh ideas for meeting consumer wants and provides new insights into sustainability. As a result, the development direction of this project is to build transformable clothes that consumers can freely assemble. Transformable clothing is likely to be worn in a variety of ways throughout the apparel life cycle, minimising the flow of new equipment and materials required for consumption. Fashion designers have an impact on consumer behaviour and help to promote fashion sustainability. As a result, fashion designers must evaluate how textiles and clothing should be developed and manufactured to better fulfil consumer desires in a more sustainable manner.

Transformable clothing promotes the sustainability of clothing consumption by extending the apparel life cycle and encouraging consumers to use fewer, more versatile items. Transformable fashion refers to any clothing item meant to be easily altered, either by the wearer or by a specialised service provider. To fulfil the needs of diverse consumers, transformable apparel may transform its aesthetics and usefulness into multiple looks and functions. Transformable design is a practical approach that allows a piece of clothing to be turned into multiple appearances to meet the demands and purposes of various individuals. Thus, it is reasonable to suggest that transformable garment design is a sustainable fashion alternative to reduce overall clothing consumption by changing, re-organizing and replacing the garment parts. Due to the transformability and versatility of this type of garment, a number of positive impacts are expected to be created. The transformable design concept is considered several things all in one; it is a type of sustainable design, a reaction to environmental crises and an indicator of the rapid growth of economic activity and human needs. Transformable garments can be converted into at least two or more different looks that share certain characteristics and functions with the original clothing, which will provide the wearer with more functional and/or aesthetic styles without unnecessary purchases.. Due to the product being transformable, the consumer can modify the existing garment to achieve various desired or required styles instead of buying new products for different occasions. In

addition, the transformable design also provides benefit to retailers. Due to convertibility, a product can be more competitive in the marketplace. Transformable apparel has been suggested as a strategy for retailers to satisfy consumers' need for novelty and versatility and it may be a potential revenue source for the industry.

The concept of "modular fashion" falls under the umbrella of transformable fashion. Modular fashion refers to clothing products with detachable sections that can be easily altered to meet changing demands and tastes throughout time. Its disassembly and reassembly capabilities allow the wearer to replace only the damaged part of the clothes instead of buying brand new clothes. In addition, the modular clothes are easy to disassemble only the dirty parts would be removed and cleaned when stained clothes.

OBJECTIVES

With the following specific objectives include:

- Create a design album
- Design and evaluate jali pattern inspired transformable western wear
- Prepare pattern for standard measurements
- Select suitable fabric and trims for constructing garment
- Construct final garment and display

METHODOLOGY

Survey was conducted among the female consumers inorder to know their opinions about awareness of transformable design and as well as sustainable fashion. Sample size of 125 between the age group of 10-26 was taken and the views of all the 125 samples were taken inorder to know whether they were familiar with transformable clothing. Participation in the study was voluntary and it took about 5-10 minutes to complete the entire survey. Ten prototypes were designed with three being selected as the final designs for this study according to the survey.

FINDINGS

- According to the findings, respondents stated that almost everyone pay attention to sustainability while buying any clothing.
- The finding shows 97 per cent of the respondents were aware of transformable clothing.
- About 63 per cent of the respondents have previously purchased transformable garments.
- It was found that not very often people use the transformable feature.
- Many of the respondents i.e. 75 per cent of them pay attention on sustainability when they purchase any garment.
- Ninety one per cent of the respondents have purchased customized garments.
- It was found that 47 per cent of the respondents prefer contemporary style for transformable garment.
- 28 per cent of the respondents would like to add some shape to the transformable garment.
- It was found that 57 per cent of the respondents prefer close fitted silhouette and the other 43 per cent of them prefer flare silhouette.
- Thirty two per cent of the respondents prefer detachable technique to add in transformable garment.
- Many of the respondents i.e. about 46 per cent of them prefer any type of fabric for their garments.
- It was found that almost 96 per cent of the respondents trust quality items that are sold at an affordable price range.
- Seventy one per cent of the respondents expressed that they spend Rs 60,000-70,000/- for their family clothing.

CONCLUSION

The overall benefits of the transformable design can be summarised into several areas: they could extend a garments lifespan, increase the versatility of clothing styles, offer renewable solutions that would promote sustainable practices, reduce overconsumption and fabric wastage and possibly enhance consumer satisfaction over time. It is evident that several of the respondents showed favourable responses towards transformable clothing because of their benefits. In order to design a garment with a longer lifespan that would serve multiple purposes, it is important to understand how consumers respond, interact an engage with the product. According to the results of this study, it is reasonable to suggest that consumers would like to be involved in the design process where they could create personalised clothing to fulfil their specific needs and desires. In addition to these findings, it is evident that many respondents would prefer a transformable garment with less mix and match options.

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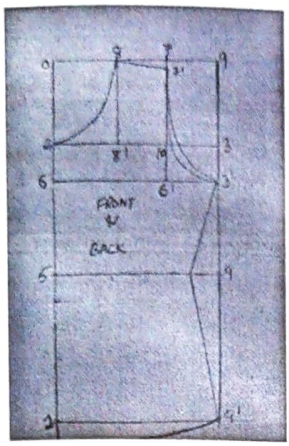
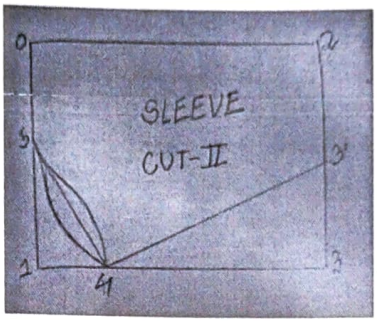
ANNEXURE

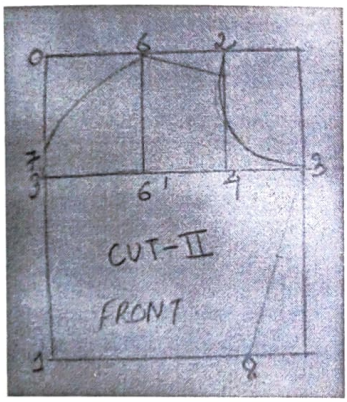
7. ANNEXURE

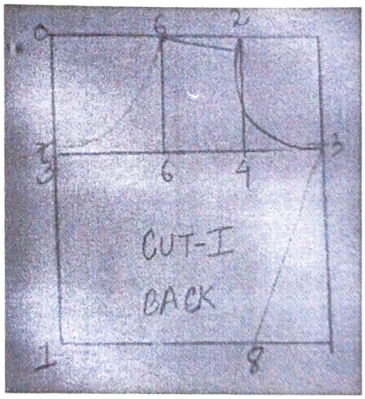
Layout for design 1 (A-Line dress with overcoat and detachable sleeves

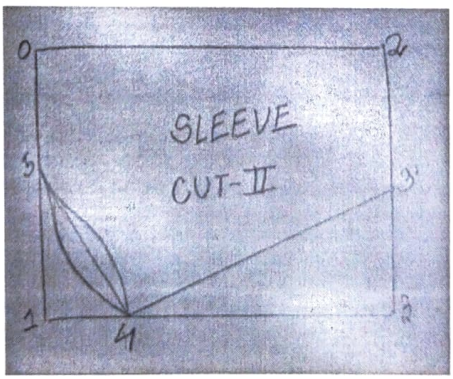


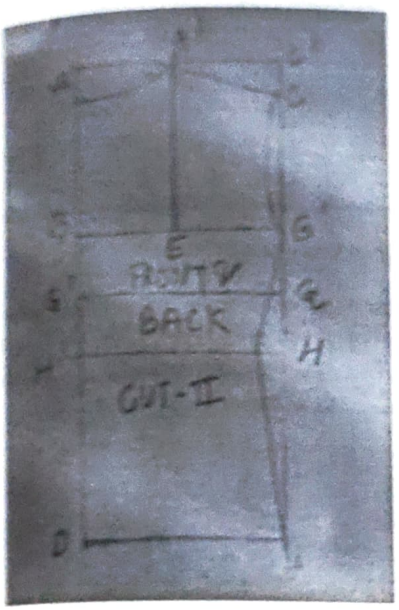


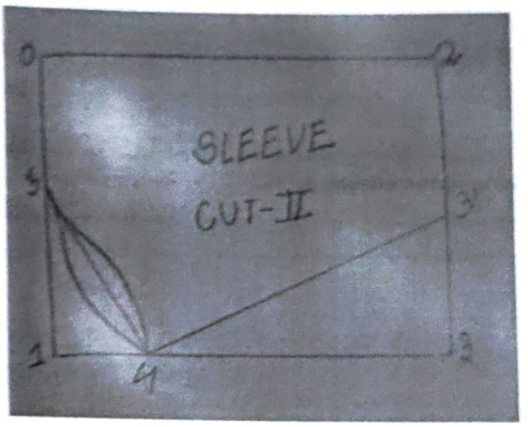
Layout for design 2 (A bustier top with palazzo pants and detachable











Layout for design 3 (A body fit dress with sheer cape

QUESTIONNAIRE FOR SURVEY TO STUDY THE TRANSFORMABLE GARMENT FAMILIARITY AMING WOMEN

Personal information

1. Name

2. Educational qualification

Undergraduate Postgraduate

3. Age

22-23 24-25 26-27

4. Occupation

Employed Self-Employed

Knowledge and aptitude

5. Are you aware of transformable garment

Yes No

6. Have you purchased any of the below transformable garment?

Removable sleeves Detachable collars Detachable garments Reversible garments

7. How often do you use the transformable feature?

Very often Not very often

8. Do you pay attention on sustainability when you purchase garment?

Yes No

9. Have you purchased customized garments?

Yes No

10. Which fashion style do you prefer for transformable garment?

Casual Retro Classic Contemporary

11. Which are the features you want to change when you purchase customized garments?

Collars Length Color Accessories (Zippers, buttons)

12. What element would you like to add in transformable garment?

Color Shape Texture Pattern

13. What silhouette do you prefer?

Close fitted Flare

14. What type of transformable technique you prefer in the garment?

Transformable garment using snap Transformable garment using zippers

Reversible garment Detachable garment

15. What type of fabric will you prefer?

Cotton Silk Chiffon Any type

16. Would you trust quality items that come at an affordable piece?

Yes No

17. Annually how much you spend on family clothing?

20,000-30,000 40,000-50,000 60,000-70,000 80,000-90,000