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DeadStock: Resource Stress and Sustainability Challenges in South Indian Handloom Clusters

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Abstract: ***The handloom weaving sector occupies a vital position in India's cultural and economic landscape, reflecting centuries of traditional craftsmanship, artistic expression, and regional identity. Among its diverse products, sarees stand out as one of the most iconic representations of this heritage, embodying a creative synthesis of design, technical expertise, and cultural symbolism. However, despite their aesthetic and cultural significance, the handloom industry today faces several pressing challenges arising from overproduction, unsold inventories, and the growing accumulation of restocked and deadstock sarees. These issues not only result in considerable financial losses for weavers, cooperative societies, and retailers but also contribute to material wastage, resource inefficiency, and environmental strain, thereby highlighting the urgent need for sustainable intervention and strategic reuse practices.***

Keywords: Handloom weaving, Deadstock, Reuse, Sustainable, Problems and Challenges

1. Introduction

World over Indian weavers are famous for their hand spinning techniques of weaving and India is home to more than 136 weaves, mostly in the form of sarees (https://www.savehandloom.org) Especially in Tamil Nadu we have lots of handloom weavers who make different attractive varieties of sarees. Tamil Nadu is famous for handloom sarees and there are many government sector societies who offer assistance and help the weavers for their sustainability. Weavers take minimum three to four days to produce a saree. There are large varieties of sarees from cotton, silk, silk cotton, etc. After the sarees are woven, the weavers supply the sarees to

government societies and also some of the shop purchase them directly too.

The government sector supplies the yarn to the weavers to produce the sarees according to their need of structure, design and colour combinations. Sometimes the sarees won't be as expected due to quality of yarn supplied or weaving mistakes in loom. The best sarees are taken for sales. The sarees are brought back by the societies of government then supplied to government outlets like Societies, Co-optex, Sarvodhaya, etc and Retail shops. The collection of sarees is shown to customers and sometimes few pieces can become deadstock because of rejection in customer point of view, colour fading and few slight damages. Then it will be placed for discount sales by the outlets. After that also some of the sarees remain in godown and there are no chances of selling. This deadstock will be stored for many months or years and it will be a great loss when it is present in huge quantity. It also happens in retail shops in many places. The yarns cannot be reused again. If the cloth can withstand for some more years, it is proposed to reuse the sarees for sustainable development.

The stocked are in no way earn income to the societies and weavers. Taking that in mind the idea is to collect and recreation is done on sarees by doing some embellishment or creating some garment with trend setting design. Even the support of society can be taken for marketing of recreated designs and that too can add values to the handloom weavers to get income through these dead stocked and damaged sarees. The product developed out from these deadstocked and damaged sarees can minimize the waste and the income from that also enhances the welfare of the weavers. Next to agriculture weavers are the person who exercise full effort in the production. This idea can pave a way for reduction of wastage and sustainable development in textile field to the welfare of the weavers.

Handloom and its tradition

In Indian cultural and economic traditions, handloom weaving is known for its prestigious and centuries-old position. It represents a traditional craftsmanship rich with centuries of legacy, identity, and nourishment that goes well beyond the practice of producing apparel. Handloom weaving, one of the oldest known techniques for producing textiles, has endured for centuries and is now deeply rooted in India's socioeconomic structure. The earliest archaeological evidence of cotton production and the use of rudimentary looms come from the Indus Valley Civilization, demonstrating a long-standing interest in textile crafts (Roy et al., 2024) [1]. Indian handwoven textiles were renowned around the world for their grace, complexity, and versatility from the Vedic era to the Mughal era. The remarkable diversity of India's handloom tradition is what makes it so valuable. From the vivid Bandhani of Gujarat and Rajasthan to the magnificent Kanjeevaram silks of Tamil Nadu, the elaborate Chanderi of Madhya Pradesh, the traditional Baluchari of West Bengal, and the internationally renowned Banarasi brocade, each region has created its own weaving customs, motifs, and types of looms. In addition to artistic expression, cultural symbolism, resemblance and narrative images of social life set these traditions apart (Choudhary et al., 2024). [2]

Priya et al., (2025) [3] proposes that community-based production methods, intergenerational artisanal knowledge transmission, and the handloom legacy's embeddedness in cultural identity are what keep India's handloom tradition alive. She contends that the industry's ability to combine

historic knowledge with modern design sensibility and the growing customer demand for ethically and sustainably made textiles are what make it sustainable. The weaving sector's strength is supported by the rising value of authenticity and artistry, even in the face of enduring obstacles such raw material fluctuations, high manufacturing costs, and competition from machine-driven looms.

From an economic point of view, the handloom sector continues to be essential to rural Indian livelihoods. According to recent estimates, the sector employs approximately 4.3 million people, many of them are from underprivileged groups. A significant portion of these craftspeople are female, and handloom weaving offers them economic independence, social mobility, empowerment, and a stable source of income. Weaving's home-based setup supports gender equity by enabling flexible participation in addition to social and household responsibilities.

Handloom weaving has remained important despite the fast-fashion and automated clothing industries' rapid growth. The utilization of organic or low-impact raw materials reduced energy use, and the distinctive aesthetic value of handmade fabrics all contribute to its ongoing appeal. The rise in demand and appreciation of handloom textiles has been further aided by growing global awareness of sustainability and ethical fashion practices.

2. Historical Background

In some of the earliest known human civilizations, handloom weaving in India has a remarkable and rich history that extends many generations. It is notably one of the oldest methods of producing textiles, but it also serves as an everlasting symbol of India's sociocultural and economic survival. It is thought that early settled agrarian tribes used spinning and basic weaving as early as the Neolithic era (Neha and Saloni, 2024). [4]

The Indus Valley Civilization (c. 3300–1300 BCE) is the source of clearer archaeological evidence. Excavations at Mohenjo-Daro and Harappa have produced spindle whorls, dyed cotton fibers, and impressions of woven cloth on pottery pieces, indicating sophisticated knowledge of cotton cultivation and textile manufacture (Mehvish &Anwar, 2024) [5]. According to Shruti et al. (2024) [6], the antiquity of Indian hand-woven fabrics extends far beyond recorded memory, supported by both textual references and archaeological discoveries. While India was famed across the ancient world for exporting cotton and printed textiles, the hot and humid climate prevented early fabrics from surviving. Exceptional findings from dryer regions—such as a pre-Christian-era cotton fragment with a hansa motif unearthed near Cairo—offer rare physical evidence of early Indian textiles. Similarly, remnants of finely woven, madder-dyed cotton from Mohenjo-Daro further illustrate the advanced weaving culture of the Indus Valley. Historical testimonies from classical writers like Herodotus, Megasthenes, and Pliny praise Indian textiles for their fineness, craftsmanship, and high economic value, while later travellers such as Bernier, Tavernier, Voltaire, and Defoe also documented their beauty and global demand. Shruti et al. (2024) notes that the affordability and superior quality of Indian cloth threatened Britain's emerging textile mills, prompting colonial authorities to impose heavy duties and penalize traders who used Indian fabrics. Although British rule and the World Wars weakened the sector, the post-independence era revived hope and institutional support for India's handloom industry, marking a critical phase of reconstruction and renewal.

Ancient Indian scriptures and epics also provide rich references to weaving and textiles. The Rigveda mentions weaving both literally and metaphorically, while the Mahabharata and Ramayana highlight the socio-economic and symbolic roles of weavers within ancient Indian society (Gautham et al. 2025) [7]. Textile production was deeply intertwined with ritual life, caste-based occupations, and gendered labour practices, reflecting broader patterns of social organization.

The medieval period witnessed significant expansion and refinement of handloom weaving under the patronage of regional kingdoms such as the Cholas, Satavahanas, and the Vijayanagara Empire. Specialized weaving centres emerged, producing high-value textiles including Banarasi brocades, Kanjeevaram silks, and the Ikat weaves of Odisha and Andhra Pradesh (Behera et al. 2019) [8]. These traditions catered to domestic elites and were exported widely across Central Asia, Southeast Asia, and the Middle East. During the Mughal era (16th–18th century), Indian textiles reached new heights of aesthetic and technical excellence, characterised by Persian-inspired floral motifs, luxurious finishes, and advanced dyeing practices (Rather, 2024) [9].

However, British colonial rule fundamentally altered the trajectory of India's artisanal textile economy. The rise of mechanised mills in Britain, combined with colonial tariff policies that disadvantaged Indian producers, led to a steep decline in traditional weaving communities. By the late nineteenth century, handloom production had collapsed in many regions. The early twentieth-century Swadeshi Movement, led by Gandhi, revived spinning and weaving as emblems of anti-colonial resistance and economic self-sufficiency (Roy, 2019) [10]

Following independence, the Government of India introduced several institutional and policy interventions—such as the establishment of Weavers' Service Centres, the National Handloom Development Programme (NHDP), and cluster-based development frameworks—to strengthen the handloom economy and enhance artisanal livelihoods (Dutta, 2023) [11]. Despite persistent structural constraints, the handloom sector continues to demonstrate resilience, supported by digital market linkages, sustainable fashion movements, and rising consumer appreciation for heritage textiles.

South India sector

The importance of a reality that sustainability has come out as a major topic in international textile research, research shows that its incorporation into South India's handloom industry is still restricted, dispersed, and frequently superficial. The majority of the material now in publication concentrates on environmental factors, such as organic cotton, natural dyeing, or low energy consumption, while ignoring the more comprehensive aspects of social and economic sustainability

that are crucial for weaving communities (Patel, 2023; Thomas & Iyer, 2022) [12&13]

Weaving societies in Tamil Nadu, Andhra Pradesh, Telangana, Karnataka, and Kerala have evolved into geographically exclusive clusters whose output reflects unique textile languages and adopted artisan techniques. For centuries, weaving in South India operated as a culturally rooted system rather than truly an economic activity. Clusters such as Kanchipuram (silk and zari brocade), Pochampally (ikat double-weave), Ilkal (contrast-border sarees), and Venkatagiri (fine jamdani-style cottons) represent the unique weaving identity and design vocabulary that these regions maintain (Save Handloom Foundation 2025; Greeshma et al., 2023) [14]. The cluster model has historically promoted the transfer of skills between generations and preserved a home-based production system in which living areas frequently serve as weaving workshops. This pattern has been observed for the Pillayarpalayam weavers' settlement in Kanchipuram, where homes served both production and family needs (Vijayalaxmi & Arathy 2022; Chandru & Kavya, 2025) [15&16]. The lifetime significance of weaving clusters as living resources of craft heritage, social memory, and cultural economics becomes clear by the way that some clusters manage to preserve their heritage in spite of these challenges through collective institutions (weaver-cooperatives), innovative design, and new market connections, particularly in situations where the textiles carry cherished uniqueness.
In modern textile sustainability research, deadstock—defined as excess, surplus, or unsold older textile stock—is regarded as a developing challenge. Emerging studies highlight deadstock's growing significance in India's artisanal and handloom value chains, despite a large amount of empirical research on the subject focussing on industrial clothing manufacture (Textiles Committee, 2022; Saahas Zero Waste & Fashion for Good, 2023). [17&18]

Deadstock in the handloom sector includes unsold sarees, defective weaves, colour-mismatched lots, and retailer-returned inventory. These items build up as a result of changes in demand, design variations, order cancellations, and market intermediation failures.

3. Methodology

Area visit
The places where stocked sarees stored are visited directly and data be collected about the dead stocked sarees. The yarns are provided by the government to weave the sarees according to the location and the design they produce.

Problems while weaving
The sarees are made by the weavers with the required time to weave a saree. The problems faced while weaving are:

- Yarns provided may be sometimes low quality that may affect the saree quality.
- Human errors are common everywhere. While weaving the weft yarns should be 90picks per inch. Sometimes it will be lower around 70’s to 80’s.
- Visible oil stain or other stain seen in the saree and it cannot be removed too.
- Overlapping of yarns due to running of weft yarns continuously.

Likewise, many problems are faced by the weavers. The sarees are taken to hub of collection area and examined. The defected sarees are separated and the rest are taken to the government society and market for sales.

Outlet for sales
The government have their own outlets and also sometimes retailers purchase sarees for sales. The customer also rejects sarees and those sarees are also sometimes becoming deadstock. The problem faced are:

- The colour combination won’t be satisfied by the customer.
- Sometimes the design won’t be as they expected.
- Costing of handloom saree will be pricing high.
- The customer also won’t follow the wash care label and they return the saree after a single use

Deadstock
Problematic or defective sarees are generally segregated and stored in designated spaces within production units, where they remain as deadstock for prolonged periods. Although such sarees are occasionally liquidated through discounted sales, a significant share continues to be retained without commercial utilisation and therefore does not re-enter the formal market. These products are often disposed of within the weavers’ immediate social networks at minimal prices, and in some cases, they are auctioned at substantially undervalued rates, generating negligible revenue. Consequently, the economic loss associated with deadstock accumulation is disproportionately transferred to the weaver, who receives little or no compensation for the labour and material inputs expended in producing these sarees. This persistent issue highlights structural inefficiencies in inventory management and underscores the need for systematic interventions to prevent value erosion at the producer level.

Sorting
The collected sarees are assorted according to the number of years after manufacturing. Then the damages of fabric are analysed and accordingly it is segregated for further plan for reuse of the saree. The stained part of the saree is removed and the rest of the saree is given new life by creating products with the sufficient material leftover.

Product development
The collected part of the saree is thoroughly examined and converted to new version of product with the sufficient material. The dresses can be designed from zero to plus sizes. According to the design and colour combination the garment can be designed for sales.

4. Results and Discussion

The development of value-added goods from dead-stock and damaged saree material is a potential solution for minimizing inventory depletion and preventing long-term material loss. By converting these practically unsellable sarees into useful yet visually appealing goods, the method efficiently rejuvenates the original fabric, extending its lifecycle and re-positioning it within current markets. Such upcycled outputs—ranging from furnishing products to fashion accessories—facilitate the reincorporation of neglected stock

into the market system. Additionally, the income made from these sales helps to offset the financial losses suffered by weavers, who are frequently the final customers of dead-stock accumulation as a result of unsold goods, delayed payments, or lower wages. Thus, in the handloom industry, this system of thinking promotes both material circularity and livelihood sustainability.

5. Sustainability Research

Several scholars argue that the handloom sector is inherently sustainable due to its low carbon footprint, artisanal production systems, and reliance on natural fibres (Gowda, 2019) [19]. However, in view of this assumption, methods for systematic sustainability assessments that are especially suited to weaving livelihoods remain to be designed. Quantitative factors like resource utilization, productivity ratios, income volatility, or gendered labour contributions are rarely included in studies. Because of this, comprehensive instruments like Life Cycle Assessment (LCA), Social Life Cycle Assessment (SLCA), and Sustainable Livelihoods Frameworks (SLF), which are frequently employed in industrial sustainability studies, have not yet been incorporated into handloom research (Verma, 2021) [20].

There is also an abundance of research on socioeconomic sustainability. Few studies convert these issues into statistical sustainability measures, despite the fact that experts recognize the intergenerational decline, skill degradation, and financial fragility within weaving households. Cluster-level evaluations still mostly lack metrics like livelihood durability, income diversification, professional growth, youth retention, and social well-being (Mohan & Raman, 2021) [21]. Additionally, data gathering is challenging due to the informal nature of handloom employment, which is frequently concentrated within households, which results in the poor integration of sustainability measures.

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