



An Overview Of Silk Saree Wallpaper

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CHAPTER 1 INTRODUCTION

The national garment of the Indian woman is the saree. Silk saree is the traditional garments of Indian women of all ages. Whether living in India or in another country, Indian women and women from other cultures adorn themselves with the most beautiful silk sarees they can find. The Silk sarees are known around the world for their beauty, elegance and intricate trim palu. The beauty of the silk is the key to having wonderful silk sarees. The traditional silk sarees match every mood, every occasion, and to suit everyone's budget. Indian traditional silk sarees hold the credit for excellent quality and unique designs. Silk costumes are an integral part of Indian festivals and traditional ceremonies.

Today, silk weaving tradition in India revolves around the sari, the ethnic traditional wear that is worn in most parts of the country. The Indians dress themselves in elaborate and colorful silk sarees on festive occasions. The vibrant colours, light weight, resilience and excellent drape etc. have made silk sarees, the irresistible and unavoidable companion of Indian women. Indian silk is popular all over the world with its variety of designs, weaves and patterns.

A **silk saree** is a luxurious and traditional Indian garment made from silk fabric, known for its smooth texture, rich sheen, and intricate designs. Silk sarees are highly valued for their elegance, durability, and cultural significance. They are often worn on special occasions such as weddings, festivals, and formal events.

Silk sarees are the most rich looking sarees with beautiful patterns on it which are made with silk threads which are unique in itself. Now to get those texture on walls is only possible when we will use the exactly same thing on the walls. Be it silk, cotton, velvet or chiffon, most Indian homes possess a precious collection of sarees that cannot be worn nor discarded because of their sentimental value. Having been passed on from one generation to the next, these heirlooms may have lost their sheen over the years, the fabric may have weakened or the embroidery has come apart. So instead of piling up old sarees in your wardrobe, we can use it in various ways to upcycle sarees and turn them into a beautiful part of our home decor.

Since a saree is six metres long, we can use the length of the saree to make beautiful curtains. One can mix and match sarees to create a curtain set for any room and use net sarees for the sheer curtains. We recommended you add a layer of fabric under the saree to enhance the strength of the curtains. Old cotton sarees are perfect for creating window blinds for the bedroom. Use an old saree to create a table cover and instantly transform your dining space. Measure the exact size of the dining table and cut the saree as per the required dimensions. Silk sarees can live up the table on festive occasions. Don't forget to protect the table cloth with a transparent plastic cover.

The beautiful patterns, prints and colours of Indian sarees make them perfect for cushions. Stitch old sarees into cushion covers and enhance their look with tassels, laces and pompoms to give them a more formal look. Silk or cotton sarees can also be used to make floor cushions.

Stitch vintage sarees into sofa seat covers to decorate your home during festivals. Make sure that the colours of the sarees blend or contrast with the existing upholstery and colour palette of the space.

Convert beautiful silk and velvet sarees with borders into elegant bedspreads and embellish them with embroidery. Use contrasting coloured sarees for the cushions and pillow set. Cotton sarees can be converted into a bedspread for daily use. Make an heirloom patchwork quilt from brocade and velvet sarees that can be used during the winter season.

Because of their easy drape, sarees can also be used to create a unique canopy over a four-poster bed. Additionally, printed sarees are a great way to refurbish the seat of an ottoman or stool. Create beautiful pieces of wall art with ikat, khadi and hand-painted sarees that depict scenes from folklore by cutting them into pieces of different sizes. Frame each piece and arrange them on the wall to create an interesting display.

1. Types of Silk Sarees

Silk sarees come in a variety of styles, each reflecting the craftsmanship of a particular region. Some popular types include:

a. Kanjeevaram Silk Saree (Tamil Nadu)

The **Kanjeevaram silk saree**, also known as **Kanchipuram silk saree**, is one of India's most revered and luxurious handwoven sarees. Originating from **Kanchipuram**, Tamil Nadu, it is celebrated for its rich texture, intricate designs, and vibrant colors. Known for its durability and elegance, this saree is a staple for weddings, festivities, and religious occasions.

1. History & Origin

- The tradition of weaving **Kanjeevaram sarees** dates back over **400 years**, originating in **Kanchipuram**, a town famous for its craftsmanship.
- The weavers, originally from **Saurashtra**, migrated to Tamil Nadu and perfected their skills in **silk weaving**, inspired by **temple architecture**.
- Mythological stories and figures from South Indian temples influence saree motifs, adding a historical and spiritual connection.

2. Fabric & Weaving Technique

- **Pure Mulberry Silk** is used for the saree body, while the borders are woven separately and later joined seamlessly.
- The saree is **handwoven using traditional looms**, ensuring durability and a distinct shine.
- The technique involves **interlocked weft and warp weaving**, making the saree heavier and stronger compared to other silk sarees.

3. Key Features

a. Rich Zari Work

- Gold and silver **zari (thread work)** is extensively used to enhance the saree's elegance.
- Authentic Kanjeevaram sarees use **pure gold or silver zari**, woven with silk threads.

b. Bold & Vibrant Colors

- These sarees come in **deep hues like red, maroon, green, purple, and royal blue**.
- Dual-tone effects are achieved by using contrasting colored silk threads.

c. Unique Motifs & Patterns

- Inspired by **temple towers (gopuram), peacocks, elephants, floral designs, and mythological themes**.
- Some sarees have intricate representations of **Ramayana, Mahabharata, and temple architecture** woven into them.

d. Heavy & Durable Fabric

- The **thickness and strength** of Kanjeevaram sarees make them **long-lasting**, often preserved for generations.
- The saree **does not wrinkle easily** and retains its shine for years with proper care.

e. Distinct Borders & Pallu

- Unlike regular sarees, Kanjeevaram sarees have **independent borders** that are woven separately.
- Borders and the main body are **joined using the Korvai technique**, ensuring they never detach.

4. Cultural Significance

- Considered **auspicious**, Kanjeevaram sarees are worn by brides in South Indian weddings.
- They symbolize **prestige, tradition, and artistic excellence**, making them highly valued across generations.
- Often gifted during **special ceremonies** and festivals as a sign of prosperity.

5. Maintenance & Care

To preserve the saree's quality: ✓ **Dry clean only**, avoid washing with regular detergents. ✓ **Store wrapped in a cotton cloth** to prevent moisture damage. ✓ **Avoid direct sunlight exposure** to maintain the fabric's shine. ✓ **Fold carefully** to prevent creasing of zari work.

6. Modern Adaptations & Trends

- Designers have introduced **lightweight Kanjeevaram sarees** for contemporary wear.
- Fusion styles include **Kanjeevaram lehengas, gowns, and Indo-western outfits**.
- Experimentation with **pastel shades, minimal zari, and floral embroidery** caters to younger generations.

The **Kanjeevaram silk saree** remains a timeless masterpiece, blending heritage, craftsmanship, and elegance. Whether worn for a wedding or a cultural celebration, it is a statement of royalty and tradition.

- Known for its **heavy gold zari work**, contrasting borders, and bold colors.
- Woven with **pure mulberry silk**, making it highly durable and rich in texture.
- Often chosen for weddings and grand celebrations.

b. Banarasi Silk Saree (Uttar Pradesh)

- Famous for its **intricate brocade weaving** and Mughal-inspired motifs.
- Designs include **floral patterns, gold embroidery, and fine silk threads**.
- Commonly worn by brides due to its regal appearance.

c. Mysore Silk Saree (Karnataka)

- Made from high-quality **mulberry silk**, offering a smooth and lightweight feel.
- Known for its **minimalist yet elegant designs**, often adorned with **traditional gold borders**.
- Ideal for formal and festive occasions.

d. Paithani Silk Saree (Maharashtra)

- Characterized by its **vibrant colors and peacock motifs**.
- Features unique weaving techniques with **pure silk and real silver threads**.
- A symbol of luxury and tradition in Maharashtrian culture.

e. Chanderi Silk Saree (Madhya Pradesh)

- A blend of **silk and cotton**, making it lightweight and breathable.
- Adorned with **floral and geometric patterns**, suitable for casual and formal wear.
- Preferred during summers due to its airy texture.

f. Patola Silk Saree (Gujarat)

- Known for its **double-ikat weaving**, where patterns appear identical on both sides.
- Features vibrant geometric designs and intricate detailing.
- Worn by royal families and elites in history.

g. Tussar Silk Saree (Jharkhand, Bihar, Odisha)

- Has a **distinct golden sheen** due to its unique silk thread origin.
- Known for its **natural texture and earthy tones**.
- Eco-friendly and appreciated for its rustic beauty.

2. Characteristics of Silk Sarees

Silk sarees stand out due to their unique qualities:

- **Glossy Finish:** Silk's natural sheen gives the saree a royal appearance.
- **Soft Texture:** Feels smooth and comfortable on the skin.
- **Durability:** Strong and long-lasting fabric with excellent draping quality.
- **Intricate Weaving:** Includes handwoven motifs, brocade patterns, and embroidery.
- **Temperature Regulation:** Silk keeps the body cool in summer and warm in winter.

3. Importance of Silk Sarees in Indian Culture

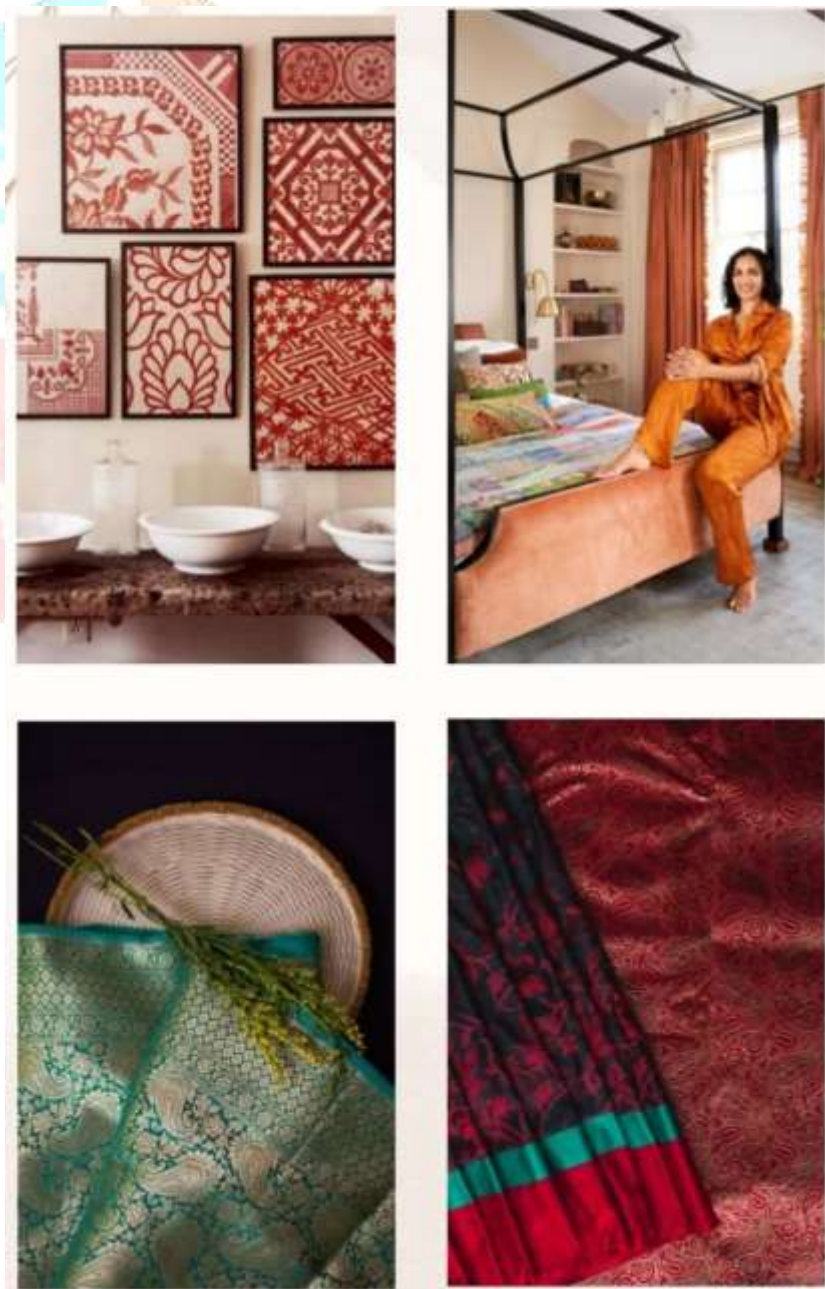
Silk sarees are deeply connected to Indian traditions and heritage:

- **Bridal Attire:** Most brides in India prefer silk sarees for weddings.
- **Festive Wear:** Worn during religious celebrations like Diwali, Durga Puja, and Pongal.
- **Symbol of Status:** Considered a luxury garment, often passed down through generations.
- **Gift Tradition:** Silk sarees are commonly gifted during auspicious occasions.

4. Maintenance & Care

To preserve the beauty of silk sarees, proper care is essential:

- **Dry Cleaning Recommended:** Avoid washing with harsh detergents.
- **Storage in Cotton Cloths:** Prevents damage and retains texture.
- **Avoid Direct Sunlight:** Protects the fabric from fading.
- **Use of Mild Fragrances:** Prevents silk from attracting pests.



1.1 AIM

The aim of a silk saree wallpaper research paper is to explore how traditional silk saree motifs and patterns can be adapted into wallpaper designs while preserving their cultural significance. Researchers analyze the visual elements, symbolic meanings, and historical relevance of saree motifs using techniques like semiotic analysis. This helps in understanding how traditional textile art can be integrated into modern interior design.

Convert beautiful silk and velvet sarees with borders into elegant bedspreads and embellish them with embroidery. Use contrasting coloured sarees for the cushions and pillow set. Cotton sarees can be converted into a bedspread for daily use. Make an heirloom patchwork quilt from brocade and velvet sarees that can be used during the winter season. Because of their easy drape, sarees can also be used to create a unique canopy over a four-poster bed. Additionally, printed sarees are a great way to refurbish the seat of an ottoman or stool. Use an old saree to create a table cover and instantly transform your dining space. Measure the exact size of the dining table and cut the saree as per the required dimensions. Silk sarees can liven up the table on festive occasions. Don't forget to protect the table cloth with a transparent plastic cover.

Additionally, such research contributes to sustainability efforts by promoting heritage craftsmanship and offering innovative applications for traditional designs.

Traditional Kanchipuram Silk Sarees –

This research explores the craftsmanship, cultural significance, and intricate motifs of Kanchipuram silk sarees, which could be relevant for wallpaper design inspiration.

Visual Research on Arani Silk Saree Motifs –

This paper analyzes the motifs found in traditional Arani silk sarees using semiotic analysis, helping to understand their symbolic meanings and potential applications in wallpaper design.

Sustainability in Textile Design –

This study discusses up cycling synthetic saree waste, which could be useful for sustainable wallpaper production.

Preserving Cultural Heritage –

Incorporating traditional silk saree motifs into wallpaper designs helps maintain and celebrate the rich textile heritage of regions like India.

Enhancing Aesthetic Appeal –

Silk saree patterns are known for their intricate designs and vibrant colors, making them ideal for creating visually stunning wallpapers.

1.2 OBJECTIVES

Primary Objectives:

- To find solution on how Synthetic Old Sarees can be up cycled through innovating Lifestyle products.

Secondary Objectives:

- To study about the age-old practice of making ropes from Synthetic Sarees.
- To find a solution on how the Rope making art can be preserved.
- To study about the adverse impact of synthetic waste if it is not properly disposed in environment.
- To suggest Brand Proposal related to up-cycling Synthetic Sarees.
- To assess about current practices related to up cycling of Old Sarees.
- To examine on how zero waste strategies can be achieved through up cycling waste sarees.

Innovating Interior Design – By adapting saree motifs into wallpapers, designers can introduce a fusion of traditional and contemporary styles in home and commercial spaces.

Promoting Sustainability – Using digital adaptations of saree designs reduces textile waste and encourages eco-friendly design practices.

Expanding Market Reach – Saree-inspired wallpapers can appeal to global audiences, bringing Indian craftsmanship into modern decor trends.

1.3 SCOPE

1. Old Synthetic sarees.
2. Ropes made from sarees
3. Lifestyle Products.

Look elegant and give the traditional charm by adding a touch of sophistication to your home. This product can be a real game changer This is one of the easiest ways to upcycle your mom's old Banarasi saree! All you have to do is pick your favourite nine yards from her wardrobe, and then create a masterpiece with it. These areas draw attention and create dynamic in a space. They can be used to make it feel roomier, to highlight a specific feature, or even to start a conversation. India is a land of diverse cultures and traditions. One of the most significant aspects of Indian culture is the saree, a traditional garment that has been a part of Indian heritage for centuries.

One of the simplest use of old sarees is to convert them as table covers. Pick any subtle Cotton Saree or vibrant silk fabric for the table cover. If it looks too plain and simple, you can stitch miniature floral embroidery motifs across the saree. Cover it with a transparent table cloth to protect it from stains caused by spilt food and drinks. Since the table cover is in one solid colour, choose a fabric with Indian prints for the placement mats and napkins so that they add a pop of colour to your dining table. There are a few clothing items that may hold a sentimental value and you might not want to throw them away. It may remind you of someone who gave it to you or it may have belonged to a loved one who has passed away. In Indian culture, upcycling has always been a part of life.

To date, the newborn is wrapped in their grandmother or great grandmothers old sarees and put to sleep. We have got another use for those cherished garments. You can frame the fabric as a whole and display it as a wall hanging. You can also embellish them with tassels, embroidery and mirrors. If you have a lot of kurtas that are not in a wearable condition, cut square pieces of the fabric and frame them individually or together. This may be a fun gallery look for

your space. If you want to make your bedroom look cosier and desi, put up some easy-breezy bed canopies. You can use old bandhani, Georgette Sarees, or even your Dupattas for this. Curtains on the other hand complete a room. For the curtains, repurpose one of your soft cotton sarees or any flowy Chiffon Sarees with a similar colour palette to your room walls and furniture.

1.4 LIMITATIONS

1. Limitation as to Sample Type and Sample Size:

This study is limited to 50 Samples of Random women.

2. Limitation as to Geographical area:

This Study is limited to women from in and around Gwalior.

3. Limitation as to time:

This study is limited from a time period.

Durability: Silk is strong but can show signs of wear and tear more easily than other fabrics. It can also be prone to wrinkling. Despite the allure of silk's luxurious reputation, concerns regarding its durability arise primarily when dealing with poor quality silk products. Low-grade silk items are prone to fraying, pilling, and thinning over time, diminishing their longevity. Inferior silk fibers used in these products are more likely to break or weaken easily, further compromising the fabric's durability. Cheaper silk blends, which often incorporate lower-quality materials, exhibit reduced resilience and are more susceptible to wear and tear. Additionally, insufficient thread count in low-quality silk can lead to fabric weakness, making it more prone to damage. When considering silk products, it's essential to prioritize quality to guarantee longevity and durability in your purchases.

Maintenance: Silk is delicate and requires special care, such as dry cleaning.

Sun damage: Prolonged exposure to sunlight can cause silk to weaken, fade, and tear.

Risk of Poor Quality Silk: We have noticed that poor quality silk can be a real concern, especially when it's blended with synthetic materials, impacting the fabric's luxurious feel and authenticity. This blending practice could greatly lower the overall quality and durability of the silk, making it essential to be vigilant about counterfeit silk products that may mislead consumers. Quality control issues and price discrepancies are common red flags that could indicate the presence of poor quality silk in the market, emphasizing the importance of choosing genuine 100% mulberry silk for better assurance.

Counterfeit Silk Products: Moving from concerns about silk durability, encountering counterfeit silk products introduces a substantial risk of poor quality in the market. Counterfeit silk products pose a significant threat due to their low quality and lack of genuine silk fibers. Fake silk items often lack the luxurious feel and benefits associated with authentic silk, leading to disappointment for consumers.

Additionally, the presence of low-quality silk blends or synthetic materials in counterfeit products can impact both durability and comfort negatively. Choosing counterfeit silk can result in a subpar experience regarding appearance and overall performance. To guarantee superior quality and benefits, opting for genuine silk products is essential.

Quality Control Issues: Poor quality silk in the market can be attributed to the lack of strict quality control measures. This can lead to silk products being mislabeled or blended with other materials, deceiving consumers about the authenticity of the fabric. Price discrepancies in silk products may indicate varying levels of quality

and authenticity, making it essential for buyers to be vigilant. Understanding quality control issues is vital to avoid purchasing low-grade or misrepresented silk.

When evaluating silk quality, look for indicators like the Charmeuse weave and Grade 6A, which are associated with genuine silk products. Ensuring proper quality control practices can help maintain the integrity of silk in the market and prevent the spread of inferior products.

1.5 METHODOLOGY

Finding about what are different methods used to upcycle the old Sarees in making new products.

- i. Data collected through Primary sources.
 - ii. Data collected through Secondary sources.
 - iii. To examine how these practices are contributing in reduction of waste and achieving sustainability.
- B. To study about the technique of making traditional Ropes.
- i. To know how the synthetic ropes are made and how is it used in particular areas.
- C. Solutions providing Lifestyle products made from used old Synthetic sarees.
- i. Lifestyle products made as a solution to upcycle the synthetic waste from old sarees.
 - ii. Brand Creation with promotion of the lifestyle products created, through different platform, showcasing on upcycling of old synthetic sarees.

Primary Research:

- Interacting with the people making Ropes from the Synthetic Old Sarees, and to know about how it is done.
- Interviewing target samples to know about how they treat the sarees once they are on the verge to be thrown.

Secondary Research:

- Reviewing articles to know about the amount of textile waste generation in India.
- Data collection through websites to know their current practices followed by brand to make Sarees into a new product.
- Data collected from articles and websites on how the old Sarees are utilized in different ways to avoid it from going to waste piles.
- Reviewing research papers on the take of upcycling of old Sarees.

This paper is obtained from secondary sources such as academic papers, blogs, magazines, industry reports, and credible online articles, which contain relevant information regarding the historical background, cultural importance, marketing, trends, quality, craftsmanship, weaving techniques, designs, and motifs of woven silk. It also focused on the socio-economic aspects of Kanchipuram silk

Methods for this will really be so easy as we will paste the saree on plastic paper and then to the wall. A few means by which you can do that are:

A) If the damaged border is the reason that you've stopped using the saree change the saree by removing old border and adding new borders like kundan, zardosi etc.

B) If instead, the border of old saree is good and saree is tattered, design a new saree by adding the old border to a new fabric like chanderi or kota silk.

C) Block printing old plain sarees can change them into brand new, beautifully designed sarees.

CHAPTER 2 LITERATURE REVIEW

This article has talked about how in ancient times, ropes were made from grass, reeds, roots, leather and animal hair. Human history was changed forever by an invention that produced a finer form of rope, yarn, which was weaved into fabric. There is something fascinating about tiny delicate fibres that, when twisted and put together in large numbers, can carry huge loads and withstand violent forces. The fundamental of making these ropes is twisting the fibers together to form a nice rope from it. Traditionally, twisted ropes are made in ropewalks, which are long spaces where ropes can be arranged side by side. A rope is formed by twisting two or three strands in one direction, then bringing them together and twisting them in the opposite direction. Despite the buzz around sustainability and climate change, these craftsmen have been making ropes for 40 years now. Hand-twisting plastic ropes, using a large charkha, in the city of Gandhi's Ashram, they carry on his philosophies of handwork and self sustainability. (Gaatha, 2014) (9) This article talks about the study of Indian brands that are currently working on how old clothes can be re-used by making different functional products and becoming a very conscious brand.

1. Punah (Indore based brand)-This brand creates clothes by collecting old used clothes and converting them to one of kind of wearable fashion apparels using different crafts.
 2. Reimagined (Bengaluru based brand)-This brand collects old used clothes and turns them into home decor items, and those they find are in good condition they make apparels from those clothes.
 3. Twirl (Kolkata based brand)-This brand has donation boxes around the city, where people come and put unwanted clothes, and this brand then converts them into small usable items.
 4. Pomogrenade (Bengaluru based brand)-This brand works towards upcycled fashion, wherein they offer their customers with gift cards once they donate into their brand. Their customers can then purchase from their brand with some discounts on the products. This study can then be concluded that, many small scale business are trying to upcycle on their own level by making functional products, thus this research is concluded where actual craft and usage of old clothes is being done. (Dsouza., 2022)
- (7) In this paper the researcher has highlighted the importance of waste management and shown the pros and cons of different waste management options. Researchers have thoroughly examined each stage of the waste management hierarchy after outlining the various types of textile waste.

By drawing on technical data on alternative uses and designers' work, including novel and value-added products/items made using various upcycling techniques, where the designers take responsibility for raising public awareness of this issue, we have also described engineering solutions for textile waste. Discussion of management alternatives in every element and methods of usage from various angles has brought to light the ever-increasing risk of textile waste that is disposed of in landfills. Additionally, it is hoped that by encouraging readers to think about the history of textile products before purchasing, while using, and after consuming them, the enhanced content of this work may contribute to raising awareness among both consumers and those who produce, distribute, and sell these items. (Ipek Yalcin-Enis, Merve Kucukali-Ozturk, and Hande Sezgin, 2019) (12)

In this paper the researcher has described the sculptural seating options such as pouf's, ottomans, stools, benches, chairs, and various accessories that are made by converting old and discarded silk saris—bright and vivid draped clothing worn by Indian women throughout India—into upcycled and sustainable collection of textile stools and pouf's. The unique line of objects in the repurposed saree series has been painstakingly created. Hence, no two pieces will be alike. The unique line of objects in the repurposed saree series has been painstakingly created. For easier maintenance all of the poufs come with a zipper closer attached with it. In order to create a sensory experience employing numerous handcrafted techniques reminiscent of Indian

handicrafts and tradition, designer Avni Sejpal also had to overcome some significant obstacles. The idea was to support cradle to cradle design and offer abandoned textiles a second chance at life. The goal was to use the entire length of the used fabric for Pompom pouf's without leaving any discarded scraps of the luxurious fabric.

This the researcher has discovered various ideas from the roots of India itself and has created a design line of furnishing to achieve sustainability. (Avni Sejpal, 2015) (4) This research has aimed towards how polyester clothes are recycled to make chemicals from them. The post-consumer polyester clothing was chemically recycled with the intention of reducing the build-up of fibre grade PET waste, recycling, and offering a technically viable path leading to the preservation of the environment and natural resources. In the presence of ethylene glycol as a depolymerizing agent and zinc acetate as a catalyst, post-consumer polyester clothing was recycled into bis (2-hydroxyethyl) terephthalate (BHET) monomer. Chemical and analytical methods were used to characterise the depolymerized product. (Amit A. Barot, Vijay Kumar Sinha., 2015) (3) The Research makes an effort to investigate any potential links between sustainable development and artisan practise. This study shows how fair-trade principles may be successfully applied to create sustainable businesses and communities. It also makes a case for a sustainable business strategy that other textile and craft companies may decide to use. This concept would have a good impact on the local economy and society by reducing poverty, re-establishing cooperative connections between various ethnic groups, and preserving Sri Lanka's cultural identity if it were to be greatly extended to include populations impacted by war. This study has only one case study and cannot be applied to a larger population. To harness social and economic growth, this research encourages other craft practitioners to review their production methods and look at the possibility of incorporating sustainable and fair-trade principles into their operations. (D. G. K. Dissanayake, Srimala Perera & Thushari Wanniarachchi, 2017)

(6) This survey research has aimed about the consumers buying behaviour and with this context how it affects problems related to sustainability. According to the report, 68% of people buy for clothes each month. It was shown that the major drivers of the intention to acquire new clothing were impulsive buying and genuine necessity. The majority of the respondent's wardrobe is made up of 45+ items, with tops/shirts/upper wear dominating all other categories. Nearly 88% of the apparel was made up of tops, shirts, and upper clothes. Therefore, upper wear for people in their 20s and 30s makes up the majority of post-consumer garment trash. Sarees, dupattas, and dhotis were the most common kind of recycled clothes in Indian houses a few decades ago since they could be readily turned into various items like bags, blankets, pillow coverings, curtains, etc. Nearly half of the poll participants in India expressed a desire to get rid of clothing that was no longer in use.

Despite the fact that the majority of respondents were eager to contribute, there is a lack of knowledge regarding the channels accessible for used clothes donations. The majority of the donated apparel is tops. The majority of NGOs utilise post-consumer recycled clothing for charitable purposes or upcycle it into new items with the help of an artisanal community that depend on it for a living. Few Indian companies are now recycling post-consumer garment trash to make designer goods. Reselling used apparel through brand and company web apps is the other alternate channel that has emerged in India. (Bairagi, 2018) (5) The many ways for recycling textile wastes, including composting, paper-making, and strategies used by fashion firms to recycle used garments, are all reviewed in this study. Technical textiles, composites, and non-woven industries that entail product development employing upcycled wastes are given special attention. This may serve as a wake-up call for scientists and businesspeople throughout the world to conduct more study and contribute to lowering landfill pollution.

According to a recent US government investigation, NPE (Nonylphenol Ethylates), a dangerous chemical that might potentially be generated during washing and result in the creation of a toxin when combined with water bodies, is identified in 50 out of 80 clothes. It is one among the numerous substances that are frequently present in textile fabrics and has been shown to be hazardous. Pollution and harmful effects of textiles are ever increasing. The management of textile waste is as important as developing new goods and technology. Especially if the organisation is engaged in exporting, sustainability is essential in today's economic world.

Waste textiles that were formerly discarded are now recognised as a valuable resource. (Aishwariya, 2018) (1) This research paper has found techniques can be recycled using certain technological innovations.

A number of existing finishing processes could be replaced by laser welding in this project, as well as some innovative techniques that are not a part of existing processes. It was possible to preserve 100% mono-materiality and to make the resulting materials recyclable.

This technology requires several developments in equipment and processes in order for it to be available for full scale production. It is hoped that cooperation with an appropriate industrial partner can be achieved to fully resolve the potential for an integrated, highly responsive manufacturing and recycling system that will fit into the future vision of a closed loop polyester economy. (Goldsworthy, 2010) (11) This paper highlights about the consumer's perception regarding textiles and eco-friendly supplies.

Textile supplies the vital material essential for survival. A circular economy, instead of a linear economy, is essential despite pollution from production. Till last century it was common that the textile waste generated ended- up in landfills. A variety of techniques are used in the industry today, including recycling, redesigning, upcycling, down-cycling, restoring, repairing, using, and reducing. Educating consumers about their choices and incorporating sustainability into their daily lives is essential. Textiles have been impacted by green consumerism, which has decreased waste and infused eco-friendly practices into the industry.

This paper thus talks about the how consumer's contribution is important in reducing textile waste for the sake of sustainability, and also talks about how now consumers are shifting towards eco-friendly supplies. (Aishwariya. S, 2020) (2) This research paper has talked about how changing fashion preferences, developing technology, and increasing populations, textile products are considered to be one of humanity's most basic needs. There have been many hot topics in this field, including the discovery of alternative energy sources, the recycling of all sorts of materials, the enhancement s engineering methods and technologies for recycling, and trends like sustainable fashion that promote sustainability.

Recycling studies are also common in textile science. By the utilization of recycled fibers, it is feasible to reduce the usage of natural fibers. With this, there are many limitations to textile recycling, which led to alternatives to natural fibers and are sustainable. In this context, recycling and sustainability-based research in this field usually emphasizes the subject's necessity, without acknowledging its limitations. A focus of this chapter is therefore on the limits of recycling in textiles and the development of new fibers to overcome them. (Gizem Celep, Gamze D. Tetik and Fulya Yilmaz, 2022) (10) The present field circumstances and difficulties are thoroughly described in this thesis. It also provides a framework for the value generation precursors along the recovery processes connected to reuse and value chain redesign. The theoretical framework's themes are supported by the empirical framework, which comes to the conclusion that value generation in reverse textile value chains has a set of universal antecedents.

However, it's also important to take into account category-specific antecedents. Increased collaboration is advised to improve value generation from PCTW since the unique experiences of one actor type may as well be good lessons for another. (Emelie Johansson, Matilda Nyström , 2015) (8) With the above research, with the context of synthetic waste being generated, many of the researchers have found out different solutions to manage the waste. Not only from fashion background but also making chemicals or furniture's or fashionable products etc.

All of them have been working to see how the waste of synthetic fibers can be reduced or how in general textile waste can be re-purposed in some or the other ways on their levels. Usage of these old waste fabrics, rather sarees in particular are not new in India. This tradition has been carried throughout many generations. We also see that many articles are also published talking about the Rope making Art which is majorly common in many villages in India. It also concludes that, very less amount of research is been done on this particular rope making, which can be otherwise used to make many wide variety of product range that could actually not only

be fashionable, but also functional at the same time. Thus, this Dissertation/ Thesis has explored those options that could not only be Sustainable but also could be Productive.

2.1 PRACTICES INVOLVED IN UPCYCLING OLD SAREES

Saree is one of the oldest garments worn in India since it was introduced here. Initially sarees being made from only from Cotton, then gradually were manufactured in various materials and was liked by women. Going ahead, the artisans started to incorporate various motifs and dyes to weave the sarees to give it a more elegant look. These traditional sarees were then preserved by our ancestors and then passed on to the next generation as a symbol of blessings to them.

Some sarees were such that got torn or were on the edge to be dumped, then were these made into various usable products. One of such techniques to Upcycle the saree was by making Quilts out of it. These quilts had a warmth out into it which gave it a meaning. This technique basically involves taking pieces of the old sarees together and stitching them to make a nice blanket out of it. This practice was followed in Maharashtra, Gujrat, and Bengal etc. by different names, but with a same motto of Upcycling of Old Saree. This technique of Upcycling Sarees to give a new life and to avoid it from going into landfills is still practiced and various products are made out of it like Bags, wallets, clothes including jackets, skirts etc.

This idea is not only of upcycling but also we tend to preserve the memories that are involved with that piece of Saree. Today this generation has now moved on to the thought of “Old is Gold” concept with not only having the idea of Upcycling and achieving sustainability but also having useful products out of it. Many of the homes in India utilize sarees to make new Outfits (Various dresses) from the saree, making Cushion Covers, Blankets, Curtains, and Bags etc. This idea of Upcycling is not only done with old Sarees but also with many old clothes. There are many such NGOs and Brands who are currently working on the system of Upcycling and contributing towards sustainability by various means. Some brands even are achieving Zero Waste policies by utilizing each and every piece of that garment or fabric and not letting piles of waste going into landfills. In order to accomplish sustainability, this thesis has concentrated on creating a product category called lifestyle items while also encouraging upcycling through the use of old synthetic sarees. Each and every rope has a unique characteristic, and when a rope is formed, even we will be amazed at how distinctive the colours become when twisted together. This aspect of the rope-making idea is quite powerful. Since every rope is different, no two products will be alike in terms of colours. However, rather than producing such traditional things, it will be a lovely selection of lifestyle products.

2.2 REFLECTION OF TRADITION AND CULTURAL LEGACY

Kanjivaram sarees, often made of silk and found in Kanchipuram, have a rich history that dates back to the Pallava dynasty, which ruled from the 5th to the 9th centuries CE. Kanchipuram, known as the "Silk City," is renowned for its handwoven silk sarees, symbolizing luxury and tradition. As a hub for trade, culture, and the arts, Kanchipuram flourished throughout this time. The weaving industry in Kanchipuram owes its development to the patronage of the Pallava kings, who laid the groundwork for the sector's future expansion. The Chola dynasty, which came to power after the Pallavas, further enhanced silk weaving at Kanchipuram. The silk industry in the region was greatly aided by the Chola monarchs, who were also exceptional patrons of the arts. Kanchipuram's weavers thus developed highly skilled techniques and started crafting gorgeous silk sarees that were in great demand. During the Vijayanagara Empire, which ruled from the 14th to the 17th centuries CE, Kanchipuram silk weaving achieved its pinnacle. Because of the empire's encouragement and backing, the weavers were able to hone their skills and create silk sarees that were unmatched in beauty and craftsmanship. Kanchipuram's textile heritage was further enhanced by the Vijayanagara dynasty, which even encouraged talented weavers from nearby areas to relocate there.

Kanchipuram silk sarees have seen significant advancements over the years. The silk weaving tradition of Kanchipuram began under the Chola dynasty, and it flourished especially under King Krishnadevaraya's tenure. Kanchipuram's creative and technical diversity in weaving was enhanced by the migration of Andhra Pradesh weaving communities like the Saligars and Devangas Menon (2023).

Hindu mythological motifs give rise to the cultural and theological significance of Kanchipuram silk sarees in southern India, particularly in Tamil Nadu, Kerala, Karnataka, and Andhra Pradesh. As a reflection of their ingrained cultural legacy, these sarees are frequently worn at weddings, festivals, and other special occasions. The Kanchipuram silk saree industry has recently adapted to changing consumer tastes and technical improvements. Techniques like computer-aided design have been incorporated to create intricate designs and motifs that appeal to contemporary tastes. Despite these developments, the industry has continued to uphold authenticity and quality standards. Genuine Kanchipuram silk sarees are still valued for their super craftsmanship and classic beauty because government and business associations have banded together to fight counterfeit goods Rajan (2019).

The excellent craftsmanship, classic beauty, and international acclaim of Kanchipuram silk sarees are well known. These sarees, which are made of exquisite silk, stand out for their vivid hues, elaborate patterns, and elegant use of zari threads, which are frequently weaved with silver or gold to give them an opulent appearance. Kanchipuram silk sarees, handed down through the years, are highly prized as reminders of cultural history and ties to the family. Due to their vivid colours and timeless appeal, they are frequently used in special events worldwide. These sarees, which combine avant-garde patterns with their classic elegance, have evolved to suit modern preferences while still paying homage to South Indian traditions. They must be properly cared for to keep their beauty, as they are frequently worn as bridal gowns. Kanchipuram silk sarees are a beloved wardrobe staple and a testament to Indian artistry. They have received international recognition for preserving cultural heritage. Often called Kanjivaram silk sarees, they are a tribute to the generations of talented artisans they honor and represent the pinnacle of elegance and grace Mishra & Mishra (2021).

Kanchipuram silk sarees are exquisite and textured and made from natural mulberry silk strands. The weeks invested in their construction demonstrate the weavers' unwavering dedication and proficiency. These sarees' elaborate motifs and decorations, which draw inspiration from temple art and nature, complement the pallu's unique zigzag Korvai pattern. Celebrities love to wear Kanchipuram silk sarees for festivals, weddings, and other special occasions because of their classic elegance and opulent appeal. Depending on the design's complexity and quality, prices range from Rs. 3,000 to Rs. 4,000,000.

The longevity and charm of Kanchipuram silk sarees must be preserved and maintained properly. Dry cleaning preserves the cloth's luster and quality, guaranteeing its attractiveness lasts for many years. Furthermore, frequent airing aids in preventing colour fading Samyakkadmin. (2024a).

2.3 WEAVING TECHNIQUES AND MATERIALS

Like the old textiles, the Kanchipuram silks will keep their traditional weave and material technique, which is still crafted with skillful and experienced hands. The method combines pure mulberry silk thread with fine embroidery on the zari, which is formed into myriad designs using gold and silver. Warp threads are thrown on pit looms using methods like adai for the border and petni for palla in the same manner the sarees are being woven. Weavers in Kanchi adopt the ancient technique of Korvai to create baselines and pallus, which are integrated into the fabric and give it strength. A saree is made from two-ply silk yarn. Every thread is one of the three plaited single threads twisting together, giving the saree its qualities and traits M V & Viji (2022b). The weavers' skill, coupled with inter-generational transfer, puts on the traditional touch of Kanchipuram silk weaving, highlighting the kind of premium they put on the process that takes a long time and a high degree of expertise. In some cultures, the flow of weaving is

2.4. RAW SILK

The process is initiated with the best silk from the mulberry, which originates from South India, more precisely, Bangalore. From the silkworms feeding on fresh silkworms, raw silk is produced, which is then used for weaving.

2.5. TWISTING

In Kanchipuram, the artisans weave the raw silk into the warp and weft threads using their unique expertise and skill. In this phase, the actual number of threads per square inch and the number of sarees that will be produced will be decided.

2.6. MOTIFS AND DEVELOPMENT

Common motifs in Kanchipuram silk include peacocks, parrots, mangoes, lotus flowers, and geometric patterns. Mythological themes from the Ramayana and Mahabharata are also frequently incorporated. Master weavers and clients review initial designs. Once the design is approved, it is transferred onto punch cards. In the past, these designs were created on graph paper, but nowadays, technological advancements have enabled the use of digital designs created with CAD (Computer-Aided design).

2.7 DYEING

The warp and weft threads undergo hand-dyeing to achieve the desired colours. This critical phase involves manual cleaning, degumming, and uniformly mixing the colour powders into water.

2.8 WARPING

The silk saree becomes an art of different threads that have been thoroughly put into the loom. The total width depends on the threads used. The woven borders of Zari, like the silk warp threads, imitate the shape of the loom.

2.9 WEAVING

The loom operator hands the light shuttle to the weaver for use in the final process, which involves skipping the shuttle across the spaces or gaps between the warp threads. A typical Kanjivaram silk saree fabrication needs approximately 7,000 single shuttle movements before the saree can be completed.

2.10. FOLDING

After the saree is pulled from the loom, it is folded with precision by considering the pre-marked folder lines. Such lines remain until the saree is ironed. Being lightweight ensures a simple re-folding of the saree afterward Ramsamy (2022).

2.11 EVOLUTION OF TRADITIONAL MOTIFS IN CONTEMPORARY DESIGN

The distinctive designs of traditional patterns and motifs, as seen in Indian textiles, are influenced by regional factors like the environment, philosophy, religion, and social and cultural values. These motifs have great historical significance in addition to being creative examples.

To convey significant concepts and accurately represent local customs, values, and objectives, symbolic themes are necessary. Paintings from the Mughal era still feature the Hansa motif, which has mystical

connotations and dates back to the Indus Valley Civilization. It is also present in Ajanta cave wall art. Similarly, the Cintamani insignia, symbolizing the Buddhist trinity, has become globally recognized and has crossed cultural barriers. Alongside societal shifts and technological developments, these themes and patterns have changed. Traditional designs changed due to the British colonial era's introduction of modern machinery and synthetic dyes. Hybrid patterns were also created via the cross-national interchange of motifs via international trade networks. The inventiveness and tenacity of artisanal communities throughout history are generally embodied in traditional patterns and motifs, which enhance humankind's cultural legacy and inspire contemporary culture Prabhakar (2023b).

Kanchipuram silk sarees epitomize South Indian weaving skills while appealing to a broad spectrum of consumers through a seamless marriage of traditional artistry and contemporary design. Kanchipuram silk sarees are valued for their classic beauty, cultural significance, and connotation of luxury, and the fashion world acknowledges their enduring appeal despite shifting trends. In South Indian culture, sarees are still a sign of elegance and riches, and celebrities, politicians, and business executives worldwide value them. Preserving Kanchipuram silk sarees' traditional artistry is crucial to the industry's success going forward. Programs that support fair trade principles and sustainable materials can also provide training for aspiring weavers. The fact that Kanchipuram silk sarees are featured in high-profile events and worldwide fashion collections shows that these efforts have contributed to their visibility outside of South India Gupta (2021a).

Kanchipuram silk sarees, also called Kanjivaram sarees, have a rich cultural and religious past steeped in South Indian tradition. They are treasured as representations of beauty, grace, and elegance and are frequently worn during formal events and traditional rituals. Every saree is a unique piece of art, meticulously crafted from premium silk threads and adorned with zari embroidery that lends an air of grandeur. Despite their labor-intensive production process, Kanchipuram silk sarees are known for their durability, vivid colours, and elaborate designs. They are cherished for their rich history and magnificence, handed down through the years as heirlooms. Their fascination is not limited to South India; it has captured the hearts of celebrities and fashionistas everywhere, exhibiting its timeless beauty and cultural relevance on a global scale Fernandes (2023).

2.12 GLOBAL RECOGNITION AND FUTURE PROSPECTS SWOT ANALYSIS

Asia produces more than 95% of the world's silk, making it the leading producer worldwide. China, India, Japan, Brazil, and Korea are the top five silk-producing nations out of over forty. As the world's largest supplier of silk, China stands out in particular with its 1.5 lakh MT yearly production. The artful weaver Sage Markanda is credited with creating the first Kanchipuram silk sarees. He crafted garments for the gods, including a tissue made of lotus petals. His heirs, who are today known as Kanchi Silk Weavers, inherited his skill in weaving Manoranjan (n.d.-a).

In the Indian village of Kanchipuram, silk sarees are woven by hand, and it is credited to these weavers that they created the famous designs. As the "temple city" or the "city of a thousand temples," Kanchipuram gained notoriety 400 years ago when two well-known weaving clans, the Saligars, and the Devangas, moved there from a nearby state and brought their extraordinary silk weaving talents with them. In South India, Kanchipuram silk sarees hold great value, mainly due to their opulent status during wedding ceremonies. These sarees attract costs ranging from Rs. 2500 to Rs. 1,00,000, depending on the complexity of the work involved. They are highly prized for their unusual colour combinations, exquisite designs, and outstanding craftsmanship Londhe (2015).

Globally recognized for their stunning designs, superior materials, and unique weaving techniques, Kanjivaram sarees are a fashion statement. Selected as Geographically Indicated (GI), this esteemed designation exclusively applies to sarees manufactured in Kanchipuram and its surrounding areas. They are highly respected by women from many cultures, especially South Asia and the Middle East. Growing consumer interest in sustainability and various patterns presents chances for Kanchipuram's silk makers to develop and meet changing market demands. More artistic freedom has been encouraged without sacrificing quality

requirements, thanks to recent regulatory relaxations regulating the use of gold-silver mixtures in these sarees. Designers use modern aspects like digital printing techniques, abstract patterns, and contemporary hues to appeal to younger generations while keeping classic aesthetics Sivasakthi (2018).

The global market for Kanchipuram silk sarees remains dominant despite obstacles, including competition from synthetic materials and counterfeit goods. The sector's expansion is being driven by the rising demand for goods with cultural significance and the expanding acceptance of natural fibers. Kanchipuram silk sarees have a bright future thanks to initiatives to preserve fair trade norms and safeguard intellectual property rights. The Kanchipuram silk saree business has a bright future ahead of it, allowing it to overcome challenges and welcome continuity, innovation, and variety. Kanchipuram's standing as a "Silk Paradise of the South," luring travelers from all across the country, highlights the pure silk sarees' relevance on a global scale.

2.13 CURRENT TRENDS AND MARKETING

Kanchipuram sarees are today more popular than ever, with unique patterns, eye-catching colour combinations, and beautiful embroidery, thanks to their remarkable quality, durability, and traditional charm. The sector is predicted to prosper through innovation, adaptation, and authenticity preservation despite obstacles, including growing input costs and diminishing sales. They are blending Kanchipuram silk with others like cotton and kora or incorporating non-traditional elements to create unique, hybrid sarees that cater to diverse tastes and occasions. Creating weightless, light shades and simple motifs of traditional Kanchipuram silk sarees for ease of wear makes them suitable for formal and casual settings.

The exquisite craftsmanship and classic styles of Kanchipuram silk sarees are well known, and they help to create a distinguished brand image steeped in history and culture. Those who appreciate history and authenticity are drawn to these sarees. Sustaining market dominance is difficult in the face of intense rivalry from domestic and foreign competitors. Refinement of pricing, merchandising, and product range strategies is necessary to be competitive in a market that is changing quickly.

Using contemporary technologies can improve audience engagement. For example, establishing an integrated ICT platform for marketing and sales can unlock new business opportunities. There will be plenty of growth opportunities when new marketing techniques are introduced, and unexplored domestic and international markets are reached. Partnering with renowned fashion designers and luxury brands to create exclusive Kanchipuram silk saree collections, showcasing Kanchipuram silk sarees at national and international fashion events, and utilizing e-commerce platforms and social media to reach a broader audience. The fierce rivalry between multiple Indian and foreign vendors threatens the well-established reputation of Kanchipuram silk sarees. The ongoing need for traditional goods like Kanchipuram silk sarees is challenged by outside variables, including shifting consumer preferences and market dynamics. The Kanchipuram silk saree business players can strategically arrange themselves by utilizing their strengths, correcting their weaknesses, seizing chances, and reducing dangers. A SWOT analysis can offer invaluable insights when navigating the competitive landscape shaped by cutting-edge technology.

2.14 DISCUSSION ON THE VALUE CHAINS IN VARANASI SILK SAREES AND BROCADE

For Varanasi Silk Sarees & Brocade, production process involves a number of steps. Production in Varanasi Silk Sarees & Brocade is done either on work order basis or on market anticipation. Type of production decides the marketing strategy. In work order basis production, wholesale customers (export houses, business houses, popular designers, etc.) place orders with gaddidar and shopkeepers who pass on the order to middlemen/master weavers with or without the raw material at a pre-decided rate per piece. The work is further distributed by these middlemen or master weavers to the weavers on fixed wages per piece or per day depending on the amount of work and time taken. In market anticipation, the gaddidar the middlemen or master weaver sometimes produce as per their experience and seasonal demands and sell the products to the shopkeepers and retail customers through shops and exhibitions. Further, Gaddidaar and Master Weavers etc.

sell the finished products to retail and wholesale customers (export houses, business houses, ecommerce sites, designers, etc.) through shops and exhibitions. The weaver and master weaver differ in terms of their skill sets, resources and capabilities to market the products or meet the work order deadlines. The detailed presentation of key findings from the study derived after extensive analysis of data collected from the field is given ahead. The key value chain activities and actors involved in the craft of weaving Varanasi silk sarees and brocade are studied and explained in Table-2 in relation to the definition of value chain activities (Holsapple, 2001) with certain contextual modifications.

As explained above, the ‘outbound logistics’ are regulated by shopkeepers/gaddidars/business houses/NGOs and in many instances even middlemen/master weavers play a significant role in regulating outbound logistics. Master weavers take work order from gaddidars, business houses, NGOs and sometimes from customers. They are either provided with raw material and design along with work order or they themselves decide the design and procure raw material. Further, they pass on the work order to a group of weavers and pay them individually on pre-decided daily wage rates for weaving a product (operations). The number of days required in weaving a particular design is decided before assigning work to the weavers. The finished product is collected by the master weaver and taken to gaddidar or whoever has placed the work order. The gaddidar either sells in retail or supplies to business and export houses. Some gaddidars also use e-commerce platform to reach out to their customers.

The Figure-2 shows two different types of value chain models prevalent in Varanasi Silk Sarees and Brocade. Both the models are discussed ahead in the paper.

The two prevalent value chain models that came up in the Varanasi silk sarees and brocade Industry are:

- a) Traditional model- being followed by majority of players since ages
- b) Contemporary Model- being followed by just one major player

These models were studied in detail and differences and best practices of each were highlighted. The Figures 3 and 4 depict the two prevalent value chains of Varanasi silk sarees and brocade industry.

2.15 PRODUCTION PROCESS

China is the largest producer of silk in the world, but the silk used for world famous Kanchi sarees is mulberry silk which is grown in Karnataka and Tamilnadu. Jari (a gold coated silver thread) used for borders and pallu is from Gujarat, which gives metallic look and brightness to a saree. It consists of 57% of silver and 0.6% of gold.

Weaving a Kanchipuram saree is very different from any other saree. The skill of weaving kanchipuram saree has flown from generation to generation, with great care and elegance. It is an art that was inherited, taught by the elders and honed by practice, creativity and vision. Weaving a kanchipuram saree is tedious but has a stamp of splendour and durability.

A kanchipuram saree is distinguished as body portion, border portion, and pallu portion. It is called as “Korvai”, where body and pallu are woven separately and then interlinked together. It is interlinked in such a way that the joining could not be identified from the front. It is a symbol of identification and differentiation of Kanchi saree from other sarees. The width of typical kanchipuram saree is much broader by 3 inches, where the standard silk saree is 45 inches.

Using a double warp for weaving is its speciality, where each thread is actually made up of three single threads twisted together which makes it much stronger and expensive from its counterparts from Banaras or Dharmavaram. Initially, these sarees were woven in 9 yards, but today 6 yards saree is the trend followed every where. Contrast jari border is a distinguishing feature of this saree. It is a silk thread which is twisted with the silver thread over it and dipped into pure gold to make jari border. However now adays tested jari is used, where the thin copper wire is electroplated with silver.

The major reason for the consistency in the quality of the sarees is the dyeing process followed from hundreds of years. River Palar which flows across Kanchipuram is a boon to this city. The stiffness of the saree is only because, it is dyed in the Palar river water. In order to bring thick consistency in the saree, silk yarn is dipped in rice water and dried in the hot sun.

2.16 UNIQUENESS

A special technique is used to weave these sarees, where three single threads of mulberry silk yarn is twisted with jari to produce a saree which is not found in any other saree. Its excellency lies in formation of motifs, (design or pattern) by trained weavers. These motif designs are taken from sculptures of temples, which has brought the name to the city as “Temple City”. Some of the common motif designs are peacock, leaves, mango, rudrakshi, stripes, elephants and so on. We can also see motifs from the epics of Ramayana and Mahabharata.

2.17 GEOGRAPHICAL INDICATION

To present the traditional Indian heritage kancheepuram sarees has been brought under Geographical Indication act. Kancheepuram sarees are India's alluring exquisite saree originating from the district of kancheepuram Tamilnadu. Only pure kancheepuram sarees are awarded with silk mark by silk board of India and this label on saree is the surity of its genuineness.

Kanchipuram sarees have got (GI) from government of India in 2006, which gives it a distinctive identification and recognition in India and all over the world. This (GI) tag has proved to be a marker to build brand name Kanchipuram. According to this (GI), it should maintain standard weight, quality and Jari mark as it is mentioned in the norms of the act. After implementation of (GI) to Kanchipuram sarees sales has been increased all over the world.

2.18 MARKETING

Previously Kanchipuram sarees were marketed only through co-operative societies. There are around 60,000 silk weavers in the city, out of them 50,000 weavers work under co-operative fold. Retailers had to register themselves as the member of these societies and purchase only through these societies.

Kamatchi Amman, the first Kanchipuram Co-operative society was established in 1942 at Kanchipuram and later extended its branches all over Tamilnadu, Andhra Pradesh and Karnataka. At present 24 co-operative societies are working in India. Slowly the trend changed and weavers started selling their products directly to wholesalers and retailers which brought them reasonable profits.

As the dayspassed, there are new trends in marketing these silk sarees i.e., online marketing, social media marketing etc have been implemented by the large scale silk saree showrooms. It's price range starts from Rs. 7000 – Rs.2,00,000. Worth of today's Kanchipuram industry is 20 million dollars. Silk showrooms also provide with customisation of these sarees, by having their own artisians, who hand weave the saree of customer choice. It takes 15-20 days of duration, to complete one single saree depending on intricate designs.

On account of globalisation, kancheepuram sarees are available all over the world. It makes the job of selection quite challenging because of its dazzling colours designs and variety. There are 60,000 looms in kancheepuram and Rs.200crores turnover, with 3croresof exports. They are now shipped abroad to cater to the overseas Indians.

Kancheepuram sarees have crossed the Indian boundaries and have inspired the international run ways. Some of the acclaimed designers like Chanel, Alexanden Mc Queen and Louisvuitton took inspiration from the brocades and silks. Alexanden Mc Queen's , 2008 collection was based upon on the theme of 'British Royalty Meeting Indian Regality'. It was noticed as sovereign master piece in the show. (Kishore Balakrishna- author).

2.19 CURRENT TREND

Authentic, unique and handpicked handloom silk sarees from across South India adds elegance and style to woman. The changing consumer tastes, especially from traditional handlooms to fancy light sarees are the signals to the industry to reorient its production plans to suit the changing demand patterns.

Today power looms have overtaken handlooms and made the work easy and fast. Adoption of ICT (Information and Communication Technology) in production and marketing process has increased both demand and supply. Implementation of Computer Aided Design (CAD) / Computer Aided Motif (CAM) has given rise to exploration of new modern designs in borders and pallu. Times have changed and kancheepuram sarees have also undergone a transformation. Embroidery and crystal works are done on the traditional kancheepuram sarees. Due to the demand in light weight Kanchi sarees, weavers blend cotton and kora while weaving these sarees. In the modern world consumers prefer less costly, weightless, light colours and simple designs. To cut down the heavy cost of saree and to make it available for all type of customers weavers are producing sarees with single side border, which brings down the cost by half the price. Implementation of above strategies has badly affected the sale of pure Kanchipuram sarees. Instead of using Pure Jari which would cost Rs3000 and above, tested jari (artificial Jari) of Rs. 300 to Rs. 400 is been used in the borders of saree.

CHAPTER 3: CASE STUDY

3.1 FORECASTING, PLANNING AND DISTRIBUTION OF AN INDIAN ETHNIC WEAR MANUFACTURER

The events presented in this case are merely a representation of the overall industry. All data and events presented here are used to simulate an environment that is generally observed in any typical ethnic wear industry in India. Any resemblance with a real-life is merely a coincidence.

Sunil always reserves his Sunday morning for his personal use and spending time with his family. During the weekdays, he rarely finds time to spend with his family and the two young sons. This is when he would be very unhappy to receive any business calls or attend office. However, today is a different day. In spite of being Sunday, he is in office to receive the consultant team from Delhi that he has hired to guide him and his father to take their family business to the next level of growth. It took quite an effort for him to convince his father on the need for hiring consultants for future growth of their family business. His father, Amar Singh Chauhan, began as a small-time saree retailer in the small town of Chandauli in Uttar Pradesh, moved to Surat in the '90s to build Ratna Sarees. Over the years, Ratna Sarees has grown significantly. It, now, manufactures synthetic sarees in its manufacturing facilities in and around Surat and has a revenue of more than ₹100 crores. Sunil joined his father in 2018 when his father had to undergo a bypass surgery and no one was available to look after their family business including his only sister Priya who is happily settled in London with his doctor husband Rishav. Sunil is a computer science graduate from National Institute of Technology Surat and worked in a software company based in Bangalore and then at client locations in Plano, Texas for nine years. Coincidentally, the client of the project in which Sunil was involved was a leading apparel company in the US and while handling this project Sunil had a considerable exposure to the way this apparel company manages its business. This exposure helped him realize that the way his family business is managed is far from the professional management practices that he had seen in the US.

RATNA SAREES

Ratna Sarees is a Surat-based family owned group of enterprises that is involved in manufacturing, wholesaling and retailing of Sarees in India. Mr. Amar Singh Chauhan started his journey in Surat as a small trader in 1981. Later, in 1993, he established Ratna Sarees in memory of his mother which dealt primarily with manufacturing and wholesaling of synthetic silk sarees. In 2018, his son Sunil joined him with a vision of making this business bigger and more professionally managed. To execute his vision, Mr. Sunil has already taken some initiatives

with different degree of success including hiring few professionals, increasing the usage of information technology for day-to-day operations, exploring newer markets, and enhancing the product portfolio. One of the challenges that he is facing with his initiatives is that, Ratna

Sarees being operated in a very traditional manner, the processes has remained very ad-hoc; there are very few competencies and professionals available to take the company to more valuable markets mainly dominated by more professionally managed corporates. There is also a sense of complacency in the organization and Sunil also has to fight mental blocks that must be broken if his dreams are to be realized. He also realized that a more systematic and organized approach is required to make the change. Realizing this, he approached few of his friends for helping him in finding qualified professionals and consultants who can advise him on his restructuring of Ratna Sarees. Two of his friends, Raj and Aakash, who earlier worked in reputed consulting firms and, now work as freelancer, to help him at a very nominal cost.

THE SAREE SUPPLY CHAIN

On the first interaction, Mr. Sunil was quite happy to meet his friends, Raj and Aakash. He was also pleased to note that his friends have prepared themselves well in terms of their understanding of the overall idea about the apparel industry and the theoretical models of forecasting. During the interaction they even cited some publicly available cases on the application of forecasting techniques in the industry. However, Sunil also believes that the solutions which worked fine elsewhere may not be applicable, as it is, in Ratna Sarees case and would require necessary adaptations. Hence, Sunil asked his friends to meet key personnel and understand Ratna's business processes for the next two weeks. For the next two weeks Raj and Aakash spent time in observing the business processes and interacted with a number of persons to develop a very good idea about the saree value chain, production and inventory decisions, sales process, and the way forecasts are made. Initially, they were little perplexed with their failure to connect Ratna's business environment with their previous works with companies which are mostly well-established large corporates. Although the basic 'concept-to-market' processes are similar to that of any apparel manufacturers', there are subtle differences in the way they are executed. The two friends identified the differences in the areas of how a design concept is finalized, the way the wholesalers and others place orders, the spread of the network, the process of forecasting, and finally the way production decision is taken.

Saree is an ethnic wear for women commonly used in the Indian subcontinent including India, Bangladesh, Sri Lanka, Pakistan, and Nepal. Traditionally, it's a single piece of cloth wrapped around the waist with one free end, generally decorated, covering the upper part of the body. However, in case of designer sarees, multiple pieces of different color and design may be stitched together to give better look and feel. India is the largest market for sarees with a market size of \$15Bn. Sarees are made from either cotton, silk, synthetic, or mixed. They are available in different styles, colors, and designs. Sarees are also one of the major fashion item for women in South Asia.

Although saree is a common woman wear, it has location-specific specialties which differentiates one variety from the other in terms of design, and choice of fiber. For example, banarasi, tant, sambalpuri, bandhani, pochampally, baluchari, tangail, kanjeevaram, muslin etc. are few well known variants, each of them carrying unique identities and value for the user. Few of them are also protected by Geographic Indicator. Surat is one of the major textile hub in India for synthetic textiles products.

Surat's textile ecosystem is involved in almost every part of the value chain starting with yarn manufacturing, dying, weaving, zari works, and embroidery and value-added supplies. A significant portion (approximately 90%) of polyester used in India is sourced from Surat which also provides an important support to its textile ecosystem. Surat has around 4,70,496 power looms producing 91,871 Lakh meters of fabric annually. The textile value chain is one also one of the biggest employment generators. Synthetic saree is one of the most important finished products that the Surat textile industry deals in.

For firms like Ratna Sarees, their supply chain starts with a design concept followed by sourcing of fabric and other value-added supplies like, zari laces, ribbon laces, linen, embroidery thread etc. Design for new sarees

are sourced in-house as well as from design vendors. Once the designs are finalized catalogs are prepared and the production quantity for each design is decided. The production decision helps Ratna Sarees to estimate the requirements for fabric, embroidery materials, and other supplies. The supplies are generally procured either directly from suppliers or from the open market. Fabric is the key material for a saree. There are a number of intermediaries in the value chain for fabric manufacturing. Synthetic fabrics are manufactured from Mono Ethylene Glycols (MEC) and Purified Terephthalate Acid (PTA) which generally comes from the petroleum refineries located in Dahej and Panipat. The above materials are used to manufacture synthetic yarn which are further used to manufacture fabric. The fabrics may also be dyed to different colors based on customer's requirements. Zari works are carried out in Surat itself whereas for other supplies there are enough distributors and wholesalers in Surat. The received supplies are checked for quality before sending them for cutting, stitching, and garmenting. Although a part of the cutting is done in-house, however, stitching and garmenting is completely done through outside suppliers. The above process of concept to receiving of finished products from suppliers takes around 2.5 to 3 months. The packaging of the finished sarees is done in the warehouse located in the industrial suburb, before they are dispatched to customer's locations. The customers of Ratna Sarees are mainly wholesaler and retailers distributed across India.

While Ratna sells its products across India through its 100 plus counters and online, all pre-selling activities are performed within the geographic boundary of Surat. Further, there are many manufacturers in Surat region who produces similar products forcing Ratna to face competition and focus on production and distribution efficiency for better margins. Ratna realized that to grow further it needs to create a pan-India identity among final customers over and above its good brand reputation among the wholesalers and retailers. Recently, in addition to its in-house design team, Ratna has started sourcing its designs from the outside. It regularly organizes design competitions in college campuses which makes its designs more contemporary with the design trends. However, unlike major fashion brands it rarely participates in fashion shows and other events to validate its design. Unlike other major fashion brands who has an elaborate process of validating the design before it goes for production, Ratna uses its years of industry insights and in-house expertise to validate its designs. This reduces the concept-to-production lead time drastically to two/three months. However, this leads to a situation where Ratna takes its production decision for a new design without any order commitments from its customers.

WHOLESELLING

Surat being a hub for synthetic sarees, there exists a big wholesale market consisting of thousands of wholesalers and manufacturers. Many wholesalers and big retailers from across the country physically visit Surat and buys their requirements from the *Gaddi*². Placing orders through catalogues is increasingly becoming popular for the reason that the buyers do not have to physically travel before placing the orders. Catalogues helped Ratna Sarees to bridge the physical distance and reach out to retailers at far off locations. There are also hundreds of agents employed by Ratna Sarees who market the catalogues, and liaison with the retailers to gauge customer sentiments.

DEMAND FORECASTING

Aakash and Raj realized that the current practice of forecasting and taking production decision can be greatly enhanced by making it more open and formalized. They based their argument on the fact that, currently, there is a very high level of demand-supply mismatch on the presence of very high level of average inventory and stock outs. The financial statements as shown in EXHIBIT 2 suggests that Ratna Sarees had a very high levels of inventory. A higher inventory means that there are designs which did not sell well. Similarly, EXHIBIT 3 shows the confirmed orders received and the number of units sold for two of its most popular catalogues. The exhibit represents instances when orders from wholesalers and retailers could not be filled. This suggests that Ratna Sarees is facing the problem of simultaneous occurrences of both surplus inventory and stockouts. This is a typical case of demand-supply mismatch in the supply chain. Taking production decision is very crucial for every new catalogue as underproduction would lead to loss of potential revenue whereas overproduction would end up into unsold inventory.

Forecasts are an important input for taking the production decision and Mr. Amar utilizes his three decades of experience for estimating demand and take production decision. Production is generally outsourced and is taken after a catalogue is finalized but before it goes for printing. The wholesalers place their orders after receiving the catalogues and hence, at the time of taking the production decision no order information is available. Each catalogue represents a theme that creatively relates a personality and an occasion. For example, a catalogue with a name like, Rajashree would characterize a personality of a women with the style, elegance and the charm of a royal family. For such a catalogue the material would generally be the finely knitted and lightweight chiffon fabric with pastel colors more suitable for working women. On the other hand, a catalogue with a name Taal may characterize a glamorous woman draped in an embossed synthetic saree with multiple bright colors and zari works trying to subtly draw other's attention in a party or a festival. As the themes are more general, the same catalogue continues for many years and the changes in fabric quality and material, and the broad aspects of design are very marginal.

However, in every season the color combinations, the look, the prints and the works, and the finer aspects of design would change considerably giving an impression of a new possession. On occasions, new catalogues may also be added to the existing set of catalogues or an old catalogue may be discontinued. One unit of order for a catalogue by a wholesaler or a retailer is equivalent to multiple pieces of the saree with different color combinations.

Therefore, it is confusing for anybody on what to forecast i.e. whether to forecast at catalogue level or SKU level (each saree in a box of a catalogue is an SKU). One may also assume that the SKUs selected for a catalogue are equally likely to be picked by the customers. In such cases, one may focus on forecasting the demand at catalogue level rather than SKU level.

Further, for Indian women sarees are a must for marriages and festivals and hence, the demand for sarees goes up significantly during such seasons. Although there are differences in the festivals that are celebrated in different parts of the country, however, there are commonalities too. A major festival season in India when a major portion of the yearly demand takes place is the Diwali. There are other festivals too. For example, Durga Puja in Bengal and other eastern states, Ganesh Chaturthi in Maharashtra, Onam in Kerala etc. EXHIBIT 4 shows the Hindu marriage dates during the period 2012-2017. Unlike the seasons as observed for apparels other than saree no distinct seasons emerges out in EXHIBIT 4. However, when the same dates are arranged in a Hindu calendar as shown in EXHIBIT 5, four distinct (Season 1: January- February, Season 2: March-June, Season 3: July – August: Season 4: September – November) selling seasons emerges for sarees. However, during March, July, August, and December are lean periods. In EXHIBIT 6 shows the sales numbers arranged in aggregate for each season. Clear increasing trend in seasonal sales over the years can be observed in EXHIBIT 6 and FIGURES 1 and 2, and hence, can be used for building forecasting models at month/season level.

ASSORTMENT PLANNING

Aakash and Raj, earlier worked on forecasting problems that are sold over a longer period of time. Normally, for such products, they have mostly focused on past data and the choice of forecasting methods for tackling forecast errors. This is, first time, that they are dealing with a seasonal product that have a life cycle of 2/3 months only. They soon realized that the past data may not be relied on completely for forecasting future demand of fashion sarees. For example, if a green color saree was very popular in the last season it is natural that in few of the subsequent seasons color green may not be the preferred choice. Past data may not be a good predictor of consumer demand who evaluate a number of dimensions before they take their purchasing decisions. The most common dimensions that customers evaluate are, (1) color combinations rather than the individual color choices, (2) quality of fabrics, (3) quality and innovation in the design, and (4) quality of workmanship. Interestingly, the consumers may not trade their preferences on one dimension with another dimension in a linear manner but in a more complex and integrative manner based on the occasion, latest fashion trends, and price. This also makes use of traditional multi-attribute forecasting

models as very challenging. Often, experts' judgements are used to make such trade-offs and a most common approach would be to use notions of 'willingness-to-pay' that represents the attractiveness of a design for a given price. Soon, Aakash and Raj learned that, for Ratna Sarees, such judgement tradeoffs are made when production decisions are taken based on a review meeting between Mr. Amar Chauhan and few of the senior executives. Although such meetings are arranged for taking production decisions but, they take such decisions based on their assessments, somewhere at their subconscious mind, of the attractiveness of the design. The two friends planned to suggest a formalization of such assessments and propose a planning and forecasting mechanism that merges scientific analysis of sales data and judgmental assessments of attractiveness of the design.

The two friends were convinced that seeking inputs from seasoned experts, wholesalers, retailers, and other traders would give much better idea about the demand trends and hence, better matching of demand with production. The demand-supply match can further be reduced if a new catalogue is distributed and orders bookings are allowed early. Based on their interactions with stakeholders, observation of the selling process, and analyzing individual sales data they came out with a two-step process of the forecasting and planning process. In the first step they focused on forecasting the demand for the aggregate sales based on the sales trend seen in the past for each of the seasons separately. Given the forecast of the aggregated sales for a season, they suggested the use of subjective assessments of the attractiveness of a catalogue given by more executives who are more exposed to the market and have a very good understanding of consumers' psyche. One trickiest part of that they realized is on including the effects of substitution when the demand of one design that has stocked out is substituted by another design. A large number of techniques exists for forecasting the demand for such categories to be considered in the second stage. They noted that the seasonal demands exhibit an increasing trend over the years. To demonstrate the logical strength their proposal, they used data presented in the earlier EXHIBIT 6. The monthly (season-wise) time series plot as shown in FIGURE 1 (FIGURE 2) gave them a clear indication of the presence of both trend and seasonality which would help them forecasting aggregated sales on a monthly (season) basis. They also looked at the seasonal demand of the earlier years as given in EXHIBIT 7. EXHIBIT 8 shows the category-wise sales distribution season-wise and year-wise which may be used for estimating the demand for the catalogues. A variety of categorical methods also exists that may be explored for their suitability for forecasting the catalogues-wise demand.

DATA ISSUES

There was a brainstorming discussion happening between Aakash and Raj on the availability, quality, and usefulness of the sales data that was shared by Ratna Sarees. Raj with a disappointing tone said *"Aakash, I assume Ratna Sarees needs to work on their data capturing mechanism. The available data seem to be scattered, incomplete, and small in size. We have to first make sure what all data are available with Ratna Sarees and accordingly prepare the data for the analysis."*

Aakash concur with Raj and both started collating the available data and creating data tables as shown in EXHIBITS 7-9. Aakash with a sense of relief said

"Now Atleast we know what all the data are available with us for forecasting."

Let us quickly list up the data availability and possible forecasts that we can make out of the data:

- a) There are aggregated yearly sales figures available from 2014-18 for which trend can be determined and forecasted for 2019.*
- b) There are monthly and hence season-wise aggregated sales data available for 2014-18 which has both trend and seasonality and can be used to forecast monthly/season-wise sales for 2019.*
- c) We don't have sales data for seasons 2 and 3 for 2008-2013 and hence season-wise forecast for 2019 on the basis of 2008-2018 is not possible. We need to check with Ratna Sarees if the missing data can be made available.*

d) Even catalogue-wise sales figures are also missing for the seasons 2 and 3 due to which forecasting at catalogue level is not currently possible.”

Raj progressively replied:

“Yes, I agree. In my opinion we should first build a forecasting model for season-wise sales followed by building a predictive model for sales of individual catalogue subject to the availability of the data. One major shortcoming of the models will be that these are based on few data points. So, there is no scope for validating the models.”

CHAPTER 3: DATA AND ANALYSIS

3.1 SWOT ANALYSIS

3.1.1. STRENGTHS

Kanchipuram silk sarees have a centuries-old tradition behind the craft passed down through generations; hence, they have high cultural significance. The sarees are best known for their durability, intricate designs, and high-quality materials, so they are considered a premium product. The Brand Kanchipuram silk is not only famous in India but has gained wide recognition in the world market.

3.1.2. WEAKNESSES

The exclusive application of pure silk and gold/silver zari powder makes these sarees expensive, leading to less targeting of a broader market Londhe (2015). The skilled hand-weaving process is complex and lengthy; thus, production volumes are affected. Industries face shortages of manual skilled workers, especially weavers, whose numbers are diminishing because of the youth's declining interest in this sector. There is also a shortage of modern technologies and design machinery.

3.1.3. OPPORTUNITIES

A large opportunity involves expansion into foreign markets via tailored marketing campaigns and e-commerce platforms. Keeping modern designs and fashion trends up-to-date could attract younger buyers. Highlighting ecological production and the potential of sustainable methods is one way of finding consumers sensitive to environmental needs. Younger generations of consumers have become more fans of Indian heritage crafts Sivasakthi (2018).

3.1.4. THREATS

The market provides lavish options of machine-made imitations selling at a lower price, which disrupts the wholesale of genuine Kanchipuram silk. Shifts in silk and gold costs and an economic recession can have a negative impact on weaving. The change in consumers' behaviour towards cheap and trendy fabrics. Low support for and policy for the handloom sector Sivasakthi (2018).