Woven Tales: A Review Of Challenges And Innovations Of India's Handloom Sector

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Abstract: The Indian handloom industry is considered as the second-largest source of rural engagement after agriculture, which supports three million houses, most of which are built in villages. Despite its significance, the industry struggles with serious challenges, which consists of health concerns among workers, obsolete skillsets, inadequate market access, and financial uncertainty—problems that are especially severe for female weavers. The growing break between traditional practices and modern market demands further threatens its relevance and survival. This paper aims to conduct a systematic literature review of existing study to explore the major issues and emerging opportunities within the Indian handloom industry, focusing on weaver well-being, gender inequalities, innovation, and lasting sustainability. A total of 310 open-access scholarly papers were shortlisted with PRISMA-based selection procedure. Bibliometric analysis was conducted with the help of VOS viewer, allowing the identification of leading writers, frequently cited studies, research clusters, and collaboration patterns within the field. This paper emphasizes the demanding need for current skill development, robust policy frameworks, and strategic marketing methods. Bridging the gap between traditional skills and modern tools can not only improve economic situations for workers but also safeguard the continued artistic and sustainable value of the handloom sector in India.

Index Terms - handloom, weaver, VosViewer, Prisma, employment, bibliometric analysis.
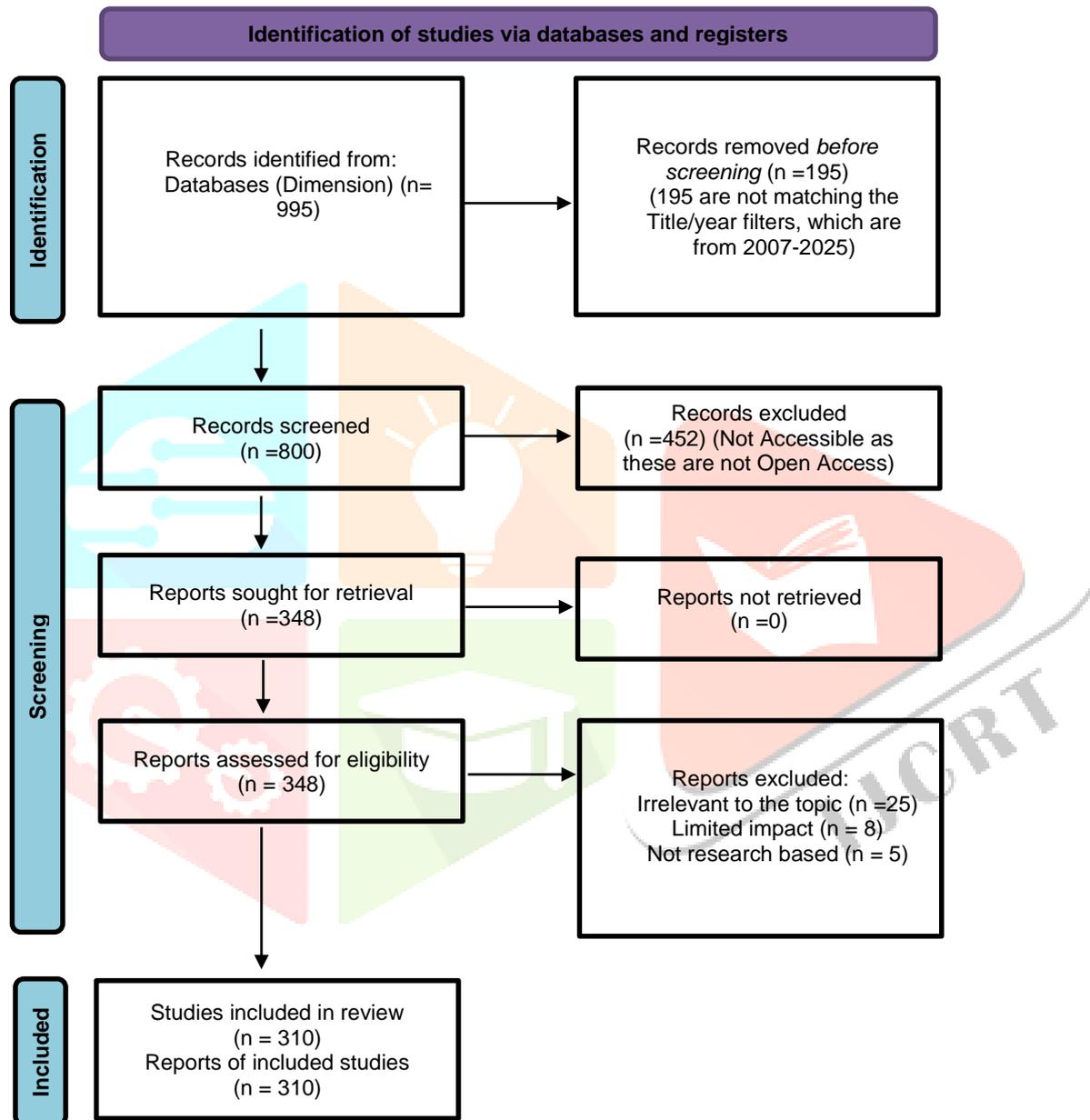
1. INTRODUCTION

In India, Handloom weaving is the major source of revenue after agriculture and gives employment opportunities both directly and indirectly to around 3.15 million households, with 87.40% of them residing in villages. (Faruque & Guha, 2023). Despite of its traditional roots, the handloom sector still continues to display a major role in providing incomes, empowering women, and cheering environmentally friendly production procedures. However, this handloom industry is currently facing several critical challenges that question its upcoming sustainability. The Indian handloom industry every so often faces poverty and adversity. Numerous workers live with short revenue and indefinite livelihoods. In spite of this, this sector is rich in human talent and workmanship. It is intensely rooted in traditional familiarity accepted over generations. (Mishra, Mohapatra, Pattnaik, & Satpathy, 2022). Local workers are struggling to become familiarize with new marketing procedures and advanced business approaches. Furthermore, the absence of skill expansion and training in the weaving sector results in handloom goods not getting fair price or competitive market values. (Dutta, Borah, Kalita, Bhuyan, & Goswami , 2022). And hence, there is a requirement to review the existing challenges and discover ways to strengthen this valuable industry.

2.   Objectives

• To systematically review and analyze the existing research on the Indian Handloom Industry using bibliometric and citation-based methods.

• To identify prominent themes and influential authors and co-authorship analysis.

• To identify key issues, research trends, and possible solutions associated with health, gender, modernization, and sustainability

3.   Methodology

Identification of studies via databases and registers

Identification

Records identified from:
Databases (Dimension) (n= 995)

→ Records removed *before screening* (n =195)
(195 are not matching the Title/year filters, which are from 2007-2025)

Screening

Records screened
(n =800)

→ Records excluded
(n =452) (Not Accessible as these are not Open Access)

Reports sought for retrieval
(n =348)

→ Reports not retrieved
(n =0)

Reports assessed for eligibility
(n = 348)

→ Reports excluded:
Irrelevant to the topic (n =25)
Limited impact (n = 8)
Not research based (n = 5)

Included

Studies included in review
(n = 310)
Reports of included studies
(n = 310)

Source- PRISMA 2020 Flow Diagram

The study followed PRISMA guidelines to filter and analyze relevant literature. Total of 995 records were identified using the keyword "Handloom". After year filteration, 195 papers were removed and left with total 800 papers. After Open Access filteration, 348 papers were left and finally after removing the studies that are not relevant to the topic , keywords or field, total 310 papers were left. So, articles finally selected for the study was 310.Throughout the screening and eligibility procedure, articles were omitted based on evidently defined conditions related to significance and academic impact. To confirm the inclusion of current and useful research, studies which were published between 2007 and 2025 were taken for consideration. Keywords such as "handloom," "weaving," "GI tag," and "sustainability" were used to recognize topic-specific studies. This review mainly focused on study within disciplines like

economics, social sciences, public health, and environmental studies. Research outside these subject zones were excluded as irrelevant. Also, papers with low or no citation counts, mostly those missing peer review or academic impact, were omitted due to limited scholarly effect..

4. Results

The bibliometric diagrams shown under will help to know the research trends in the handloom industry. These charts highlight important authors, keywords, journals, and topics that are very important. A brief explanation of each diagram is also given to make the information easier to read.

Bibliometric Analysis

Citation analysis- Recognizes such publications which had the greatest impact on the particular ground, as showed by citation amounts. (Passas, 2024)

**Figure 1- Citation Analysis**
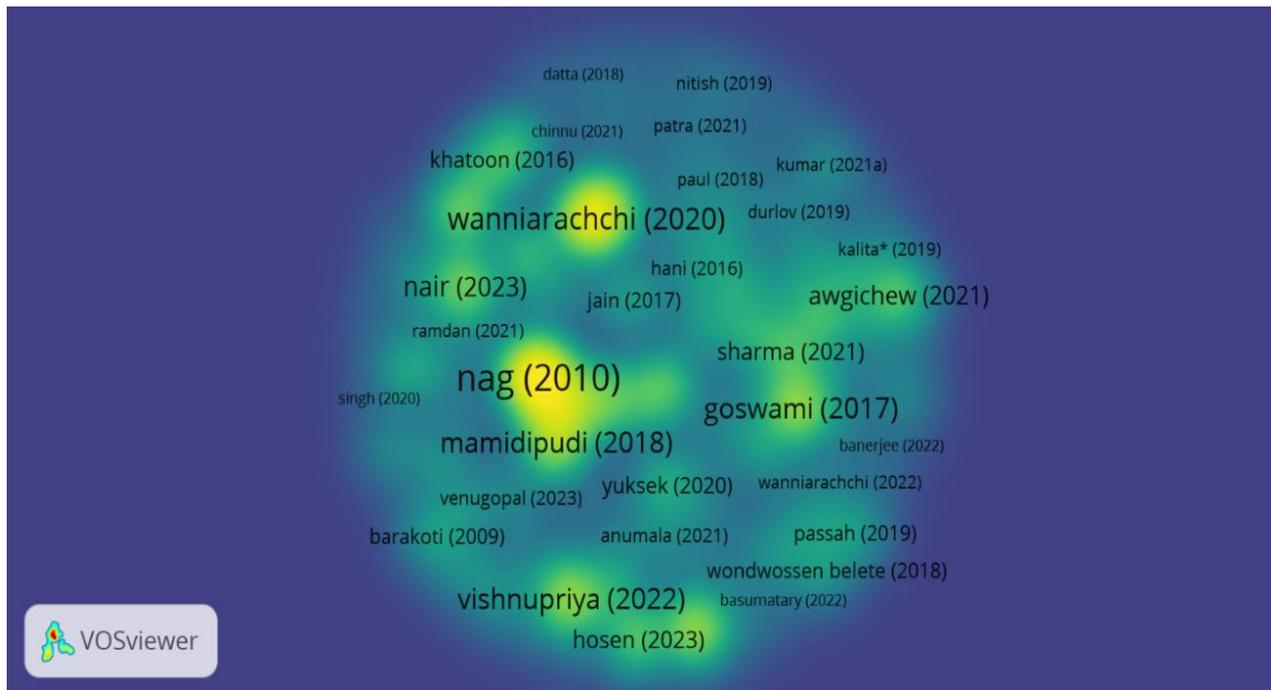
Source- Compiled in Vos Viewer

The citation diagram above reflects the most important authors in handloom-related research based on how repeatedly their work has been cited. Authors like Nag (2010), Wanniarachchi (2020), Mamidipudi (2018), and Goswami (2017) appear prominently, displays they are extensively mentioned by other researchers. The size of each name shows its citation strength—larger names represent more citations. The size of the name (how large it looks on the diagram) shows the number of times that author or paper has been cited.So, a greater font size = higher citation count = more important or impactful in that field. Example: In this diagram, "Nag (2010)" is shown in the largest size, which shows that this paper is the most cited amongst all the listed papers/authors. Minor names such as "Kalita (2019)" are cited less often. This graph helps identify key givers and popular studies in the field. Overall, the graph shows increasing academic awareness in areas like sustainability, innovation, health issues, and policy associated with the handloom sector over the current years.

Co-authorship Analysis- It is a type of analysis that shows the collaboration designs among authors and focus on social links in research.

Figure 2- Co-authorship Analysis
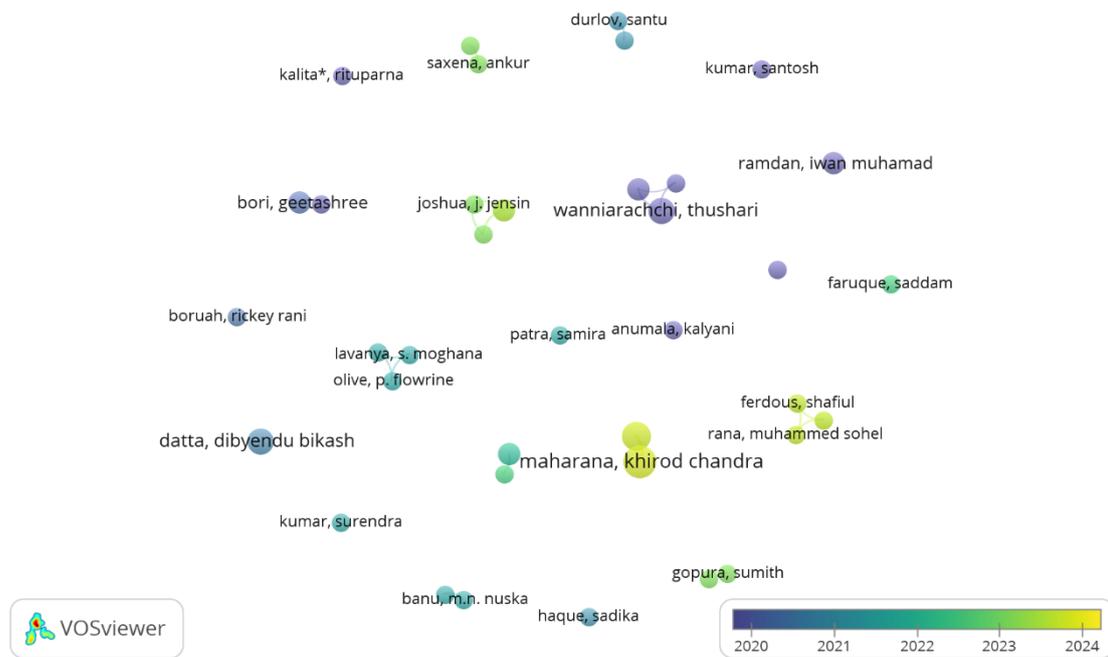
Source- Compiled in Vos Viewer

The co-authorship figure shows collaboration patterns between researchers in the handloom and textile research area. Authors like Maharana, Khiroda Chandra and Wanniarachchi, Thushari appear as dominant figures, showing common collaboration with several researchers. The color gradient shows the timeline of publications, with yellow showing recent works (2023–2024) and blue indicating older ones (2020–2021). Closely clustered names show stronger collaborative links, while isolated dots show limited or no co-authorship links. In Total, the diagram reflects increasing collaboration in present years and finds key contributors enthusiastically publishing in this field.

Co-Citation Analysis- This analysis investigates the frequency with which two papers are mentioned together, representing their connection. (Passas, 2024).

Figure 3- Co- Citation Analysis
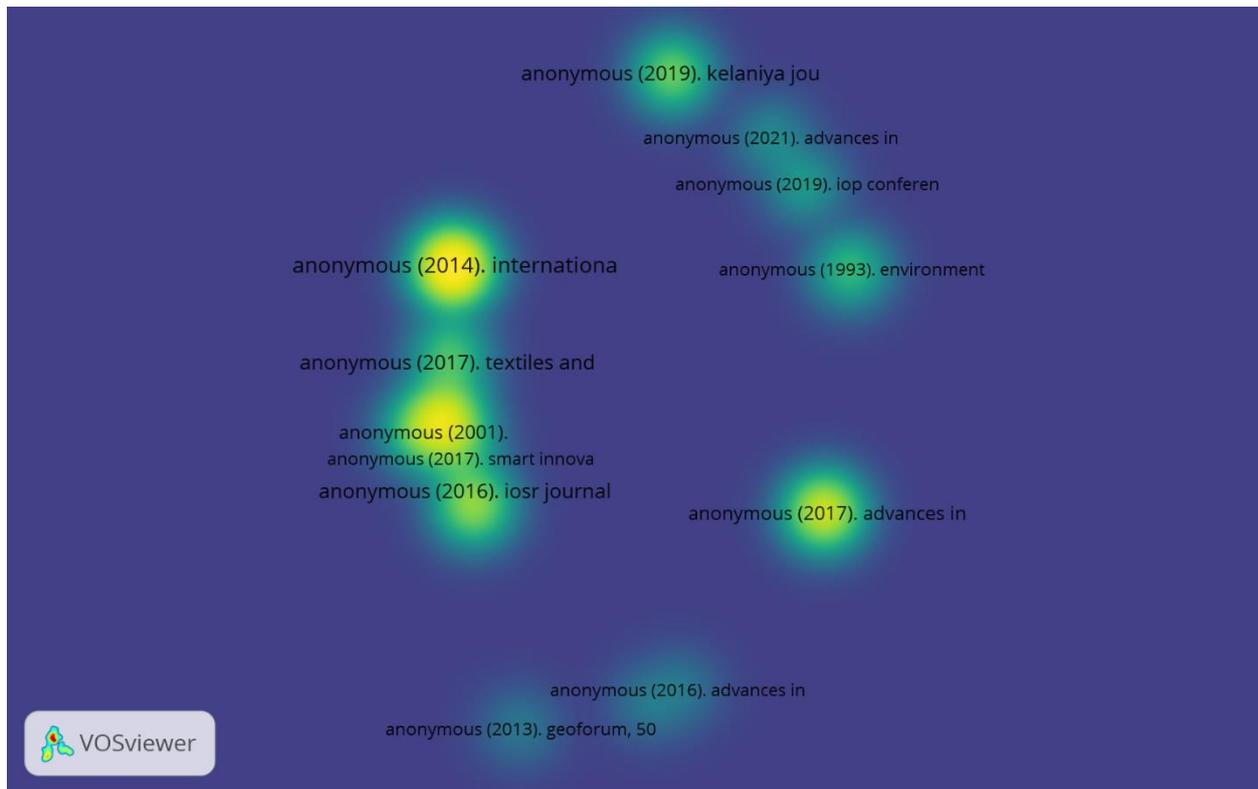
Source- Compiled in Vos Viewer

The co-citation diagram reflects which sources are more repeatedly cited together in handloom-related work. The larger and brighter the tag, the more repeatedly that source was co-cited with another researcher. For example, "anonymous (2014)" and "anonymous (2017)" look as the most often co-cited bases, meaning many authors mentioned to them together. This advises these papers are significant and closely linked to the topic. The scattered location of other entries displays that some sources are less commonly related. Overall, the figure helps to find key references that form the foundation of research in this field.

Bibliographic Coupling Analysis- This analysis observes in what way publications are related by their references to the similar works and signifies interesting likenesses. It also examines present and developing themes in study on the basis of common references (Passas, 2024)

Figure 4- Bibliographic Coupling Analyses
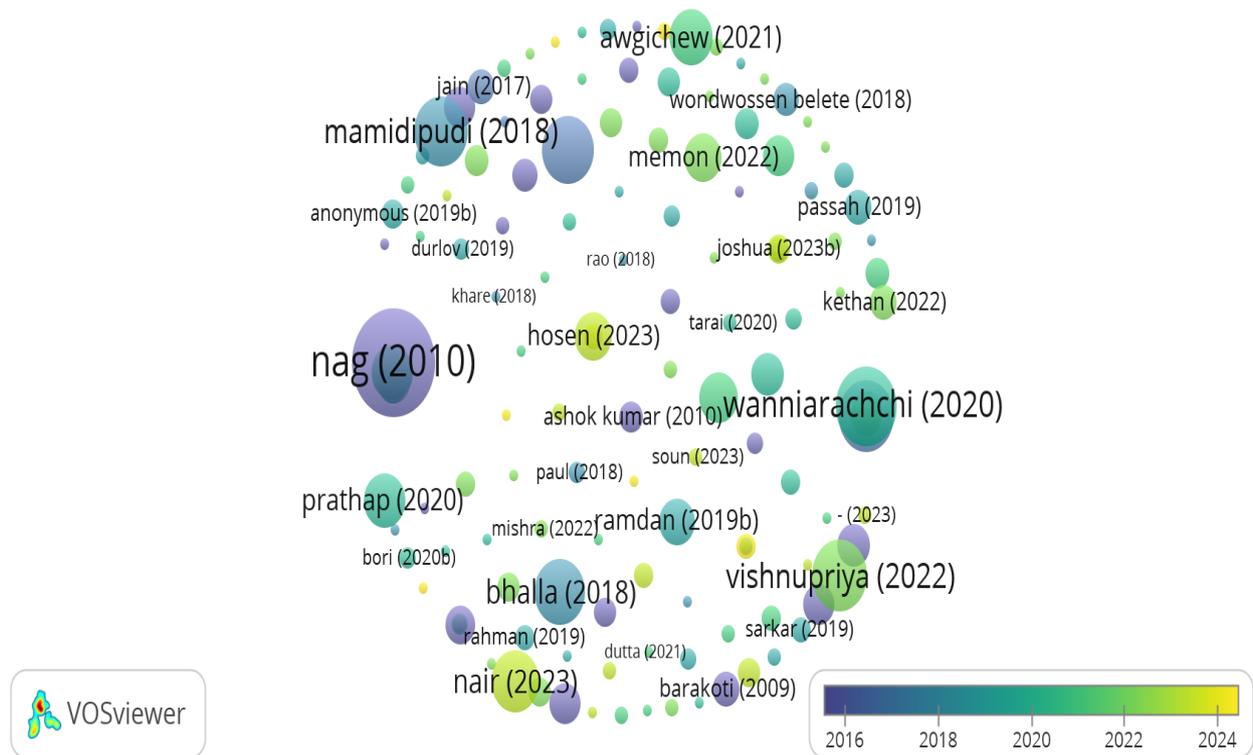
Source- Compiled in Vos Viewer

The bibliographic coupling diagram displays how closely research works are linked based on shared references. Papers like Nag (2010), Wanniarachchi (2020), Mamidipudi (2018), and Vishnupriya (2022) are presented as large and central nodes, showing they have numerous references in mutual with other papers. This shows their strong effect and connection to several studies in the sector. Papers closely composed are more alike in content, while those beyond apart are less linked. The color scale displays publication years, with older research in blue and newer works in yellow. This diagram supports identify important papers and research groups in the field.

In-Depth Review of Important papers

Total 310 research papers were selected from among the available articles after doing all the screening and filtering process. From these 310 articles, the top 10 most cited papers for detailed discussion in this review are chosen. However, the actual count of papers comprised of are 11, because two of the articles had the same number of citations and were equally very important to include.

Review of Papers

SL. No	Title	Objectives of the study	Findings of the study	Limitations of the study	References
1	Gender Differences, Work Stressors and Musculoskeletal Disorders in Weaving Industries	To analyze physical and psychological work stress among the male and female workers of the handloom and power loom industries.	Maximum weavers suffer body pain due to long working hours and inappropriate sitting position. It is also found that the women are affected with back pain while males are more affected with knee and hand pain.	As it is a cross-sectional study, it relies only on the opinions of the people which may not be accurate always.	(NAG, VYAS, & NAG, 2010)
2	Improving sustainability and encouraging innovation in traditional craft sectors: the case of Sri Lankan handloom industry	To develop ways to make the handloom industry more sustainable and innovative and help workers make more creative design and marketing skills.	The handloom sector makes eco-friendly and socially valuable products, but the growth is very limited due to old design, weak marketing facilities and inaccessible modern technologies.	The study could not find out the reason why the young generation are not taking this as their profession.	(Wanniarachchi, Dissanayake, & Downs, 2020)
3	Comprehensive Analysis of Power and Handloom Market Failures and Potential Regrowth Options	To analyze the problems faced by the handloom industry.	Maximum weavers face finance related problems, weak marketing strategies, and some health issues such as back pain and eye problems which create a problem in their earnings.	The study only focused on 75 weavers, whereas inclusion of some more weavers will provide more generalized view.	(Vishnupriya, Chandrasekar, Ganesan, Mithilaa , & Jeyashree , 2022)
4	Determinants of financial risk attitude among the handloom micro-entrepreneurs in North East India	To understand the factors that influence the women weavers to take financial risk in North East India.	Women are more cautious in spending money than men, but this can be improved by giving proper education and more income facilities.	The study only covered the three north eastern state and didn't explore any social factors.	(Goswami, Hazarika, & Handique, 2017)
5	Innovation in Indian Handloom Weaving	To understand how the weavers of the handloom industry improve their work by using both old and news ways.	Weavers use mixed approach where they combine traditional methods with	The study is based on only one region, so it is not the complete representation of the	(Mamidipudi & Bijker, 2018)

			digital tools such as phones and computers to reach the customers directly.	whole handloom industry.	
6	Sustainable and ethical manufacturing: a case study from handloom industry	To analyze how handloom businesses can be done both eco-friendly and fair trade	The study found that fair trade and eco-friendly waste can help handloom industry grow more and do not harm the environment.	The study only covered one company, so it cannot be the proper representative of the whole handloom industry.	(Dissanayake, Perera, & Wanniarachchi, 2017)
7	An Integrated Rural Development Model based on Comprehensive Life Cycle Assessment (LCA) of Khadi-Handloom Industry in Rural India.	To understand how Khadi production cares sustainability and rural progress using life-cycle valuation.	Khadi uses less energy, creates less pollution, and create better job opportunities for rural people.	This study covers only two Khadi centers, so the results may not apply to all areas.	(Bhalla, Kumar, & Rangaswamy, 2018)
8	An Assessment of Green Marketing Tools and Strategies for Increasing the Consumption Pattern of Khadi Textile Products Among Millennials in Kerala	To understand how eco-friendly marketing affects young people buying Khadi in Kerala.	Things such as green advertisements, tags, and packing made people more attracted in buying Khadi.	The study only focused on three districts, so it may not reflect the full scenario.	(Nair & Aithal, 2023)
9	Experimental Study and Effect on Recycled Fibers Blended with Rotor/OE Yarns for the Production of Handloom Fabrics and Their properties	To analyze how using old recycled clothes with cotton affects yarn and handloom fabric.	Mixing maximum 75% of recycled fibers did not affect the fabric's strength or appearance. The materials were still good sufficient for use in homebased items like curtains and cushion covers.	The study only focused on a few textile styles and situations. So, the outcomes might not spread over to all types of fabric or handloom goods.	(Awgichew, et al., 2021)
10	Determinants of purchase intention of traditional handloom apparels with geographical indication among Indian consumers	To know what aspects influence people to purchase GI-certified handloom garments.	It was found that GI tags help decrease confusion about product excellence, build faith, and make	The study only considered handloom dresses, not other GI-certified goods. So, the findings are not applicable to	(Prathap & C, 2022)

			people more likely to purchase.	food, crafts, or other GI tag products.	
11	Prevalence and predictors of musculoskeletal disorders (MSDs) among weavers of Varanasi, India: A cross-sectional study	To understand how common body pain is amongst handloom and powerloom workers and the reason behind it.	Handloom workers had more pain in the back portion, shoulders, and wrists due to more working hours and poor sitting position.	The study was done on self-reported data from senior workers in one place, so outcomes may not be applicable to everyone.	(Siddiqui, Banerjee, Chokhandre, & Unisa, 2021)

Influence of Reviewed Studies and Emerging Patterns

The reviewed studies have contributed to the handloom industry in various ways some studies by giving importance to critical problems like health related problems or market entree, and others by suggesting probable explanations like branding, GI labeling, or sustainability creativities. All these studies provided a rich base of knowledge even though some parts remain unexplored.

Influence on the Handloom Sector

• **Policy Consciousness:** Papers by Goswami et al. (2017) and Vishnupriya (2022) assisted in identifying gender disparities and the absence of access to financial amenities among female handloom workers. The findings from these papers have supported thoughts on the necessity for gender-inclusive strategies and microcredit structures.

• **Health and Ergonomics:** Papers by Nag (2010) and Siddiqui et al. (2021) brought nationwide attention to handloom workers physical well-being, specially MSDs (musculoskeletal disorders), leading to demands for improved working circumstances and loom restructures.

• **Market & Branding Provision:** Papers of Prathap (2022) and Guha (2023) discovered the role of GI label and marketing in improving product credit. These papers supported the development of branding creativities like the "India Handloom Brand."

• **Sustainability Ambition:** Research Papers from Wanniarachchi (2020) and Bhalla (2018) presented sustainable lacing methods and eco-labeling as paths to encourage eco-conscious manufacture and consumer faith.

These research papers have progressively influenced sectoral involvements by NGOs, government involvements, and private design establishments. Though their influence into policy modification and actual grassroots employment is still evolving.

Emerging Patterns

• **Geography:** Most research focuses on Indian states like Assam, Tamil Nadu, and Varanasi. Few studies on pan-India exist.

• **Gender:** Many research highpoint females' inadequate access to finance and policymaking, but no such research was conducted on problems like mental wellbeing and free labor.

• **Innovation:** Most of the research were given importance on GI labels and eco-fibers but there are inadequate research on digital tools, e-commerce, and ergonomic advancements.

• **Methodology:** Most research are small-scale or qualitative studies. But a few studies are conducted on Long-term impact assessments.

Key Contribution

This review highpoints four important themes in handloom study: health issues faced by workers, sustainability and eco-friendly procedures, market entree and branding trials, and gender-based financial problems. By investigating the most cited papers, it displays that Indian research concentrate more on physical well-being and GI tickets, while worldwide studies give consideration to recycling, climate variation, and digital tools. This study also points out less explored topics like mental wellbeing, contamination from dyeing, and the actual impact of government systems. In total it lays the basis for more comprehensive, practical, and universally connected study in the handloom industry.

Policy Recommendations

• **Improve Working Situations-** Administration and NGOs should participate in ergonomic looms, improved lighting, and rest-break strategies to decrease health issuess like back pain.

• **Support Digital Education-** Introduction of local training agendas for handloom workers on the usage of Instagram, Amazon, or WhatsApp for marketing their goods online.

• **Inspire Eco-Friendly Weaving-** Encourage use of secondhand yarn, harmless dyes, and GI labels to make handloom goods more atmosphere- and market-friendly.

• **Monetary Access for Female Weavers-** Plan special micro-credit or insurance structures for females who every so often lack direct access to monetary or policymaking power.

• **Screen Government Schemes-** Track and assess how schemes like the India Handloom Brand or MUDRA loans are really serving handloom workers on the ground.

Under-Researched Areas and Research Gaps

• **Weather Change Effects on Handloom Workers-** Indian studies hardly ask how burning summers, floods, or everchanging seasons affect handloom workers who work in open huts or poorly ventilated rooms. Other nations (e.g., Sri Lanka) already display that heat cuts efficiency, so India needs alike research.

• **Digital Marketing & E-Commerce Assistances-** Handloom workers struggle to trade online, but few research examine whether training on Instagram, Amazon, or Flipkart really boosts their incomes. Hands-on aviators and platform assessments are still missing.

• **Pollution from Dyeing and Left-over-** Only a few Indian research were conducted on the chemicals and fabric dirt released by handloom industries. Bangladesh is already discovering large-scale textile reprocessing whereas, there is no deep handloom-specific pollution studies in India.

• **Mental Well-being of Weavers-** There are studies on physical pains of the handloom workers, whereas no such studies are conducted on issues like stress, debt anxiety, and social isolation specially among females who are managing home and work together.

• **Actual Impact of Government Schemes and GI Labels-** Many goods now got GI tags, and there are multiple schemes available for handloom workers like India Handloom Brand or Weaver MUDRA loans, but there are no such research conducted on whether these schemes truly increase weavers' income, safety, or market prominence.

• **Cross-Region and Cross-Nation Evaluations-** Most Indian research focuses in on one cluster. More studies are require that compare states or even do comparison of India with other nations to see which guidelines and innovations work finest.

Findings

The reviewed articles expose numerous serious problems existing in India's handloom industry. Musculoskeletal illnesses are prevalent among workers due to poor position and lengthy working periods. Women workers face higher monetary risk which make them partial decision-making authority. Absence of digital marketing assistance, obsolete designs, and low origination reduce attractiveness. Moreover, positive movements consist of increasing knowledge of Geographical Indication (GI) tags, use of recycled yarns, and environmentally friendly manufacturing procedures. Green advertising and equitable trade policies show possible to recover consumer attention. The studies also emphasize the importance of skill advancement, sustainable procedures, and improved market relations to support workers' incomes and sectoral development.

Discussions

In this paper, citation analysis is used to recognize the most important topics in handloom research. From the most cited papers, four main themes were identified:

1. Health Issues of Weavers-Some studies (like Nag, 2010 and Siddiqui et al., 2021) discussed about major health problems faced by weavers of handloom industry in India. Common problems include back ache, neck pain, and eye strain because of long hours of sitting and tedious work. This is also seen in other nations.

This reflects that handloom weavers all over the place face similar health problems. So, we need improved work setups like comfortable seats, suitable lighting, and systematic breaks.

2. Sustainability and Eco-Friendly Practices-Many studies (Wanniarachchi, 2020; Bhalla, 2018) gave attention on how to make handloom production further eco-friendly. In India, people are trying to use used yarn, decrease waste, and get GI (Geographical Indication) tags to encourage traditional goods like the Varanasi Brocade.

So, both India and other nations are moving toward sustainable invention, but India still has breaches in spreading these practices broadly.

3. Marketing and Branding Challenges-Many Studies (Prathap, 2022; Guha, 2023) discussed that while GI labels help in generating trust, most handloom workers still find difficult in using digital marketing and reaching consumers directly. This is not happen just in India. In Sri Lanka, handloom workers also need improved design and branding aids. However,Bangladesh is doing better because of its robust focus on exports and partnerships with large retailers.This means that enlightening digital services and market access is significant for Indian weavers too.

4. Gender, Finance and Social Issues-Papers like that of Goswami (2017) found that many female handloom workers in India have inadequate access to credit and limited decision-making control. This bounds their income and independence.Such gender-related problems are also found in many other nations, where females are involved in weaving activities but don't permanently get equal advantages or recognition**.**

Conclusion

The handloom industry in India is rich in values and tradition but goes through many difficulties today. The 11 papers reviewed highlight key problems like health issues among workers, especially musculoskeletal illnesses due to poor employed conditions. Financial burden, lack of modern aids, and limited market scope make the condition worse—specially for women workers, who also have a habit of avoiding financial risks. However, the study also provides some solutions. Innovative practices, digital methods, recycled resources, green marketing, and the use of GI labels have given away positive results in refreshing interest in handloom goods. Some regions and workers are now combining traditional skills with new tools to make sustainable representation. Care through training, credit support, and fair employment can further support the sector. This review displays that with the proper use of policy, innovation, and community care, the handloom sector has the possible to grow while preserving its tradition**.**

Future Research Areas

•   Studies can be conducted on how weather change such as heat, floods etc. are affecting handloom workers well-being and productivity, particularly in rural India.

•   Studies can be done to discover the mental well-being challenges of handloom workers particularly females who struggle to balance family and work pressure.

•   Studies can be conducted to examine whether digital advertising training truly improve income and sales for handloom weavers in various regions.

•   Comparison of weaving practices and strategies across various states in India and other nations like Sri Lanka or Bangladesh.

•   Studies can be conducted on how sustainable performs and eco-labels can advance both revenue and environmental effect.

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