

**Designing and construction of garment based on traditional art '*Nirmal painting*'.**

**By**

**Ketha Sowmya**

**(21PTF008)**

**A Thesis Submitted to the  
Avinashilingam Institute for Home Science and Higher Education for  
Women, Coimbatore-641 043**

**In Partial Fulfillment of the Requirements for the Degree of  
Master of Science**

**In**

**Textiles and Fashion Apparel**

**May 2023**

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**Certified as Bonafide Research Work**



**Signature of the Head of the Department**



**Signature of the Guide**

## DECLARATION

I declare that the dissertation entitled “**Designing and construction of garment based on traditional art ‘Nirmalpainting’**” 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. R. PRABHA, M.Sc., Ph.D., Assistant Professor, Department of Textiles and Clothing, Avinashilingam Institute for Home Science Higher Education for Women, Coimbatore -642043 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.

*K. Sowmya*

**Signature of the Candidate**

## CERTIFICATE FROM THE SUPERVISOR

I certify that dissertation entitled “**Designing and construction of garment based on traditional art ‘Nirmalpainting’**” submitted for the degree of Master of Science (M.Sc.) Bio Textiles by **Ketha Sowmya (21PTF008)** 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, Associateship, Fellowship, Titles in this University or any other similar institution of higher learning

 Assistant Prof (sen)  
Signature of the Supervisor with Designation

  
Signature of the HOD

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# INTRODUCTION

## **1.Introduction**

The textiles and garment sector plays an important role in India's economy and labour force, contributing significantly to its GDP. The majority of India's production of spun yarn is accounted for by the organised mill sector, which consists of 285 large, vertically integrated composite mills and nearly 2,500 spinning mills. This is indicative of India's heavy reliance on the power loom and handloom sectors, with only a fraction of looms being utilised to produce higher value finished fabrics (Vernsimpson, 2001).

The survey also revealed that brand is the second most important factor in purchase decisions. In South India, consumers are generally more loyal to brand than consumers from the North. Price, however, is the most important factor for the consumers in East India. Home/TV shopping or mail order are not yet popular in India, though consumers are aware of these distribution channels. Usually, Indian consumers like to touch and feel the product before they buy it (Kadolph, 1998).

Textile material is used in all the sectors. It is not only used in apparel but also used in non-apparel area (Vasudevan, 2016). The Indian textiles industry produce from the raw materials to the finished products and also fiber to retails (Kavithagupta, 2016). The Indian textiles industry is the second largest employer next only to agriculture, generating employment to over 45 million people directly and over 60 million people indirectly (Rashmivemi, 2016). Tamil Nadu is equipped with textiles, apparel sector and handloom silk centre, which challenge with the global market (Vedantdhandhanie, 2016).

In fashion business, the sourcing is most important activity with the right product for the right quality at the right price in the right frame. Now a days the customer is more conscious about the quality of the product (Mahesh, 2016). From the basic attire for apparel the element and principles of design describe how the textile product interacts with body fit, hand moisture absorbency (Kadolph, 1998).

Indian market has grown significantly, because of increase in obtainable income, westernization of the culture, and changing lifestyle. More and more brands entered Indian market and several others grown domestically to take the market opportunity. This created a choice overflow for Indian users (Batra *et al.*, 2000). Marketers use positioning strategies to distinguish their products from competitors. Design could play an important role in developing differentiated positioning strategies. User centric design strategies, particularly use of strategies that enhances user motivations could provide products a competitive advantage. Customization of products is

an example of user centric design. Customization keeps user at the center and develop the product according to user's choice of product features. Customization provides users more convenience, reduced cost or some other benefits depending on the features selected in customization (Sebastian *et al.*, 2017).

In the past, consumers had to choose from existing products in spite of a lack of variety. As the number of producers in the following years increased the product range increased, and more variety was offered (Satam, 2011). In customized manufacturing, where customers can change the production line of the company to produce products to their own design and requirements, production is carried out only according to the wishes of the customers and the design is carried out jointly with the customer, including modular product designs, flexible processes, and supply chain integration with customized products at the determined place and time and featuring a technology-assisted manufacturing method (Nayak *et al.*, 2015).

Customized manufacturing provides significant advantages to both the business and the consumer. For the business, the advantages are advanced customer knowledge, a high profit margin, high customer satisfaction, the ability to reach more customers at a low cost, a long-term relationship with the customer, flexible production, low and/or non-stock production, new design garment production, reduction in waste, rapid flow of cash, no discount pricing, coping with market uncertainties, quick response to customer demands, and higher levels of customer loyalty. In terms of consumers, personalized production offers a variety of advantages including a unique shopping experience, flexibility, personalized clothing, a shorter delivery time, high satisfaction, and access to unique clothing at affordable prices (Kang *et al.*, 2012).

These advantages of customized manufacturing, the mass production of clothes is reduced, and the cost-effective production of high-quality clothing for consumers is increased. Customized manufacturing has some differences from traditional mass production. Customized manufacturing consists of two stages. The first stage is where the enterprise establishes a flexible customization system that meets the needs of the overall consumer profile. The second stage is where consumers personalize their common design products using the options offered to them (Silva, 2019).

Nirmal is the name of the place where this art form originated. The Nirmal art has evolved from the days of the Kakatiya kingdom. A group of artisans known as Naqash practised this skill in the 14th century. The Mughals were so taken with the art that they patronised it. Lady Hyderi introduced these artists to the princely state of Hyderabad in the 1950s and encouraged

their skill. These paintings' hues are derived from minerals, herbs, and several other plants. These paintings' topics are influenced by Ajanta and other Mughul art. This beautiful gold picture is set against a black background (Chandrashekhar, 2023).

Nirmal town is located amidst the dense forest of northern Telangana, which is considered as the gifted land of art and craftsmen living in Nirmal are also called as 'Naqash'. Nirmal Paintings depict the traditional art scenes related to the Hindu epics of Ramayana and Mahabharata and other aspects, inspired by nature, birds, animals etc (Baral *et al.*, 2017). In earlier days, white wood of Tella Poniki tree was used as paint board for painting, which fascinatingly outstand. Due to change in time, artisans introduced Indian teak wood due to its soft grain texture, strength, and lightweight and lifetime quality. Before paints were derived from colourful stones found at the shores of Godavari River and natural ingredients like herbs and mud. The abundant use of gold adds a metallic richness to the ware (Bibhudutta *et al.*, 2017).

Present days oil paints and spray paints and acrylic colours are mixed with fevicol and used for painting. Traditional design is traced or drawn in chalk on smoothed wood or composition board, then painted in flat, bright colours and often touched up with gold and varnished. Once the paintings are completed clear spray is sprayed on the frames for water resistance and luster. The paintings are exported to Australia, America and England through Lepakshi, an Andhra Pradesh government organization (Bibhudutta *et al.*, 2017).

In more recent years, however both the demand and production of Nirmal crafts has seen a decline, with fewer artisans joining the practice due to the lack of financial stability. To remedy this, an artisan- run organisation know as the Nirmal toys and arts industries cooperative society was established under which each artisan makes a particular type of product. These products are sold either directly by the co-operation or through government run store (Neeharika, 2017).

The Ramayana has influenced Indian English writer's aesthetic expression. Myths have added to the importance and hugeness to Indian English literature. Indians relate a lot of their own lives as they discover parallels of themselves in myths. The Ramayana has been a storage facility of paradigms and pictures. The main poetical expression of Valmiki, has turned out to be model, Kusha and lava, the children of ram have turned out to be original poets and numerous different characters have been formed as paradigms, as they epitomize certain motivations in the aggregate oblivious to the Indian personality (Anamika, 2017).

The original Ramayana written by the 4<sup>th</sup> sage Valmiki comprised of seven “kandas” or parts. Many scholars question the authorship of the certain passage from the first book (Bala kanda) and question the authenticity of the last book (Uttara kanda) for various reasons (Patrick, 2006)

- Bala kanda: “The book of the youth,” the boyhood and adolescence of Rama;
- Ayodhya kanda: “The book of Ayodhya,” the court of Dasharatha and the scenes that set the stage for the unfolding of the story, including the exchange between Dasharatha and kakikiyei and the exile of Rama;
- Aranya kanda: “The book of the forest,” life in the forest during the fourteen-year exile and the abduction of site by Ravan;
- Kishkindha kanda: “The book of the empire of holy monkeys,” Rama’s residence in Kishkindha, the quest for Sita, the slaying of Bali;
- Sundara kanda: “The book of the beautiful (Hanuman),” Sundara means beautiful, and this portion of the book has passages of lyrical beauty; description of the landscapes over which Rama roams, and the arrival of Rama and his allies in Lanka;
- Yuddha kanda: “The book of war,” the defeat of Ravan, the recovery of Sita, the return to Ayodhya, and the coronation of Rama;
- Uttara kanda: “The book beyond,” the later section, detailing ram’s life in Ayodhya, the banishment of Sita, the birth of lava and kusa, the reconciliation of Rama and Sita, her death or return to the earth, and Rama’s ascent into heaven.

Mangalgiri cotton is a versatile fabric that is globally demanded and known for its simple patterns and design. Mangalgiri is a combination of beautiful colours and contrast. Mangalgiri cotton is a cool, comfortable and a hand-woven cotton fabric in a palette of striking motifs and designs. It offers a unique range of textiles from a single weaving cluster. The is fabric is in high demand among designers, garment manufacturers (Sumitra, 2011).

Due to the presence of cotton yarns in the fabric, Mangalgiri is a durable cotton fabric. It is famous for its beautiful range of Mangalgiri sarees. Mangalgiri can also be produced in silk and are used for special occasions such as wedding and for religious festivals. weaves of mangalgiri silk is as fine as the mangalgiri cotton. One of the finest fabrics is mangalgiri in handloom cotton in the country. Mangalgiri fabric is known for its quality and absorbency. Mangalgiri fabric is suitable for summer clothing.

The fashion word in the Latin “*facere*” which means ‘to make’ or ‘to do’ something in clothing. Fashion style are most popular in the present days. People are giving more importance to their

appearance and uniqueness of their garment. The fashion should have a theme, the basic idea designer shows. Fashion is a chance for designer to show-off a particular aesthetic, a particular mood, a particular feel or the point view. Portfolio work should be organised, consistent and demonstrate your skills. It starts with the beginning inspiration of a project, to the final outcome. with portfolio the designer attracts the client with his or her work by showing the portfolio boards so that the client gets interested (Sumitra, 2011).

**Objectives:**

- To study the traditional painting of Andhra Pradesh-Nirmal painting.
- To do a background study on Nirmal painting.
- To select the design regarding Ramayana through the survey.
- Implementing the selected design on the fabric.
- Designing of garment with the selected designs.

# REVIEW OF LITERATURE

## **2.Review of literature**

The literature reviews followed for the study, “*Designing and construction of garment based on traditional art ‘Nirmal painting’*” are expressed under the following heads.

### **2.1 Nirmal painting**

#### **2.1.1 History of Nirmal painting**

#### **2.1.2 Components of Nirmal painting**

##### **2.1.2.1 Raw materials used in Nirmal painting**

##### **2.1.2.2 Background surface or base of Nirmal painting**

##### **2.1.2.3 Design development process of Nirmal painting**

###### **2.1.2.3.1 Source for colours**

###### **2.1.2.3.2 Tools used for painting**

#### **2.1.3 Application of Nirmal painting**

##### **2.1.3.1 Preparation of the base**

##### **2.1.3.2 Preparation of the background colour**

##### **2.1.3.3 Naqash work of tracing**

##### **2.1.3.4 Colouring the paintings**

##### **2.1.3.5 Motifs used in Nirmal painting**

### **2.2 MangalGiri cotton fabric**

#### **2.2.1 History of MangalGiri**

#### **2.2.2 Specifications of MangalGiri fabric**

### **2.3 Fashion portfolio**

#### **2.3.1 History of Portfolio**

#### **2.3.2 Introduction to Portfolio**

##### **2.3.2.1 Research**

##### **2.3.2.2 Theme board**

**2.3.2.3 Inspiration board**

**2.3.2.4 Client board**

**2.3.2.5 Colour board**

**2.3.2.6 Flat sketch**

**2.3.2.7 Garment construction**

**2.3.2.8 Swatch board**

**2.3.2.9 Costing**

**2.3.2.10 Final presentation**

**2.4 Garment construction**

**2.4.1 Elements of design**

**2.4.1.1 Line**

**2.4.1.2 Shape**

**2.4.1.3 Form**

**2.4.1.4 Colour**

**2.4.1.5 Value**

**2.4.1.6 Texture**

**2.4.1.7 Space**

**2.4.2 Pattern making**

**2.4.3 Marking & Cutting**

**2.4.4 Sewing**

**2.4.5 Customer fit**

## **2.1 Nirmal painting**

The place **Nirmal**, in Telangana, has long been regarded as a blessed place in terms of arts and crafts. This town's art group of craftspeople is known as '**Naqash**' and they have made this region famous for the Nirmal paintings. The paintings depict a rustic ethos to a superb royal atmosphere, and from flora to animals, there is a clear array of gorgeous expressions that are portrayed in a variety of colours and appealing forms on various items.

The majority of Nirmal Paintings are traditional art scenarios based from the Hindu epics of Ramayana and Mahabharata, influenced by older schools of painting such as Kangra, Ajanta and Mughal miniatures. During the Mughals and the Nizams, this art genre was highly regarded. Several colours are utilised in Nirmal Paintings, and the most of them are obtained from natural sources. The designs employed are fairly popular and the canvass has a beautiful finish. Birds are rendered quite nicely, and the paintings' world-class export quality has gained broad praise and honours. Nirmal artworks are reasonably priced at Lepakshi Handicrafts. They are perfect for decorating your living areas and may also be given as treasured memories (Lakshmi, 2020).

### **2.1.1 History of Nirmal painting**

The origin of Nirmal art and craft can be traced back to fourteenth century during the reign of Kakatiya dynasty. It was started with limited range of products like paintings for pooja, wall paintings, panels and partitions. The principal articles prepared were based on characters from mythological, religious epics along with folk narratives. The Nirmal artisans often sought to dramatize and recreate the different personalities from epics, narratives, folklores that were widely accepted by the kings, royal families along with common people with same passion and intensity. These paintings were created with the use of natural pigment paints and dye extracts on the surface of walls and wood (Lakshmi, 2020).

In the arena of local and global arts and crafts, the northern section of Telangana state has a distinct personality. In Nirmal, there is a Naqash community of craftsmen. Nirmal town is nestled in the deep forests of Telangana's newly formed Nirmal district. Nimma Naidu suggested the name "nimmala," which was later changed to Nirmal over time. This village is well-known for its Nirmal toys, paintings, and furniture. The artists inherited this lacquered woodwork painting style from their forefathers, and it is still done now. The Naqqashi Nirmal painting style is a delicate and harmonious fusion of indigenous and international aesthetically expressive handicraft traditions. During the Mughal era, the emperor was entranced by their art form. The fact that the fundamental skills of this wonderful art haven't changed all that much

over time makes it special. It is currently in a hopeless scenario as the artists are leaving their traditional career and looking for new opportunities to make a living. This has happened over time as the market for Indian art has started to wane. It has recently come under danger from contemporary automated and digital printing techniques (Isacco *et al.*,1993).

## **2.1.2 Components of Nirmal painting**

### **2.1.2.1 Raw materials used in Nirmal painting**

The artisans have inherited this skill of painting art that is put into practice from generations. The three main aspects that go into the making of these paintings were base- wood, design and colour.

### **2.1.2.2 Background surface or base**

The wood of the tree's "**Thella poliki**", "**Ponika**" or "**Ponnikki**" (words in Telugu) was used to make Nirmal items. It is a dioecious tree that may reach a height of 20 metres and has dark bark with a smooth texture that peels off in thick scales. It is softer, supple, and more flexible than wood generated from other typical trees. The plant is a member of the Euphorbiaceae family and is generally known as the white Catamaran tree, which grows in the woods of central and peninsular India. The wood may be used to carve figurines, toys, and other items. The seeds yield good lubricating oil, which is utilised in fine machinery. Poniki wood provides craftspeople the unique benefit of being able to create a variety of paintings and toys from this lightweight wood (Indiabiodiversity.org, 2020)

### **2.1.2.3 Design development process**

Design development is defined as a constant, continuing, and evolving process that yields new concepts. Many of the themes utilised in Nirmal paintings were gathered while documenting the Nirmal art and craft business. The following are a few examples of popular designs:

#### **2.1.2.3.1 Source for colours**

The colours are obtained naturally from pigments found in plants, vegetables, fruits, and mineral deposits. The colours used in Nirmal art are mostly vegetable, earth, lake paints, and metallic. Vegetable colours are derived from plants, earth pigments from various areas of coloured earth soil and stones, and lake pigments are derived from stone deposits that are stagnant and moving in water bodies and are collected and utilised for colouring.

Metallic deposits such as gold, silver, copper, and bronze, as well as other fixing elements, are employed to decorate paintings. These pigments are combined with binders, gums, fixers, and natural mordants. Lake colours, on the whole, dry slowly. Dark lake colours are therefore blended with linseed oil, while lighter ones are mixed with poppy seeds and nut oils such as clove, almonds, and so on. Each pigment has its own recipe compositions for desired tints and hue shades. The season, as well as the kind and nature of the pigment and its supply, influence the choice of colour. To accelerate drying time, the pigments are treated with various oils or gums, or in combination with metallic compounds or driers. In a few cases, independent or combined liquids such as honey, sugar, molasses, starch, and glycerine were also used (Darrah,1993).

**The major colours used are given in the following:**

The Tamarindus indica (tamarind tree) helps form the broken or damaged edges of the frames and aids in colour fixing through seeds and gum, respectively. The Fabaceae family includes the leguminous tree. The pod-like fruit produces a sweet, tangy meaty, juicy acidic pulp that is utilised in cooking as well as for therapeutic purposes. It is made up of tartaric acid, glucose, and calcium. Tamarind kernel powder has great viscosity and binding qualities, as well as excellent water absorption. It is utilised as a thickening agent in the textile sizing process. It is also used to polish metals (Thombare *et al.*, 2014).

**2.1.2.3.2 Tools used for painting**

Tracing sheets, dot pins, colour mixing palettes, drawing pencils, erasers, tracing chalk powder, pigment grinding plate and stone or muller, and water for mixing are all included. For this painting, wide brushes, filling brushes, and delicate brushes of various sizes were utilised. Delicate details were painted with animal hair brushes. Delicate brushes made of squirrel hair were highly valued for their accuracy. For finer lines and outlining, the finest brushes created from single hair strands were used. In addition to palm fronds, tamarind tree twigs, bird feathers, and bamboo twigs were utilised in the artwork. For outlining the designs, the gum of the tamarind seeds, together with gum Arabica, was employed as a water-soluble gum resist. These lines aid in distributing the paint to the painting's undesirable sections.

### **2.1.3 Process of Nirmal painting**

#### **2.1.3.1 Preparation of the base**

The raw wood from the Ponnikki tree is first chopped into the required blocks and sizes as part of the traditional procedure. The most frequent frame sizes in inches were 8 X 11, 12 X17, 17 X 24. 30X24, Wood cutting machine in the saw mill is used to reduce the huge blocks into little pieces. Specially manufactured dye, "**Chinta lappam**," made from ponnikki wood sawdust powder acquired as waste after main frame cutting, boiling liquid made from tamarind seeds powder combined in water, and then the resultant liquid is blended with white or pipe clay to the proper consistency. The resulting solution is colloquially known as "chinthalappam" or "dye". The frame is then fortified with several coats of this lappam to smooth out any ridges and depressions and give the foundation a clean finish. Ponniki wood dust powder is rubbed on the board's surface to smooth it down. This chinthalappam absorbs moisture from the wood, allowing it to endure longer (Manisha, 2020).

#### **2.1.3.2 Preparation of the background colour**

Nirmal art's backdrop colours are black, white, red, and brown. In big events, the dominant backdrop colour was black. After applying lappam, the backdrop is painted with black paint. The frame is cleaned and polished with linseed or cotton seed oil for a glossy finish.

#### **2.1.3.3 Naqash work of tracing**

The characteristic and distinctive feature Nirmal Painting is the process of drawing the desired design. From the main source, the design is created or traced onto a translucent drawing sheet or a fine muslin material. The sheet is perforated along the design lines and on the whole outline of the figure using safety pins or dot pins. At the copying stage of the design transfer from paper to wood, the holes allow the chalk powder to pass through. The pattern is applied on the target base using chalk powder. The imprints are afterwards linked with a pen to keep the design till the task is finished. The markings will be removed in the succeeding phases. Initially, sketching and tracing were done on parchment paper or fine muslin fabric. They were later replaced by drawing and tracing papers (Venkateswarlu, 2015).

#### **2.1.3.4 Colouring the paintings**

These works were created using the traditional tempera process. It is a method of holding pigment together using a water solution containing fixers and binders. This is the earliest

technique, which was most likely utilised in the first century AD and is still in use now. The colours were added to the drawing after being mixed in water with a binding and fixing solution. Following the completion of the design tracing, the principal and wide sections are filled in accordance with the shade schemes specified. The finer points are worked out with greater care and attention. In the case of human figures, the body parts, clothes, and flesh portions are completed first. The face and hair are worked out individually and with greater attention. The work is given a unique aspect in the final stage of painting by the use of metallic colours such as gold, silver, copper, and bronze. This gives the figures in Nirmal paintings a particular aspect of bejewelled and rich look, making this art more dynamic and colourful (Rupa,2019).

Minimal colours were initially employed in Nirmal, such as earthy browns, bottle greens, brilliant reds, and frequently stunning blacks and yellows, in addition to golden hues used to enhance legendary characters and epic situations. These colours offered this master creative art works a particular and distinguishing quality (Handicrafts,2001).

#### **2.1.3.5 Motifs used**

Between the 14th and 16th centuries, themes were derived from historical and mythical narratives and were simply aesthetic objects. Idols of the King, Queen, Minister, Natraj, Laxmi, Saraswathi, Hanuman, Mahalakshmi, Mangala harathulu, Gopala Krishna, Radha Krishna, Santhoshi matha, Gondu goddess, Dandi maramma, Vaddera Amma, Sagada Parvathi, Yellamma, Pochamma, Nagaraja, and many more This art genre reached new heights in the seventeenth century. Nirmal workers' designs are mostly traditional and derived from various sources such as Ajanta Frescoes, temple friezes, art schools, Persian art, Nizam art, Mughal paintings, Kangra and Pahari miniature paintings, Raja Ravi Verma paintings, folk, mythological characters, ancient forts, historical monuments, Ganjfa playing cards, and so on. The theme categories are mentioned as follows (Cameron *et al.*, 2007).

**Mythological:** Motifs that were created based on mythological stories like Ramayana (Rama, Sita, Lakhmana, Hanuma), Pattabhishekam, Seethapaharna, Jataayu vimochanam, Life saviour-Anjaneya- Sanjeevini, Bhagavadgitha(Krishna, Arjuna, subhadra),, Geethopadesam, Rukmini kalyanam, Mahabharatam and the war scenes, Ganjfa card designs, etc

**Religious:** Ganesha, Shiva-Parvathi, Balaji, Govindam. Venkatesa charitam, Ayyappa swamy, Sai Baba, Veera Bala Ayyappan, Maa Shakthi, Durga, Bhavani, Lakshmi devi, Mohini avatar, Mother Earth, Fire as God, Lord Krishna, Radha-Krishna, Rukmini Kalyanam, Brindavanam, Gopika Krishna. Different religious symbols, etc.

**Historical:** Royal forts, temples, palaces, Inspirations from Ajantha and Ellora caves, Kangra and Miniature paintings, Ajantha school art works, Gauthama Budha, Nala- Damayathi, Royal court scenes, Nizam, Nawab and Deccani styles, Portraits of rulers, kings, popular personalities like Ashoka Chakravarthy, Sri Krishna Devaraya, Kakathiya, Cholas at different historical timelines, Popular female characters like Shakunthala, Menaka-Viswamitra.

**Folk art:** Emotional aspects of human beings like joy, happiness, sadness, love, passion, romance, waiting period, separation anxiety, stories like Panchatantra, entertainment-based motifs, Banjaran motifs, Nizam style figurines, rangoli patterns, village and rural life settings, etc

**Wedding theme:** This category includes organizing and conducting marriage, pre and post preparations, mandap set up, procession of groom and bride, other rituals and ceremonies associated with it.

**Inspirational arts:** Eminent artists like Raja Ravi Verma Seetha vanvas, Hamsa Damayanthi Samvad, Priyadarshika, Padmini, Vasanthasena, Shakunthala-Sakhi, Yashoda- Krishna, Mohini, Woman holding fruit, etc.

**Sceneries:** Nature, waterfalls, sky in different shade, water, rivers, oceans, waterfalls,

**Nature:** Beautiful creations of mother earth, flora, fauna and beautiful locations, etc

**Floral Designs:** flowers, twigs, creepers, fruits, leaf motifs, trees, plants, vegetables, etc

**Birds and animal:** elephant, swan, Koyal, peacock, cow, parrot, deer, etc.

## **2.2 Selection of fabric material**

Mangalgiri cotton is a versatile fabric that is much sought after and recognised for its basic patterns and motifs. Mangalagiri is a stunning display of colour and contrast. Mangalgiri cotton is a cool, soft cotton fabric that is hand woven in a variety of eye-catching themes and styles. It provides a one-of-a-kind selection of textiles from a single weaving cluster. Designers, textile producers, and even furniture manufacturers love this fabric.

Mangalgiri is a durable cotton fabric due to the presence of cotton yarns in the fabric. It is well-known for their gorgeous mangalgiri sarees. Mangalgiri sarees are also available in silk and are used for important events like as weddings and religious festivals.

### **2.2.1 History of Mangalgiri**

The Centre of Mangalgiri Sarees & Fabrics weaving is Mangalgiri in Andhra Pradesh, India. Mangalgiri is situated between Vijayawada and Guntur. It is located 19 kilometres from Guntur, and 12 kilometres from Vijayawada. Mangalgiri Sarees and textiles are manufactured entirely of cotton. The material is long-lasting and is made in the Mangalgiri district of Andhra Pradesh, near Guntur. Though Mangalgiri weavers began with sarees, cotton fabric has gained popularity in recent years because to its colour variations, affordable cost, and ecologically beneficial properties (Saka, 2012).

The major feature of Mangalgiri sarees, which is now a key aspect of chudidhar material and dupattas, is the Nizam border, which is delicately woven from pure Zari particularly purchased from Surat in Gujarat. This border is made up of delicate inverted checks with tiny dots in between. The fabric is available in brilliant short colours, which are combinations of two or more colours that give the cloth a distinctive gloss. Several characteristics distinguish Mangalgiri. Mangalgiri textiles are known for their durability and suppleness (Bhadra, 2012).

### **2.2.2 Specifications of Mangalgiri fabric:**

Mangalgiri Sarees and textiles are manufactured entirely of cotton. The substance is long-lasting and created in the Mangalgiri district of Andhra Pradesh, near Guntur, as follows:

- Cotton fibre that is pure, strong, and long-lasting
- There are no weaving patterns on the body of the cloth.
- Nizam border in sarees and chudidhar material, unique to the Mangalgiri area
- Material woven only on pit looms and handloom items.
- There are no gaps in the weave at the material's edge, which is unusual for this type of cloth.
- Exclusively produced in the Mangalgiri area
- Sarees and textiles made of yarn in the 40s to 80s.
- Despite the fact that the yarn is not extremely fine, fabric is widely recognised for its softness. This is owing to the tightness of the weave, which is achieved by weavers placing their feet firmly on the ground when weaving on a pit loom.

### **2.2.3 Stages of production**

The production of the Mangalgiri sari includes different stages which includes

- **Raw materials** - pure cotton yarn, silver and gold Zari's, synthetic and natural dyes and some chemicals.
- **Cotton purification** - This process involves boiling of hank cotton to remove certain impurities, soaked overnight, rinsed and made suitable for dyeing process.
- **Dyeing** - it involves bleaching technique for white saris and for coloured ones, Vat dyes are used.
- **Removal of excess dye** dyed or bleached yarn undergoes soaking in boiling water with some techniques to cut out excess dyeing
- **Drying**-after the above process, the yarn is dried and also adds light sensitive colors in shades

### **Pre-loom process**

- **Winding of hank yarn into warp and weft**- Charka, shift bamboo and bobbin are used to form warp. While, the weft is made with help of a pim.
- **Street sizing**- The warp extension, spraying of rice congee ensures suitable weaving followed by drying.
- **Weaving process**-It involves Warp and Weft method of weaving and sometimes replaced by Jacquard weaving. Usage of only pitlooms for weaving. designing and cutting per the goods demand undertakes
- **Cutting & folding**-Woven cloth undergoes cutting per the goods demand • Inspection of sarees-inspection by the master weaver to rectify flaws
- **Marketing**-The period of 1985 bought revolution with new market for dress materials than the saris

## **2.3 Fashion portfolio**

### **2.3.1 History**

Fashion drawings, an inspiration or mood board with textile samples, flat sketches & "floats," and CADs should all be included in a conventional fashion design portfolio. It highlights your individuality to prospective employers and groups. It enables you to be more personal and innovative in order to extend and demonstrate your abilities, awareness, initiatives, and experiences. A portfolio is a self-discovery and self-assurance tool. It is an adaptable method of organising your activities, objectives, aspirations, and personal thoughts (Sanjana, 2020).

### **2.3.2 Introduction**

A collection of recent work, made up of different media including illustration, photography, design, sketch books etc.

Design development process are as following:

- Research
- Theme board
- Inspiration board
- Client board
- Colour board
- Flat sketch board
- Garment construction pattern details
- Swatch board
- Costing
- Final presentation

#### **2.3.2.1 Research**

The act of gathering and capturing creative material in order to assemble a bank of visual knowledge for inspiring purposes is known as research. The act of capturing research data offers a focus from which to begin producing ideas, which can originate from anywhere, be fully unique, and only have a highly personalized connection to the designer.

Investigative research includes finding and documenting information from a wide range of reference sites, such as historical sources, museums, exhibits, stores, and collecting materials, photographing details of building processes, and researching a specific location in depth. The second is inspirational, which can be drawn or photographed from any source and is often a diverse selection of images, materials, colour schemes, articles, sketches, fabrics, notes, scraps of wrapping paper, wallpaper, advertisements, photographs, trimmings, articles, sewn samples, memorabilia, postcards, old patterns, video, animation clips, music, and graphics (Linda, 2011).

#### **2.3.2.2 Theme board/ Mood board**

Mood boards are often a collection of pictures, texture, colour, and other elements assembled with the goal of making a visual statement inspiring a mood to inspired creations. A mood board is an overview of the inspiration and topic of your collection. It's a design tool that will assist

you in staying focused and consistent as your line grows. It's also an excellent tool for communicating your vision to others. Magazine shreds, fabric swatches, vintage pictures, buttons, ribbons, and pretty much any other visual reference you can think of are put on a hard board. As with a book or film, give your narrative board a title.

### **2.3.2.3 Inspiration board**

Fashion necessitates the "new" in order to stimulate design and provide something new to the buyer. What inspires a new season is an important aspect of that season. In a visually rich environment, there is a continual need to keep the fashion consumer stimulated, whether through mood, print, pattern, or texture. Gathers all of the references on how the product will appear. A more detailed and visually appealing set of visual references that serve as the foundation for components. The mood board should inspire the inspiration board (Bradford *et al.*, 2014)

### **2.3.2.4 Client board**

Gives you an insight of your client's likes and dislikes. The consumer might be a person or a certain group; you must also consider the client's age, educational background, and economic background. At the same time, avoid becoming overly precise in describing your customer, providing his address, and so on (Linda, 2011).

### **2.3.2.5 Colour board**

Colour stories are typically represented using whatever colour samples are available, for example, flat textiles, yarn samples, swatch samples, etc., colour palettes are inspired by exhibits, gallery visits, interest in certain cultures, odd images, or historical imagery.

### **2.3.2.6 Flat sketch**

Fashion sketches are a great method to express the attitude of a garment while also displaying your artistic abilities. These photographs should depict your unique "hand." Artwork should also highlight the garment's most crucial characteristic. Pictures demonstrate your understanding of how particular materials drape, pleat, or hold shape. This is also a terrific approach to demonstrate that you understand how clothing fits the body. Black and white illustrations of "flats" talk more about the story's clothing' intricacy and form (Linda, 2011).

### **2.3.2.7 Garment construction pattern**

This board highlights the pattern details for the planned clothing.

### **2.3.2.8 Swatch board**

Embellishments, closures, laces, threads, fusing material, label, and fabric swatches are all part of the trim and fabric board.

### **2.3.2.9 Costing**

A cost sheet is a detailed record of each design that is used to calculate the cost of the garment and determine the wholesale price. Included are the expenditures incurred during the production of each individual clothing item. Afterwards, a price is set on the basis that all expenditures, profit are incurred back, and any proportion of the entire net expense can be hiked to win back any percentage of profit (Susan, 2009).

### **2.3.2.10 Final presentation**

Collection debut on a fashion catwalk. Exhibition of retail stores. Client presentation. Launch of an online store. Introducing myself to the in-house chief designer. As the demand for rapid fashion grows, firms are converting the hottest runway trends (Susan, 2009)

## **2.4 Garment construction**

### **2.4.1 Elements of Design**

The elements of design are line, space, shape, form, texture, and colors which are used by every designer

#### **2.4.1.1 Line**

Line is the most basic element of design, and is very important element of design. It is also defined as linear marks that can describe a shape. They are vertical, horizontal, or diagonal. (Darstaru, 2021). Line has different aspects including direction, thickness, sharpness of edge and length. It provides the visual dimensions of length and width (Jacchi, 2021).

#### **2.4.1.2 Shape**

The two-dimensional line encloses an area and it is the element shape which is geometric or organic. Boundaries including lines and colour ultimately define shapes and can also emphasize (Morales, 2020).

### **2.4.1.3 Form**

The form is a three-dimensional object which not only has width and height but also has depth. The three primary shapes and forms are the square/cube, the triangle/pyramid and the circle/sphere (Meng, 2018).

### **2.4.1.4 Colour**

Colour has three properties. The first is hue, which is the name of the colours. The primary hues are yellow, red, and blue. Secondary colours are made by mixing two primaries. Intermediate colours are mixtures of a primary and adjacent secondary colour. The second property of colour is value, which refers to the lightness or darkness of hue. The third property of colour is intensity, which refers to the purity of the hue. Hue- where the colour is positioned on the colour wheel. Terms such as red, blue-green, and mauve all define the hue of a given colour (Genevese, 2005).

### **2.4.1.5 Value**

Value is defined as the lightness or darkness of an object. Every physical object in the landscape has a value. It is very important element in designing (Farley, 2009).

### **2.4.1.6 Texture**

Texture is the surface quality of any material as perceived by sight or touch. In floral design, the texture is part of a composition (Johnson, 1984).

### **2.4.1.7 Space**

Space can be used to both separate and connect elements in a design. Wider spaces separate elements from each other and narrower spaces connect elements to reveal relationships between them. Overlapping elements maximizes their relationship. The controlling and shaping space in our designs, we create rhythm, direction, and motion. We create design flow through our use of space (Bradley, 2010).

## **2.4.2 Pattern making**

The first step in making clothing is to create a pattern. As a result, the pattern determines the clothing's quality. When the fabrics are cut, a pattern, which is related to tailoring and sewing, is a piece of cloth or paper used as an example to make a clothing when the fabrics are cut (Muliawan *et al.*, 1990). The pattern is created using measurements from various parts of the

body that are calculated systematically, and the projected face, back, arms, collars, and so on are then copied on paper (Datta *et al.*, 2018) According to Datta, "pattern making is the art of creating patterns by creating templates from which clothing items can be sewn."

A pattern making process actually aids in the designer's imagination from sketching to final product. Flat pattern making for the design of the torso's bodice, skirt's waist to ankle, trousers' waist to ankle and sleeve's arm from shoulder to wrist, as foundations for developing a diverse range of designs and stylistic variations". Pattern making knowledge may assist students in applying techniques for creating the correct and accurate pattern of a woman's blazer. Students must be able to sew in addition to having knowledge and understanding of pattern making. Sewing is a crucial process in the fashion industry (Schmidt, 2008).

Sewing is used to create a seam connection by combining pieces of cloth that meet the standard of an economical production process. A person's sewing skill is the ability to sew clothing based on a pattern, using proper techniques, fitting the original design and fabric, and meeting certain clothing making standards. Sewing techniques are tailored to the design and fabric of the garment. Proper sewing techniques, in addition to good patterns, precise sizes, and excellent designs, can influence the quality of clothing products. All of these things are part of the clothing-making process. If one of the processes is not carried out perfectly, the product will be less qualified (Muliawan *et al.*, 1990).

### **2.4.3 Transferring Pattern Making**

Dressmaker's tracing paper or carbon is the quickest and most precise means to transfer structural details from pattern to cloth. To protect table surfaces, use a tracing wheel with the carbon fixed on sturdy cardboard. When most construction lines are required, details should be drawn on the wrong side of the fabric. Because it is safe, use white tracing paper whenever feasible. Its mark lasts longer if treated gently. Coloured tracing paper's pigment leaves a more lasting line. Scrubbing typically removes it, but regular washing and dry cleaning do not always remove it. Before marking the garment, test a shred of your clothing.

Certain lines, such as those for folds, pockets, and buttonholes, must be drawn on the correct side of the fabric. Along with the traced lines on the underside of the material, use the longest machine stitch called a bast stitch. Stitch through only one layer. The basting highlights the intricacy on the right side of the fabric (Brainkart.com).

## **Cutting**

Keep the material's ends and sides parallel to the table edges at all times to ensure that the grain does not change. Instead of dragging the material, go around the table for cutting. Moving the pattern and material causes the grain to move, resulting in uneven cutting. Do not take up the tablecloth or place your left hand between it and the table. Hold the pattern with your left hand close to the cutting edge and cut with long even strokes with your right hand. Maintain the cutting blade or shears on the table. So that the shears do not slice at an angle, place the thumb in the round handle and the fingers in the long handle. Notches should be cut outward. Two or three notches can be joined together to form one broad notch. Examine the guide sheet or pattern to see whether any extra pieces, such as shaped facings, bias binding, straight bands for cuffs, or strips for piped buttonholes, are required for finishing (Brinkart.com).

### **2.4.4 Construction method**

The construction of a garment is a beautiful art that necessitates sewing skills in order to translate a design on paper into a garment. Garment construction involves both technical and design challenges; the designer may pick where to construct lines such as pockets, collars, plackets, and sleeves, as well as how to finish edges and provide volume and structure to create a pleasing look and experience for the user. Garments that we design ourselves appeal to the emotions and are visually appealing. Unexpected forms and shapes may be transformed into flat patterns and, eventually, clothes. Patterns are like documents that explain the construction of a garment.

### **2.4.5 Customer fit**

When all of the pieces of a garment are pinned together, it is ready for fitting. Careless connecting of separate pieces might result in mistakes. The clothing is worn backwards. The seam protrusion on the incorrect side makes fitting simpler. Only one side, the right side, is suited for a person of regular build. People with one side difference from the other should always be fitted with the right side of the garment out.

**Alterations:** It is best to fit an adjusted garment before seams are sewn and completed to ensure that all of the lines are right (Sumitra, 2019).

# METHODOLOGY

### **3. Methodology**

Development of fashion portfolio to study on **Designing and Construction of garment based on traditional art ‘Nirmal painting’** is discussed under the following phases

#### **3.1 Flow chart of the study**

##### **PHASE 1:**

#### **3.2 Consumer survey**

##### **3.2.1 Preparation of questionnaire**

#### **3.3 Collection of design**

#### **3.4 Selection of the fabric for designing**

##### **PHASE 2:**

#### **3.5 Pre-treatment of the fabric**

##### **3.5.1 Desizing**

#### **3.6 Incorporation of design on the fabric**

##### **PHASE 3:**

#### **3.7 Fashion portfolio**

##### **3.7.1 Theme board**

##### **3.7.2 Inspiration board**

##### **3.7.3 Story board**

##### **3.7.4 Mood board**

##### **3.7.5 Colour board**

##### **3.7.6 Construction of Garment**

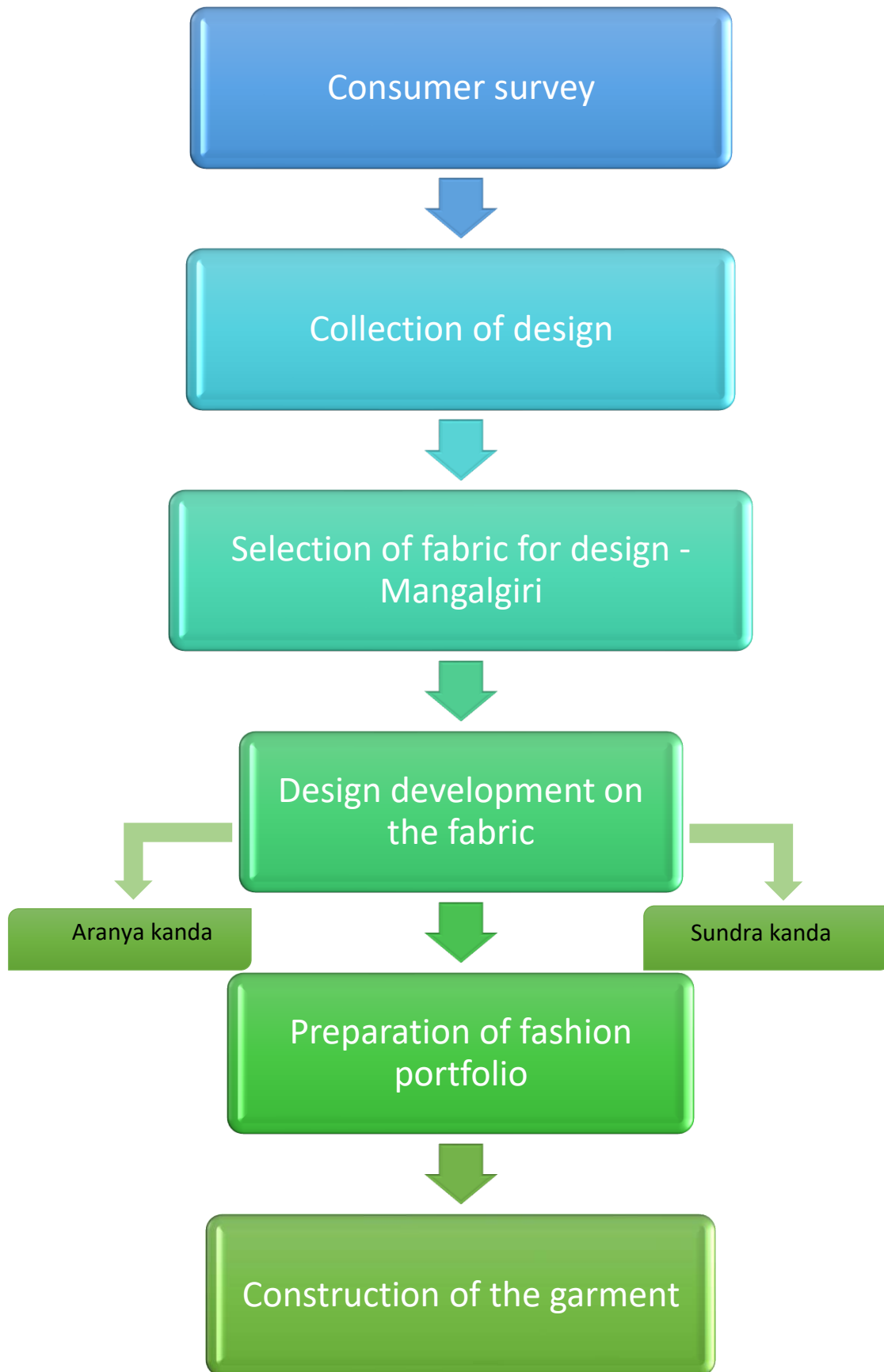
###### **3.7.6.1 Pattern making**

###### **3.7.6.2 Cutting**

###### **3.7.6.3 Sewing**

###### **3.7.6.4 Final garment**

### 3.1 Flow chart of the study



## PHASE 1

### 3.2 Consumer survey

Since Qualitative Research Methodology was applied in this study, Survey questionnaires were used as data collection tool. The data collection was planned on the virtue of questionnaires, photographs and techniques related to construction of textile design.

#### 3.2.1 Preparation of questionnaire

Survey involves collection of information through a series of questions, web browser. This survey was targeting the age group of 18 to 25 years. The data was collected by completion through mail questionnaire. The data was collected in Avinashilingam university students. The samples were taken individually not in group, the responses size of 150 members. The language of the question expressed in neutral manner. Both mixed questions such as open ended and closed ended questions were used in Questionnaire (Raechel *et al.*, 2016).



**Plate 1: Consumer Survey**

### 3.3 Collection of design

Extensive study was done to have in depth information regarding the analysis of monuments and their motifs, patterns and designs. Lot of inputs was also taken from the Internet resources, archives and websites dealing with historical information.

Bhatia, (2008) "Comparative study on acceptance of traditional & modern design in textile designing" in the study of Ramayana history, we observe that motifs re-occur, with the adaptations that become land mark. With the re-adaptations of the same designs, the entire look

is reborn. History and traditions are often applied to textile designs in different ways. When they are applied in the sphere of contemporary designs, it results more acceptance & distinctive approaches to the use of technology, materials or imagery.

Bhatnagar 2004 "Traditional Indian Costumes and Textiles", did the study on Indian traditional costumes and traditional jewellery is used to adorn the look of costume. It merged the tradition and our heritage in our daily life, which makes the consumer more comfortable.

The pictures were collected from different articles, according to the story of Ramayana the images were arranged. Around 10 pictures are collected and according to the study both Aryana kanda and Sundra kanda was collected. In pictography the story was explained.



**Figure 1- Collection of design from Ramayana**

### **3.4 Selection of the fabric for designing**

The fabric selected for the study was Mangalgiri cotton. Mangalgiri cotton fabric are simple cotton handloom fabric with broad borders woven with gold and silver threads. These fabric features dense weaves in exotic colors. Mangalgiri is a town in the Guntur district of Andhra Pradesh. The fabric was procured from Meghana handlooms and weavers, Gajuwaka, Visakhapatnam, Andhra Pradesh.



**Figure 2– Mangalgiri cotton**

## **PHASE 2:**

### **3.5 Pre-treatment of the fabric**

The preparatory process for textiles is necessary. It helps to improve the aesthetic appearance and processability of fibre to fabric by removing all impurities uniformly and makes the fabric prior to dyeing and finishing processes (Vigo,1994).

#### **3.5.1 Desizing**

When it comes to cotton the process of desizing is essential. Sizes are nothing but starch which is applied to woven fabrics of warp yarns to withstand the weaving process and must be removed before dyeing. The removal of starch from the fabric is called “desizing”. Removal of sizing matter from the cotton warp yarns/fabric is necessary. These strands are sized to withstand the strain and stress during weaving process without breaking. Natural and synthetic

sizes are present in the fabric and other foreign material are removed during process as starch prevents dye to penetrate into fibre. There are different methods and techniques used to remove starch from the fabric. The selected fabric was boiled at 100°C for 1hour to remove the sizing matter present in the fabric (Wadje, 2009).

**Table I– Recipe for Desizing**

PARAMETERS	VALUES
ML Ratio	1:20
Detergent	3%
Soap oil	2%
Temperature	100%
Time	1 hour



**Plate 2: Desizing of the fabric**

### **3.6 Incorporation of design on the fabric**

The design was incorporated through manual process such as with free hand method. For painting the acrylic paints were used. The design was directly transferred through free hand without using any stencils.



Figure 3: Hand painting pictures on fabric

## **PHASE 3:**

### **3.7 Fashion portfolio**

The fashion portfolio reflects the designer's individuality, sense of style, design inspiration, and design handwriting. A creative portfolio includes a designer's unique work as well as diversity and market understanding. It includes information such as the designer's personal information, education, skills, developed collections, designs, history, jobs, accomplishments, and achievements. This study concludes that having a creative portfolio that encompasses all categories is critical for every fashion industry professional and student. This research demonstrates how fashion designers and students may create portfolios that simply and concisely communicate their personality and creative work to the spectator (Pooja, 2021).

### 3.7.1 Theme board

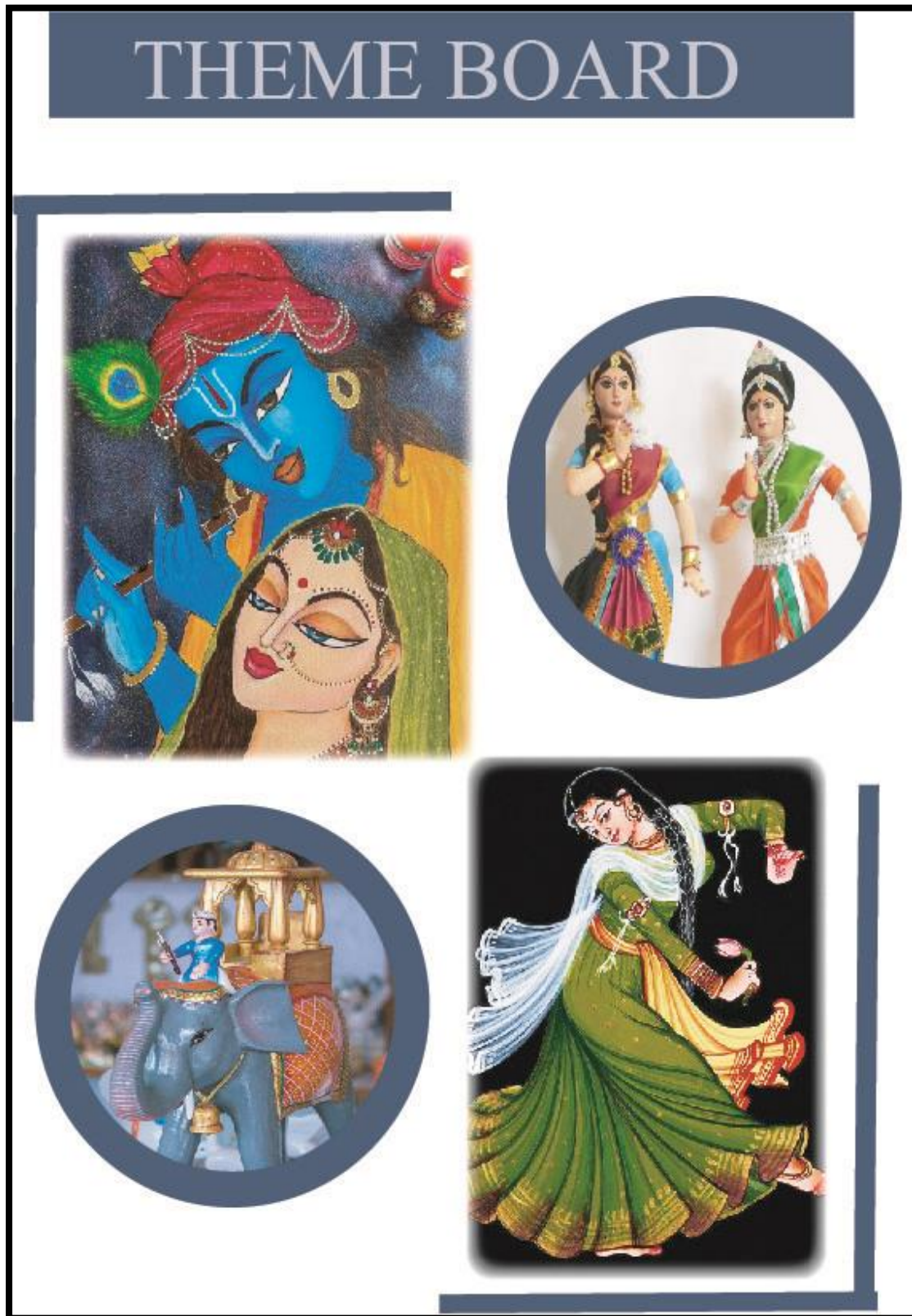


Figure 4: Theme board

### 3.7.2 Inspiration board

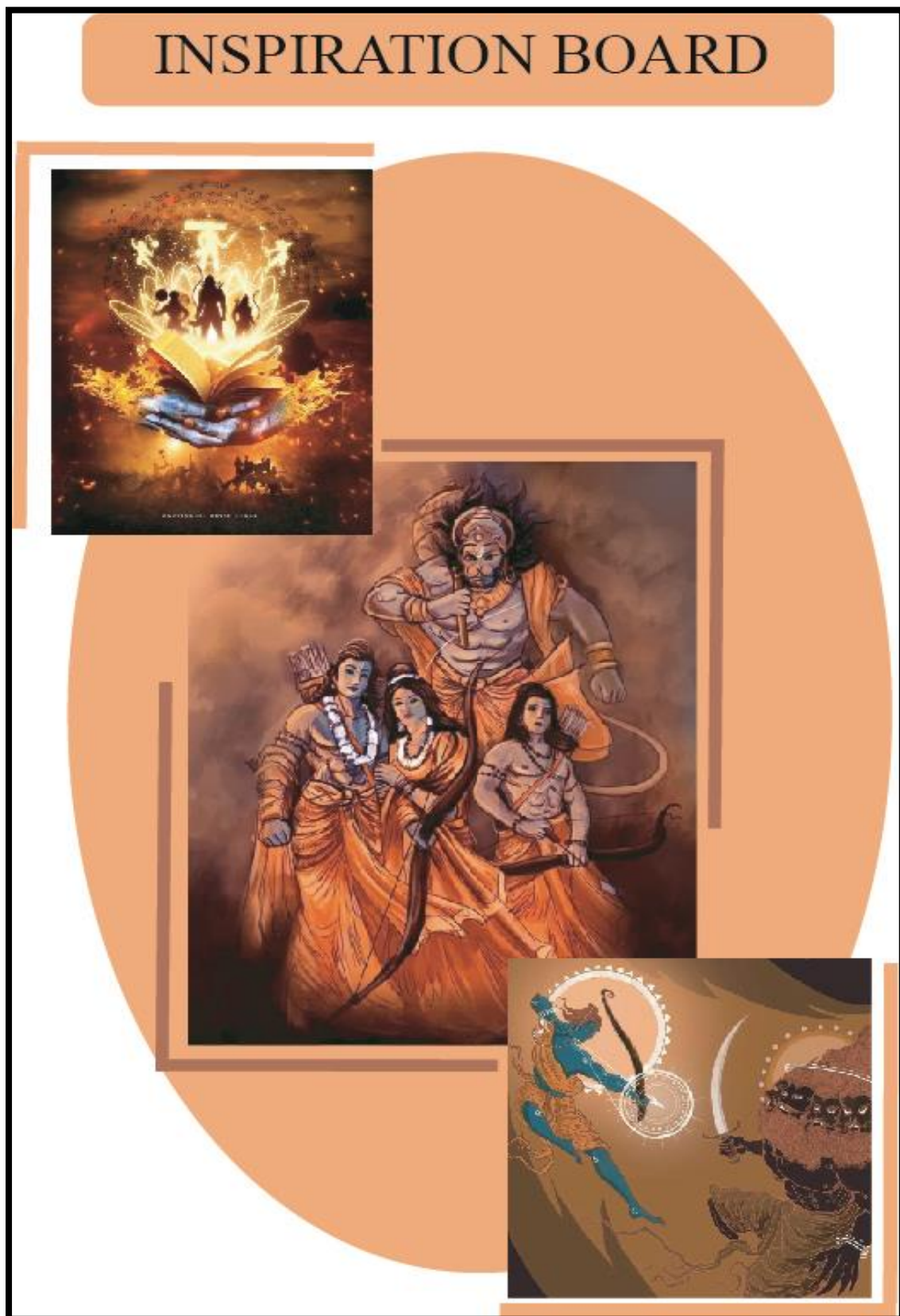


Figure 5: Inspiration board

### 3.7.3 Story board

## STORY BOARD



Aranya kanda is the third book of the epic poem of Ramayana.

Its is also found in the Ramcaritmanas.

It follows the legend of Ram through his fourteen- year exile in the forest, joined by his wife and his brother.

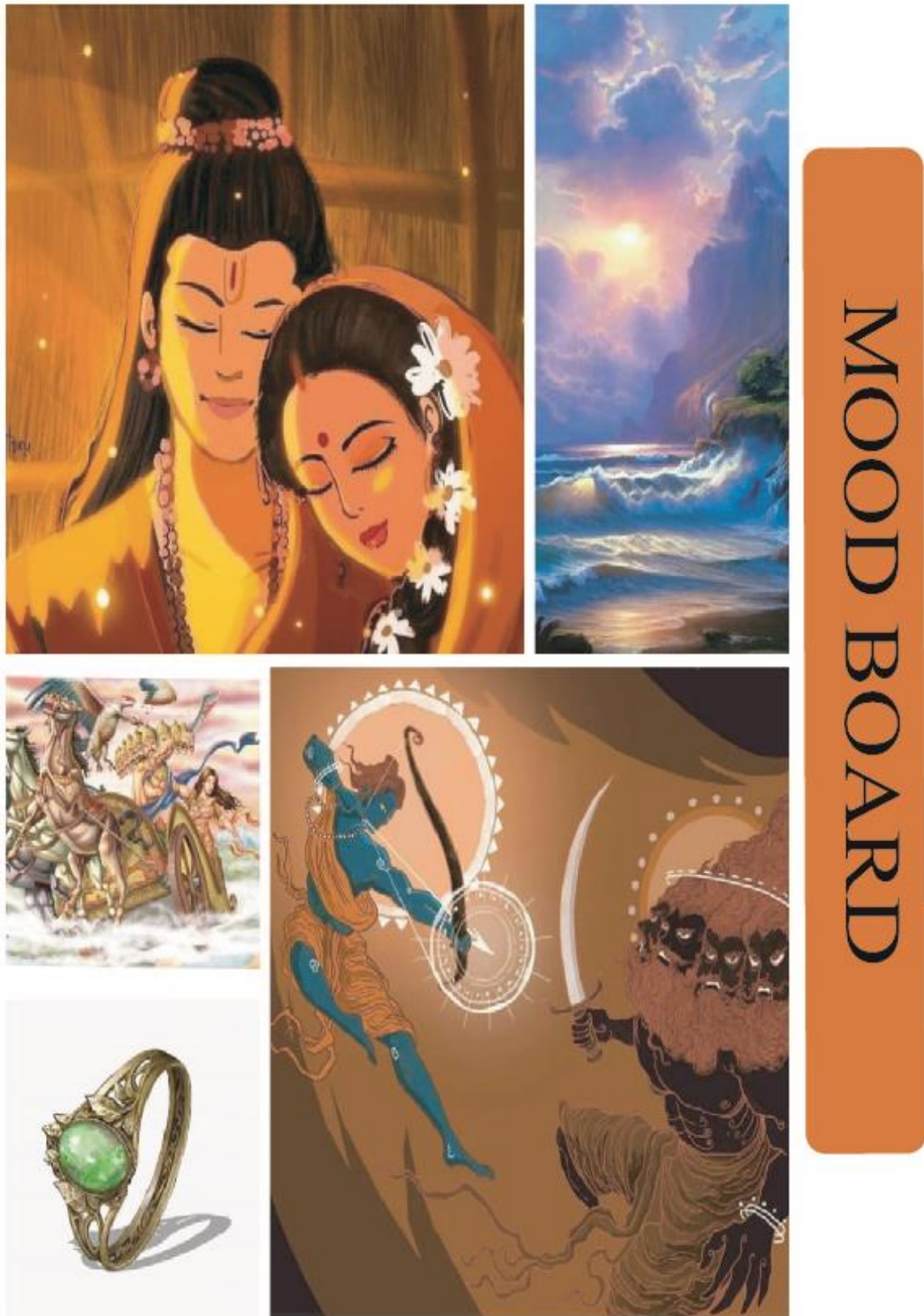
Rama overcomes challenges and demons by upholding standards of behavior.

Nearing the end of his exile, Ram's wife Sita is kidnapped by the king Ravana, and Rama learns what happened.



Figure 6: Story board

### 3.7.4 Mood board



MOOD BOARD

Figure 7: Mood board

### 3.7.5 Colour board



Figure 8: Colour board

### 3.7.8 Construction

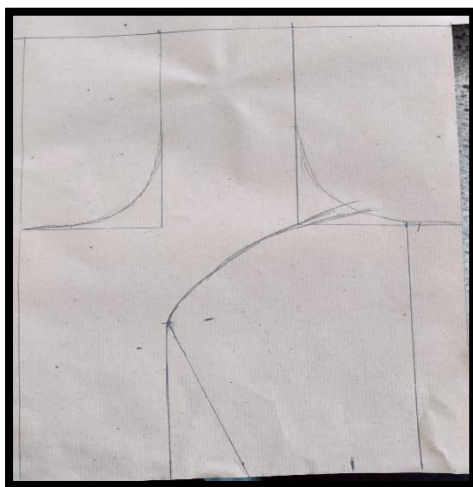
#### 3.6.8.1 Pattern making

##### Frock bodies

- 0-1=1/8 chest+ 2 ½ “
- 2-0= Full length
- 3-0= ½ Chest
- 5-0= Shoulder+ 1/2
- 7-5= 3/4, join 3-7
- 9-1= ¼, bust+ 1 ½
- Square down 9-10
- 2-12= 4” + 2
- Shape 12-6
- 10-11 add + 2”

##### Back:

- 13-0= 2 ½
- Shape neck 17-13
- Shape scye 7-18-9
- Keep ¾ outside 11-9
- 12-9 for front



**Plate 3: Pattern making of front and back bodice**

## Waist coat drafting procedure

- 1-2= Full length + 1 ¼”
- 1-3= arm depth 1/6 bust + 1”
- 1-4 =length + ½”
- 5= neck depth
- 6-1= ½ shoulder width + ½”
- 7-6 = connect two points
- 8-3 = ¼ bust + 1”
- 9-6= Shoulders slope 8/4”
- 10-1= ½ bust + 1”
- 11-10= Same as 5 to 1 measured
- 12-11= 1 ½ at 45°
- 8-13= Draw a line
- 14-13= Waist shape
- 15-7= 1” as per draft
- 16= Is a midpoint of 6 to 7
- 16-17= 1/2” Inward arm hole curve to be drawn
- Neck open front= 3 ½”

## Sleeves:

- 1-0 = 1/8 bust+1/2
- 2-0= sleeve length+1”
- 3-2= same as 1-0
- 4-1= 1/8<sup>th</sup> chest
- 5-0= 1”
- Join 4-5,6, midway of 4-5
- 7-6= ¾”
- 8-4= 2”
- 10-2= Half sleeve round +1/2”



**Plate 4: Pattern making for waist coat**

### **3.7.8.2 Cutting**

After pattern making the pattern should be mark on the fabric accordingly with extra 1 inch for seam allowance, then cut according to the markings



**Plate 5: Fabric cutting of front and back bodice**



**Plate 6: Cutting of Waist coat & Sleeves**

### 3.7.8.3 Sewing

- After cutting all the fabric attach the lining and main fabric together
- Attach the back part and finish the hemline
- Cut front part and attach the back part together
- Finish the hem and attach the front and back together
- Finish all the raw edge of side seam with a neat finish



**Plate 7: Sewing of Garment**

### 3.7.8.4 Final garment



**Plate 8(a): Final garment**



**Plate 8(b): Final garment**

## RESULTS AND DISCUSSION

## **4.Results and Discussion**

To study on **Designing and construction of garment based on traditional art ‘Nirmal painting’** is discussed under the following heads.

### **4.1 Statistical analysis**

4.1.1 Comparisation between educational qualification and the employee income

4.1.2 Comparisation between traditional wear and indo- western

4.1.3 Comparisation between cotton and linen, how comfortable

4.1.4 Comparisation between polycotton and jute cotton, how comfortable they are

4.1.5 Comparisation seasons of Ramayana would they prefer

4.1.6 How often do you like to shop

4.1.7 What type of fashion style would you prefer

4.1.8 Favourite colour of the respondent

4.1.9 What kind of the fabric they prefer

4.1.10 Would you prefer epic story on the garment

### **4.2 Cost Analysis**

### **4.3 Feed Back Survey**

## 4.1 Statistical Analysis of Survey results

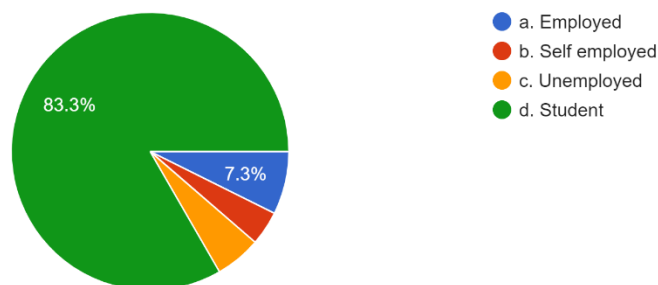
### 4.1.1 Comparison between educational qualification and the employee income

From the Table II a and Figure-9, out of 150 responses, only 7.3% were employed and remaining 83.3% were students, of which 42% are under graduates and about 85% of them have no income, 18% are graduates and about 67% of them have no income, 59% are post graduates and about 94% of them have no income. From Figure- 10, out of employed respondents, 12% have below 5 lakh income. From single factor analysis, there exist significant difference between educational qualification.

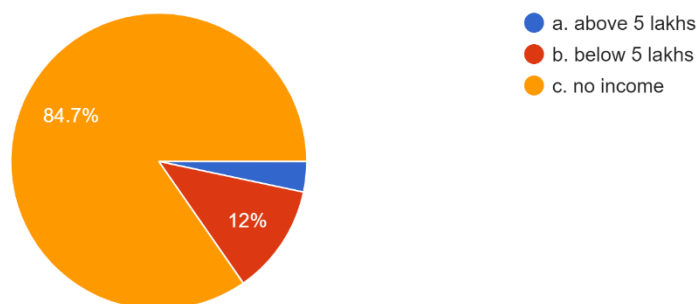
**Table II-a**

**Single factor Analysis for Comparison between educational qualification**

Groups	Mean	Variance	Percentage (%)
Under graduate	2.8125	0.218253968	42.66667
Graduate	2.555556	0.487179487	18
Postgraduate	2.932203	0.064289889	39.33333



**Figure 9 – Present occupation status of respondents**



**Figure 10–Employee income status of respondents**

**TABLE II- b****Anova for Comparison between educational qualification and the employee income**

Source of variation	SS	Df	MS	F-value	P-value
Between groups	2.627853107	2	1.313927	6.407169564	0.002148
Within groups	30.14548023	147	0.2050771		
Total	32.77333333	149			

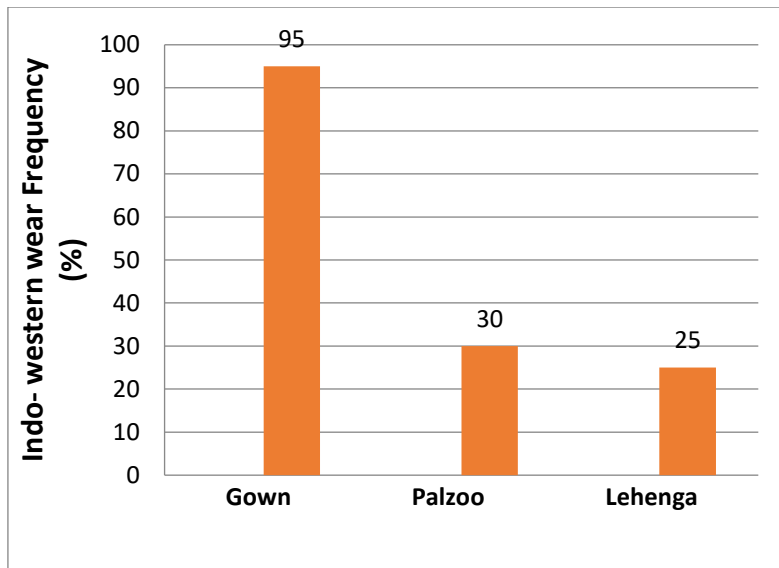
Since the P- value is less than the alpha value, there is a statistically significant difference between the groups. In this case the P- value of 0.00214 is less than 0.05. Therefore, statically it is confirmed that significate difference exists between employee income and educational qualification.

**4.1.2 Comparison between traditional wear and indo-western**

From the Table III-a and Figure-11, it is clear that, out of 150 responses 55% people like to wear Salwar kameez and 45% people like wearing Sarees. From Figure- 12, a majority (95%) prefers gown when compared between indo-western wear. From single factor analysis, there exist significant difference between traditional wear.

**Table III-a****Single factor Analysis for Comparison between Traditional wear**

Groups	Mean	Variance	Percentage %
Sarees	1.705882353	0.6883231	45.33333
Salwar kameez	1.390243902	0.4631135	54.66667



**Figure 11- Comparison between Indo-western wear**

**Table III- b**

**Anova for Comparison between Traditional wear and Indo-western wear**

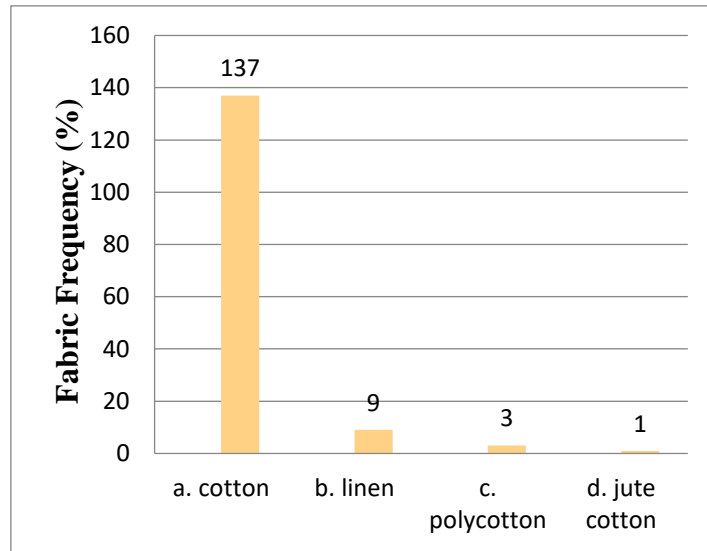
Source of variation	SS	Df	MS	F- value	P-value
<b>Between groups</b>	3.703491153	1	3.703491153	6.5540802	0.011466
<b>Within groups</b>	83.62984218	148	0.565066501		
<b>Total</b>	87.33333333	149			

Since the P- value is less than the alpha, there is a statistically significant difference between the groups. In this case the P- value of 0.01146 is less than 0.05. Therefore, statically it is confirmed that significate difference exists between Indo western and tradition wear.

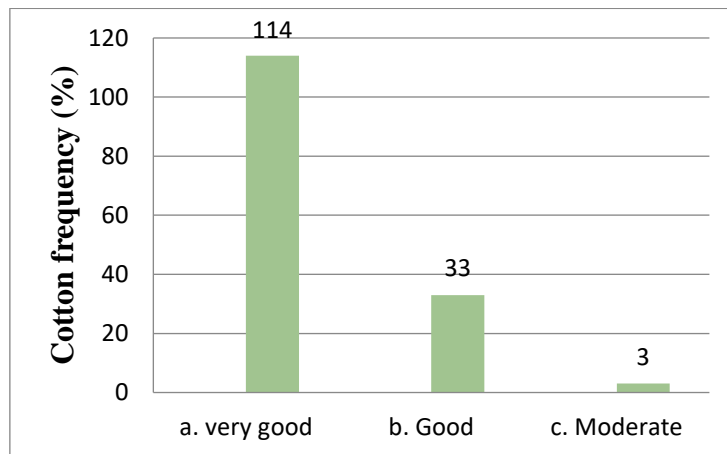
#### **4.1.3 Comparison between selected fabric on comfortable basis:**

From the Figure- 11, out of 150 responses, 76% people are very comfortable in wearing cotton and only a 20% are very comfortable wearing linen. Remaining respondents were very less in number, who preferred polycotton (3%) and jute cotton (1%) fabric. From Figure- 12, it is clear

that, 114 cotton preferred respondents gave very good rating, 33 respondents gave good rating and only 3 respondents gave moderate rating.



**Figure 12- Comparison between cotton and linen fabric on comfortable basis.**



**Figure 13- Cotton preferred respondents rating.**

**Table IV**

**Anova for Comparison between cotton and linen fabric on comfortable basis.**

Source of variation	SS	Df	MS	F-value	P- value
Between groups	0.568070175	2	0.284035	0.613068	0.5430655
Within groups	68.10526316	147	0.463301		
Total	68.67333333	149			

Since the P- value is less than the alpha, there is no statistically significant difference between the groups. In this case the P- value of 0.54306 is more than 0.05. Therefore, statically it is confirmed that significate difference exists between linen and cotton in terms of comfort.

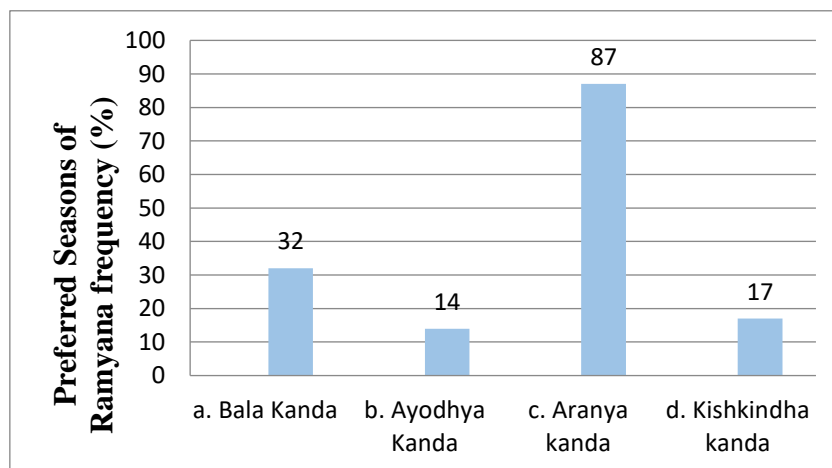
#### 4.1.4 Comparison between preferred seasons of Ramayana

From the Table VI a and Figure- 14, it is clear that, out of 150 responses, 87% people like Aranya kanda, 32% like Bala kanda, 17% like Kishkindha kanda and surprisingly only a 12% of people like Yuddha kanda. From single factor analysis, there exist significant difference between preferred seasons of Ramayana.

**Table V- a**

**Single factor Analysis for comparison between preferred seasons of Ramayana**

<b>Groups</b>	<b>Count</b>	<b>Mean</b>	<b>Variance</b>
<b>Bala kanda</b>	32	1.9375	0.834677
<b>Ayodhya kanda</b>	14	1.785714	0.950549
<b>Aranya kanda</b>	87	1.494253	0.624967
<b>Kishkindha kanda</b>	17	1.882353	0.985294



**Figure 14- Comparison between preferred seasons of Ramayana**

**Table – V b**

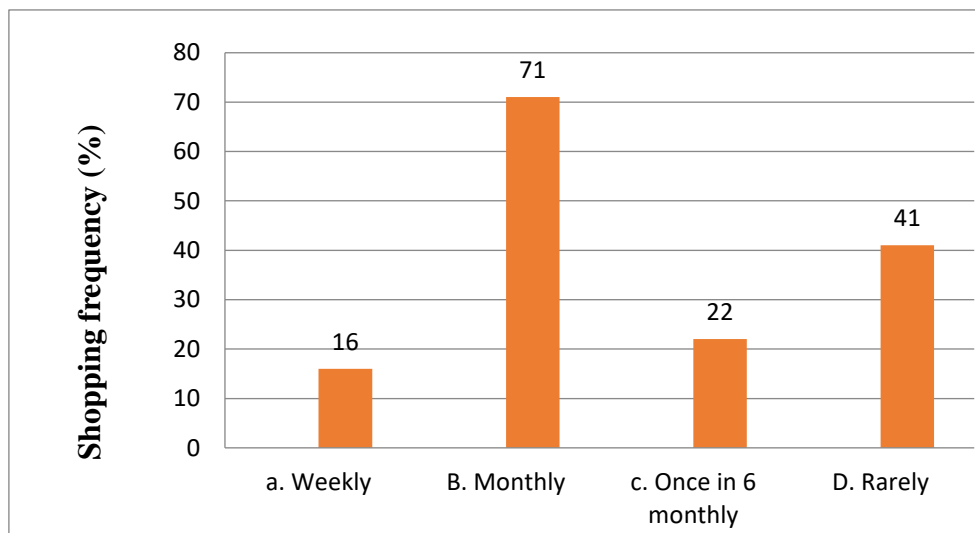
**Anova for comparison preferred seasons of Ramayana**

Source of variation	Ss	Df	MS	F- value	P- value
Between groups	5.916024824	3	1.972008	2.672198	0.0496416
Within groups	107.7439752	146	0.737972		
Total	113.66	149			

Since the P- value is less than the alpha, there is a statistically significant difference between the groups. In this case the P- value of 0.04964 is less than 0.05. Therefore, statically it is confirmed that significate difference exists between seasons of Ramayana in term of liking.

**4.1.6 Shopping frequency percentage of respondents**

Figure- 15, shows that about 71% of the respondent are interest to shop monthly and about 41% of respondent are interested to shop rarely, about 22% of the respondent are shopping once six months and about 16% of the respondent are interested to shop weekly.



**Figure 15: Shopping frequency percentage of respondents**

#### 4.1.7 Respondent's most liked fashion styles

As of the Figure-16, it is clear that about 87% of the respondent are fascinated about indo western style, about 52% of the respondent are fascinated about Indian style and about 10% of the respondent are fascinated about bohemian mix style.

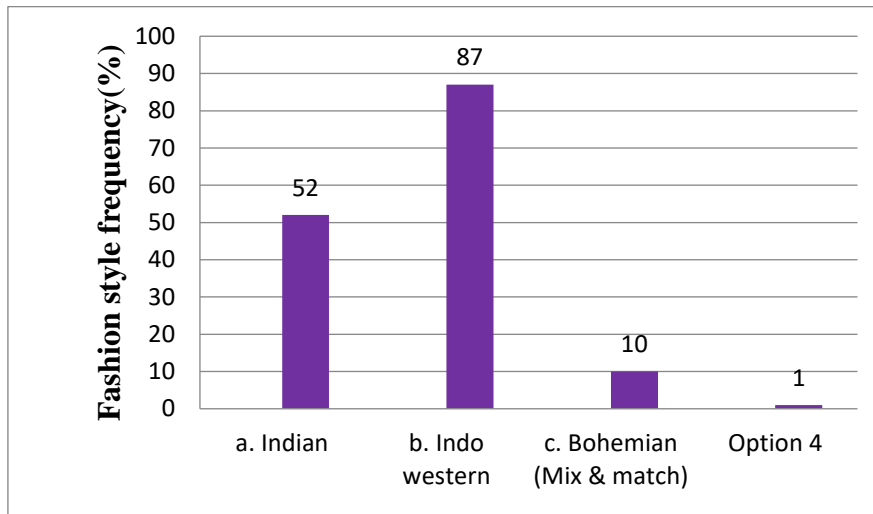


Figure 16: Respondent's most liked fashion styles

#### 4.1.8 Respondent's favourite colour to wear

From the Figure-17, as the bar graph below represents the variation in favourite colours of respondents, out of 150 responses 49% people like blue colour and 23% of people like white, 17% of the people like grey, 9% of the people like yellow, only a 3% of people like orange.

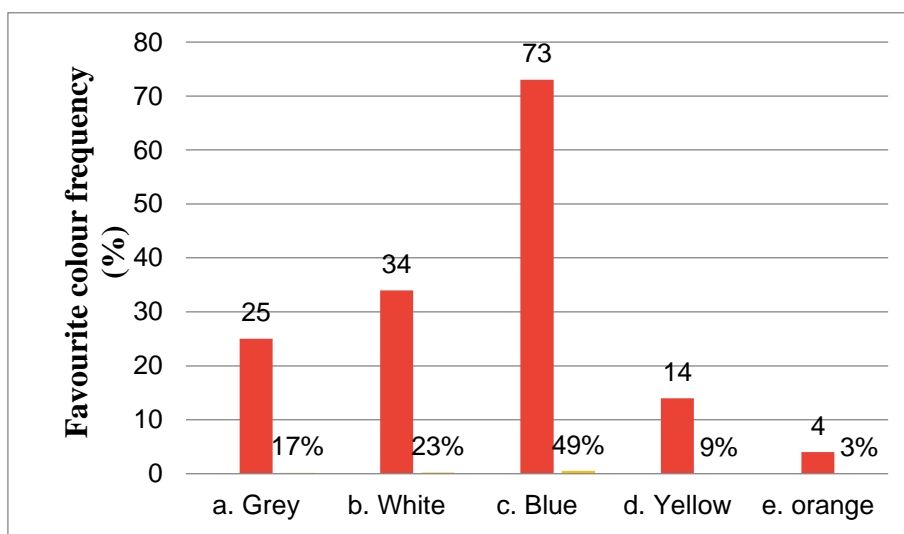


Figure 17: Respondent's favourite colour to wear

#### 4.1.9 Preferred fabric of respondent

From the Figure-18, as the bar graph below represents the variation in kind of fabric people prefer, out of 150 responses 91% people like cotton, 6% of the people like linen, 2% of the people like polycotton and only a 1% of people like jute cotton.

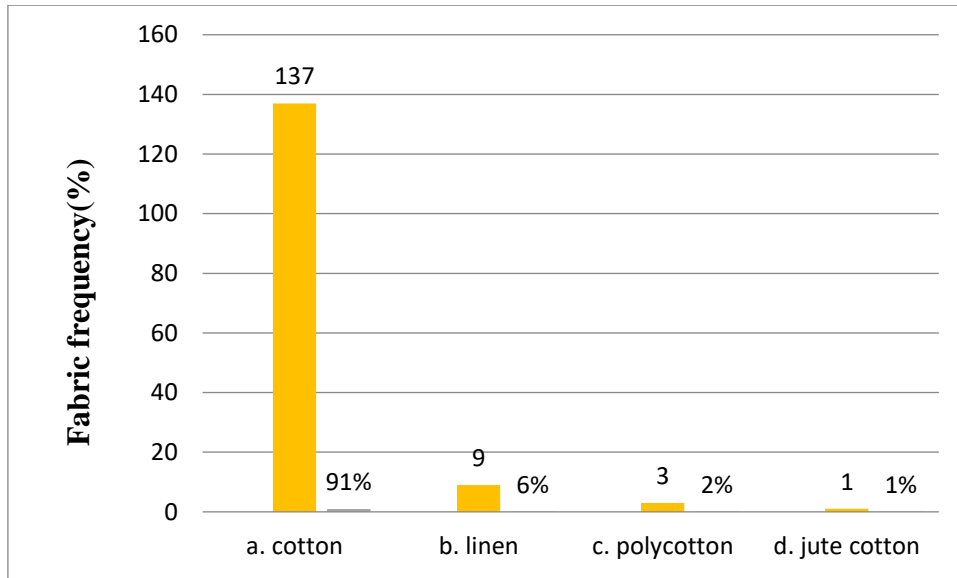


Figure 18- Preferred fabric of respondent

#### 4.1.10 Respondents preference of epic story on the garment

From the Figure-19, as the bar graph below represents the variation in kind of fabric people prefer, out of 150 responses 85% prefer epic story on the garment and 15% does not prefer an epic story on the garment

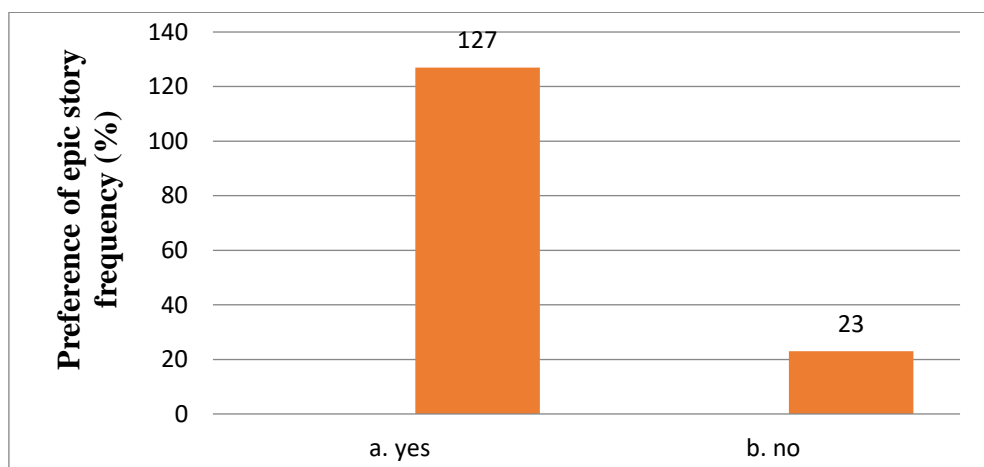


Figure 19- Respondents preference of epic story on the garment

## 4.2 Cost analysis

**Table- VII**

### **Cost analysis**

<b>Item</b>	<b>cost</b>
Blue colour fabric per meter	175 rupees (5 meters)
Peach colour fabric per meter	120 rupees (2 meters)
Painting items	1500 rupees

## 4.3 Feedback survey

The survey was conducted in visual inspection the sample was shown to the consumers, then asked for feedback in rating form. It was conducted around 100 members of students from Avinashilingam college.

**Table- VIII**

### **Feedback survey**

	<b>Excellent</b>	<b>Good</b>	<b>Average</b>	<b>Bad</b>
<b>Colour combination</b>	74	26	0	0
<b>Design</b>	81	19	0	0
<b>Type of the garment</b>	72	28	0	0
<b>Cost analysis</b>	89	11	0	0
<b>Texture of the fabric</b>	75	20	5	0

From Table-8, it is clear that the level of customer satisfaction was judged to be very much satisfied by the highest percentage for all the product, colour combination-excellent 74%, good 26% and for design -excellent 81%, good 19% and for type of the garment excellent 72%, good 28%, and for cost analysis excellent 89%, good 11%, and for texture of the fabric excellent 75%, good 20% and then average 5%, as it is concluded as more rating percentage for cost analysis, and next for design than texture of the fabric.

## SUMMARY AND CONCLUSION

## 5. Summary and conclusion

The summary and conclusion pertaining to the study entitled “**Designing and construction of garment based on traditional art ‘Nirmal painting’**” are summarized.

### First Phase

The first phase consisted of a consumer survey, Preparation of questionnaire, Collection of design and Selection of the fabric for designing.

A consumer survey was conducted to select the fabric which is suitable for the designing. The designs were collected from the web browser according to the selected Kanda through the survey. Preparation of Questionnaire is done to confirm the garment type, suitable colour, type of the fabric which are preferable by the consumer. According to the theme, the main phase of the story, Pictures were collected.

### Second Phase

The second phase includes the pre- treatment of the fabric for further processes. To remove the impurities and starch content on the fabric desizing is done. Incorporation of design on the fabric, the design was incorporated through manual process using hand painting method. For painting the acrylic paints were used. The selected design was hand painted around the hemline of the frock. The selected kandas were Sundra Kanda and Aryana Kanda.

### Third Phase

In the final phase, Fashion portfolio is done. Fashion portfolio includes Theme board, Inspiration board, Story board, Mood board, Colour board and the Construction of the final garment. Fashion portfolio helps to create a unique design for the selected story by using CAD software. Pattern making, marking and cutting, and sewing is done for the construction of final garment. Final garment is done using Mangalgiri fabric with hand painted design of Sundhara kanda and Aranya kanda.

### Objectives:

- To study the traditional painting of Andhra Pradesh-Nirmal painting.
- To do a background study on Nirmal painting.
- To select the design regarding Ramayana through the survey.

- Implementing the selected design on the fabric.
- Designing of garment with the selected designs

### **Finding of the study**

The following are the responses of consumer survey:

- From single factor analysis out of 150 responses, only 7.3% were employed and remaining 83.3% were students, of which 42% are under graduates and about 85% of them have no income, 18% are graduates and about 67% of them have no income, 59% are post graduates and about 94% of them have no income. Out of employed respondents, 12% have below 5 lakh income.
- From single factor analysis out of 150 responses 55% people like to wear Salwar kameez and 45% people like wearing Sarees. From figure, a majority (95%) prefers gown when compared between indo-western wear.
- Out of 150 responses, 76% people are very comfortable in wearing cotton and only a 20% are very comfortable wearing linen. Remaining respondents were very less in number, who preferred polycotton (3%) and jute cotton (1%) fabric. It is clear that, 114 cotton preferred respondents gave very good rating, 33 respondents gave good rating and only 3 respondents gave moderate rating.
- From single factor analysis, it is clear that, out of 150 responses, 87% people like Aranya kanda, 32% like Bala kanda, 17% like Kishkindha kanda and surprisingly only a 12% of people like Yuddha kanda.
- Shopping frequency shows that about 71% of the respondent are interest to shop monthly and about 41% of respondent are interested to shop rarely, about 22% of the respondent are shopping once six months and about 16% of the respondent are interested to shop weekly.
- It is clear that about 87% of the respondent are fascinated about indo western style, about 52% of the respondent are fascinated about Indian style and about 10% of the respondent are fascinated about bohemian mix style.
- The variation in favourite colors of respondents, out of 150 responses 49% people like blue colour and 23% of people like white, 17% of the people like grey, 9% of the people like yellow, only a 3% of people like orange.
- The variation in kind of fabric people prefer, out Of 150 responses 85% prefer epic story

on the garment and 15% does not prefer an epic story on the garment

- It is clear that the level of customer satisfaction was judged to be very much satisfied by the highest percentage for all the product, colour combination-excellent 74%, good 26% and for design -excellent 81%, good 19% and for type of the garment excellent 72%, good 28%, and for cost analysis excellent 89%, good 11%, and for texture of the fabric excellent 75%, good 20% and then average 5%, as it is concluded as more rating percentage for cost analysis, and next for design than texture of the fabric.

### **Conclusion:**

Nirmal painting is a traditional art form inspired by the Ramayana and Mahabharata that is implemented for home furnishings such as wooden toys and frames. In this project, we are implementing Nirmal art into the fabric. Based on the survey the fabric type, fabric colour, story theme and styles are chosen to design and construct the final garment, to satisfy the need of the consumer. The story of Aranya kanda and Sundara Kanda's main segments was collected pictorially as a theme to implement on the fabric according to the consumer survey. For this project, the fashion portfolio was created using CAD. From these selected designs, using Mangalgiri cotton fabric, hand paintings are done. Using this, the garment is designed and constructed which portrays the whole story of the selected kandas. From the feedback survey and cost analysis, it is clear that respondents were fond of handcrafted designs on garment, hence it can be applicable large extent of fabric designs and accessories to promote the traditional art forms.

### **Recommendations for further studies:**

- Since only Aranya kanda and Sundara Kanda's main segments were used for this study, remaining kanda designs can be implement for garment design development.
- Garments can be developed using natural dyes and mordants for keeping the sustainable practices
- Designs can be further modified for developing various printing motifs.

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- Article title, year, Retrieved from: <https://indiabiodiversity.org/species/show/31380>

# APPENDICES

## Appendices- I

### Consumer survey questionnaire

1.Name -----

2.Gender

- a) Male
- b) Female

3. Educational qualification

- a) Graduate undergraduate
- b) Postgraduate
- c) Undergraduate

4. Present occupation

- a) Employed
- b) Self employed
- c) Unemployed
- d) Student
- e) Other

5. If employee income

- a) Above 5 lakhs
- b) Below 5 lakhs
- c) No income

6.How often do you like to shop

- a) Weekly
- b) Monthly
- c) Once in 6 monthly
- d) Rarely

7. What is the fashion style you like the most?

- a) Indian
- b) Indo western

c) Bohemian (mix and match)

8. if traditional what type you like?

- (a) sarees
- (b) salwar kameez

9. If, indo western?

- (a) lehenga
- (b) palazzo
- (c) gowns

10. Your favourite colour to wear?

- a) grey
- b) white
- c) blue
- d) yellow
- e) orange

11. which kind of fabric do you prefer?

- a) cotton
- b) linen
- c) polycotton
- d) jute cotton

12. Why, do you prefer -----?

13. If cotton, how comfortable you are with?

- a) very good
- b) good
- c) moderate
- d) bad

14. If linen, how comfortable you are with?

- a) very good
- b) good
- c) moderate

d) bad

15. If polycotton, how comfortable you are with?

- a) very good
- b) good
- c) moderate
- d) bad

16. If jute cotton, how comfortable you are with?

- a) very good
- b) good
- c) moderate
- d) bad

17. Would you prefer epic story on the garment

- (a) yes
- (b) no

18. Which season of Ramayana would you like

- (a) Bala Kanda [ childhood to birth and training of the princes and marriage of the princess]



- (b) Ayodhya Kanda [ Ram's coronation as a prince and exile into the forest]



(c) Aranya kanda [ forest life of ram, kidnapping of Sita]

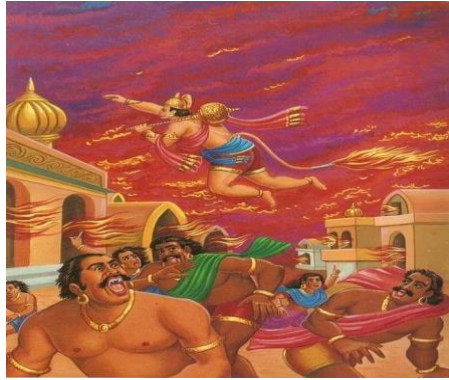


(d) Kishkindha kanda [ meeting hanuman with Ram, search of Sita]



19. Which season of Ramayana would you like

(a) Sundra kanda [ Hanuman's journey to Lanka and meeting with Sita, sets fire to



Lanka]

(b) Yuddha kanda [battle between ram and Ravan, Sita rescued from Ravan, Sita honour was tested in the fire]



(c) Uttara kanda [ life after returning to Ayodhya and Sita's exile, the birth of Luv and Kusha to Sita]



20. What's your favourite part in Ramayana -----?