Mapping the Research Landscape of Indian Handloom: A Bibliometric Analysis

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Abstract: This study aims to conduct a bibliometric analysis of research publications related to the Indian handloom Industry. Indian handloom is an essential part of the country's cultural heritage, and the handloom sector has been a significant contributor to the Indian economy (Meher & Bhattacharya, 2016). In recent years, there has been an increase in research interest on this topic. The study uses data from the Scopus Database and analyzes research output, citations, and co-citation patterns to provide insights into the research landscape of Indian handloom. The R software programme Biblioshiny was used for the data analysis. The study also identifies the top authors, institutions, and countries contributing to research on Indian handloom. The findings of this study will be useful for researchers, policymakers, and practitioners interested in Indian handloom research.

Keywords: Bibliometric Analysis, Indian Handloom, Citations, Authors, Institutions, Countries.

JEL Codes: D23, L2, M1

1. INTRODUCTION

An industry with a long history reaching back to ancient times, the Indian Handloom Industry is one of the largest and oldest in the country. The cultural and economic identity of India is strongly influenced by the handloom textile industry, which is noted for its fine craftsmanship, elaborate designs, and brilliant colours. Handloom fabrics are created using age-old methods totally by hand, without the aid of any machinery or automated procedures (Islam et al., 2021). But nowadays this industry is facing lots of challenges and obstacles, especially regarding product imitation and high prices (Mishra & Das, 2020). Despite these difficulties, the business has thrived as a result of the numerous artists and weavers who are committed to maintaining traditional methods and producing handloom fabrics that are highly valued by consumers all over the world (Ghosh & Jena, 2018). Bibliometric analysis was introduced by (Pritchard, 1969) and it significantly facilitates understanding of a research area. Bibliometric analysis can offer insightful information into the research landscape of the Indian handloom sector and assist in supporting evidence-based policy and practice in light of the increased

interest in traditional crafts and environmentally friendly fashion. According to Broadus (1987), bibliometric research is a field that studies bibliographic material in a quantitative manner aiming to provide an overview of a research field. The current state of the sector, research trends, patterns, and prospective areas for future growth and development can all be learned from a bibliometric analysis. Researchers can find important issues, areas for additional research, and chances for innovation by examining the body of literature already available on the Indian Handloom Industry. With the help of bibliometric analysis, one may pinpoint important researchers, research clusters, emerging trends, and knowledge gaps by examining the citation patterns and co-authorship networks of published articles. Researchers, industry professionals, and politicians may find this information helpful in determining research priorities and formulating successful plans for the development of the handloom industry. Moreover, bibliometric analysis can aid in pinpointing the most significant organisations, journals, and writers in the industry, which helps direct the distribution of research findings and support stakeholder alliances and collaborations.

2. RESEARCH METHODOLOGY

Recently, bibliometric analyses have now become more popular for evaluating past research on a given subject and determining future research goals. Through the examination of publications, bibliometric analysis is currently utilized to assess the qualitative and quantitative interest in a very specific topic. In contrast to conventional methods of literature review, SLR allows a large number of pertinent papers to be assessed in terms of productivity and graphical mapping to help better grasp their relevance. In this present study, the Scopus database was used to gather the data. The time frame for the study is from 2002 to 2021. A total of 180 research papers were extracted from 103 sources and analyzed by using Vosviewer and Biblioshiny software. Many bibliometric factors have been assessed, including the number of publications by year, number of citations, and productivity of writers. Performance analysis and science mapping were both done for the current investigation. The study of themes and common keywords has also been done to create a roadmap for future research.
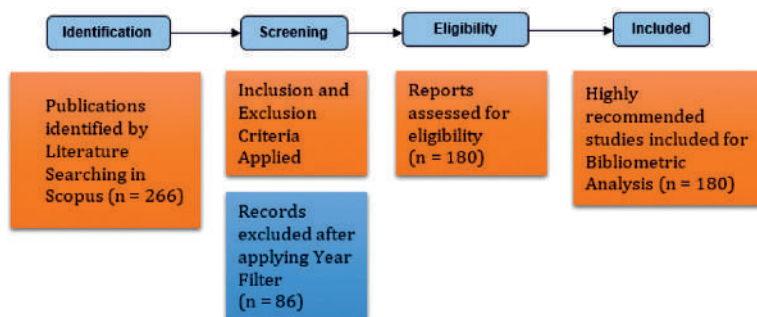
**Figure 1: Four way Flow Diagram for Data Extraction**

Source: Authors' Compilation

3. RESULTS AND DISCUSSIONS

Table 1: Annual Scientific Production

Year	No of Publications	Cumulative Score	Year	No of Publications	Cumulative Score
2002	3	3	2012	9	68
2003	6	9	2013	8	76
2004	9	18	2014	7	83
2005	9	27	2015	10	93
2006	3	30	2016	13	106
2007	3	33	2017	4	110
2008	10	43	2018	14	124
2009	3	46	2019	18	142
2010	9	55	2020	18	160
2011	4	59	2021	20	180

Source: Authors' Calculation
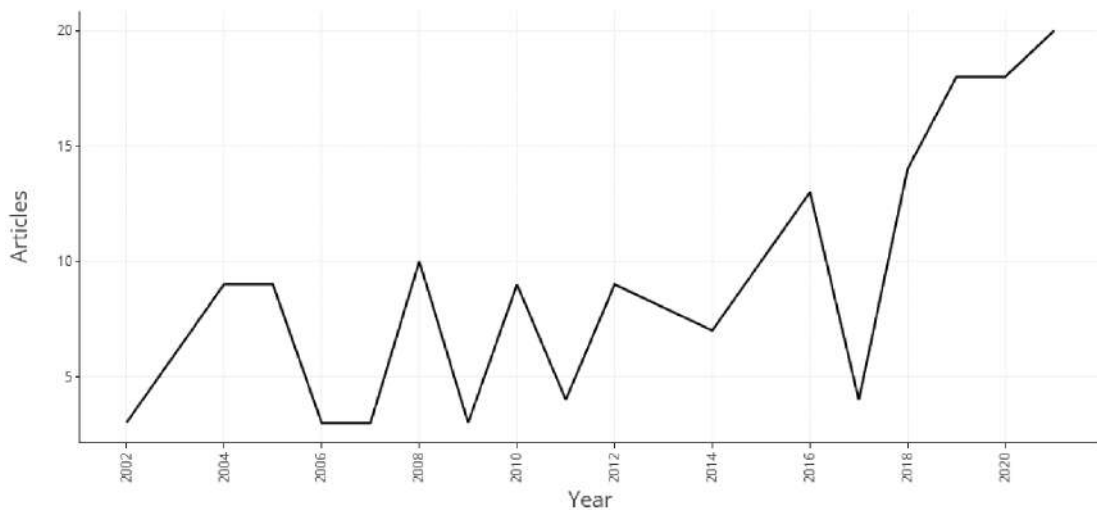
**Figure 2: Annual Scientific Production**

Source: Authors' Compilation

According to Table 1 and Figure 2, the researchers published 180 research publications in total between the years of 2002 and 2021. A maximum of 20 research papers could be published in 2021. A total of 18 research articles were released in the years 2019 and 2020, compared to 14 in the year 2018 (research papers). The trend line unmistakably demonstrates that there has been a huge increase in the number of research articles related to the Indian handloom industry that have been published.

Table 2: Most Relevant Journals

Sources	Articles
Textile Magazine	12
Indian Journal of Traditional Knowledge	7
Journal of Rural Development	7
Textile Trends	7
Smart Innovation, Systems and Technologies	6
Asian Textile Journal	5
Indian Silk	5
Economic and Political Weekly	4
International Journal of Innovative Technology	4
Journal of Intellectual Property Rights	4

Source: Authors' Calculation
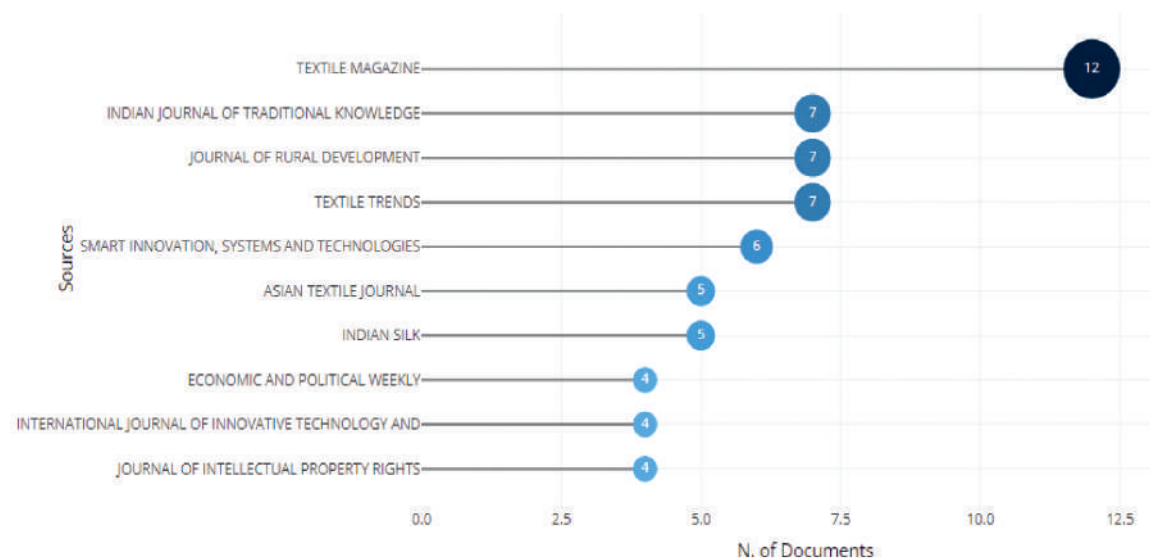

Figure 3: Most Relevant Journals
Source: Authors' Compilation

In terms of the most pertinent journal, Textile Magazine was ranked first with 12 published articles. Following that, there are 7 published articles in each of the following journals: Indian Journal of Traditional Knowledge, Journal of Rural Development, and Textile Trends. There have been five articles published about Indian Silk and Asian Textile Journal.

Table 3: Most Productive Authors

Authors	Articles	Articles Fractionalized
Goswami K	7	3.00
Hazarika B	5	2.00
Benerjee A	3	1.75
Bortamuli AB	3	1.33
Haynes DE	3	3.00
Naik SD	3	1.50
Ramswamy R	3	2.00
Wielenga KD	3	3.00
Angelo MB	2	2.00
Balasubhrahmanyam N	2	1.00

Source: Authors' Calculation
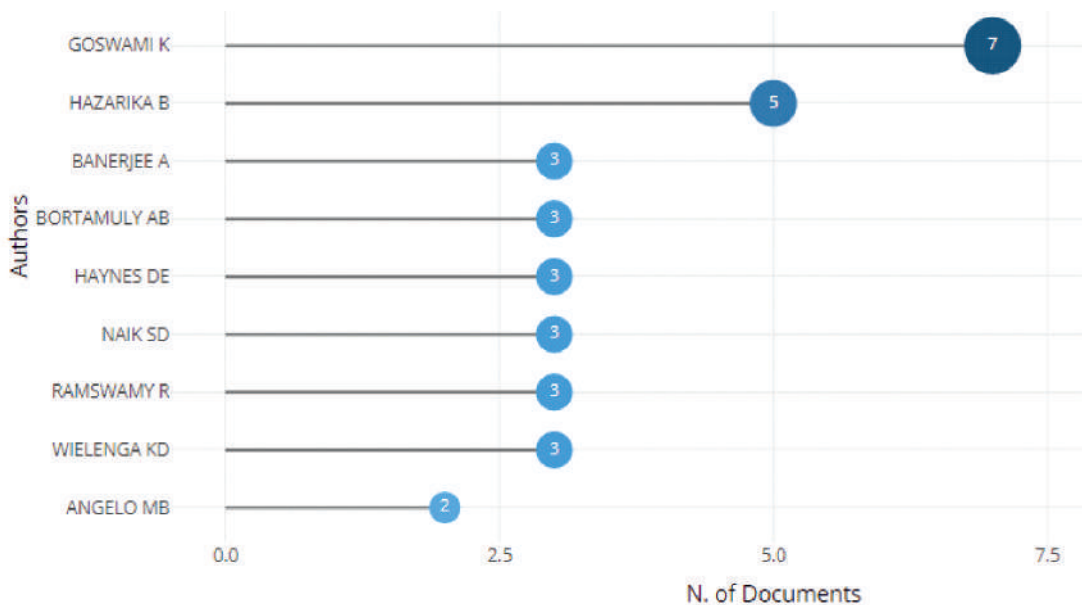
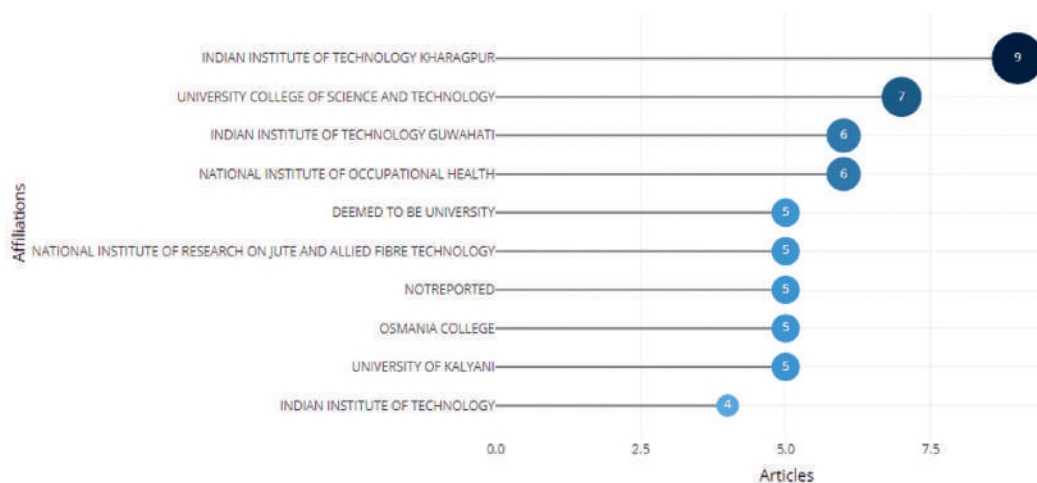**Figure 4: Most Productive Authors**
Source: Authors' Compilation

Table 3 shows the top ten productive authors based on their contributions indexed in Scopus Database. Goswami K has published a total of 7 publications followed by Hazarika B having 5 publications. Whereas Beneri A, Bortamuly AB, Haynes DE, Naik SD, Ramswamy R and Wielenga KD, all have 3 research articles during this period. The same has also been presented in Figure 3.

Table 4: Most Productive Institutions

Affiliation	Articles
Indian Institute of Technology Kharagpur	9
University College of Science and Technology	7
Indian Institute of Technology Guwahati	6
National Institute of Occupational Health	6
National Institute of Research on Jute and Allied Fiber Technology	5

Source: Authors' Calculation


Figure 5: Most Productive Institutions
Source: Authors' Compilation

Among the top ten affiliations Indian Institute of Technology, Kharagpur tops the list with 9 documents. In the second position University of Science and Technology with 7 documents, whereas the Indian Institute of Technology, Guwahati and the Indian Institute of Occupational Health both published 6 number of articles each.

Table 5: Most Cited Country

Country	Total Citations	Average Article Citations
India	448	6.03
Netherlands	251	125.50
United Kingdom	47	9.40
USA	28	6.75
Thailand	21	21.00
Italy	1	1.00
Japan	1	1.00
China	0	0.00

Source: Authors' Calculation
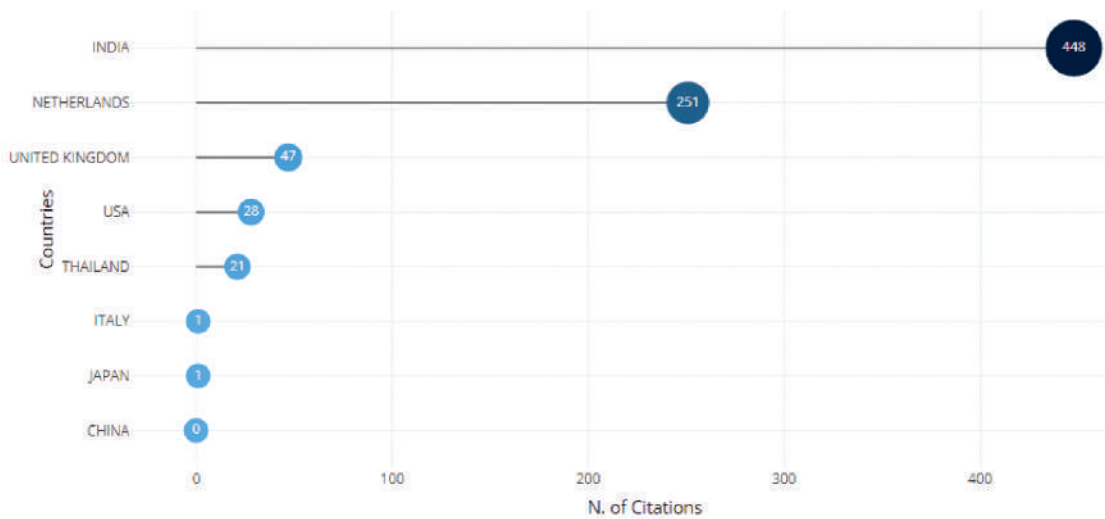
**Figure 6: Most Cited Country**

Source: Authors' Compilation

The current study also looks at the citation patterns of other nations, with India receiving the most citations (448) overall. Table 5 and Figure 6 shows the results for the top citing nations. The United Kingdom was in third place with 47 citations, while the Netherlands came in second with 251 total citations. The USA and Thailand, on the other hand, have a total of 28 and 21, respectively.

Table 6: Country Collaboration World Map

From	To	Frequency
India	China	1
India	France	1
India	Netherlands	1
India	Thailand	1
India	United Kingdom	1
India	USA	1
USA	Italy	1

Source: Authors' Calculation

The world's collaboration path is depicted on the map of country collaboration. The existence of study networks between nations. Figure 7 depicts the flow of international cooperation and demonstrates the close coordination between China, France, Netherlands, Thailand, UK, US & Italy.
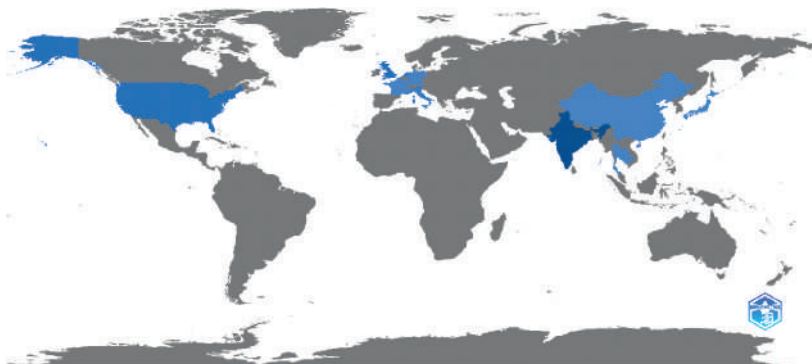
Figure 7: Country Collaboration Map

Source: Authors' Compilation

Table 8: Trend Topics

Item	Frequency	Year_Q1	Year_Q2	Year_Q3
Economic Information	5	2003	2003	2004
Weaving Industry	5	2004	2004	2004
Asia	6	2004	2005	2008
Eurasia	6	2004	2005	2008
Exports	6	2004	2007	2010
Handloom	18	2005	2008	2010
Weaving	12	2005	2008	2018
Competitiveness	6	2004	2009	2014
Textile Industry	30	2007	2010	2015
Employment	16	2004	2010	2015

Source: Authors' Calculation
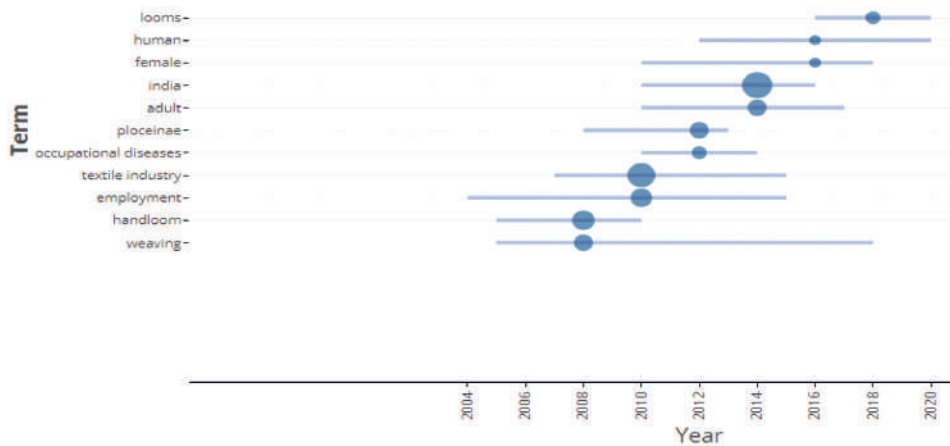
Figure 8: Trend Topics

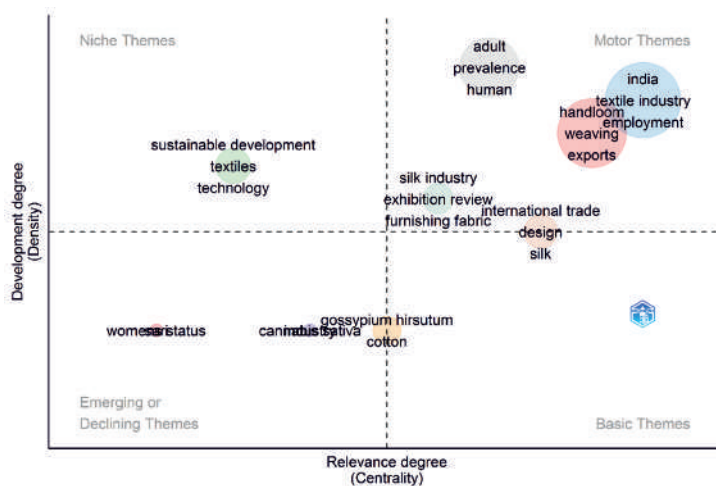*Source:* Authors' Compilation

During the period 2002 to 2021 the trend topics coined are weaving, textile industry, competitiveness, employment, occupational diseases, and exports. These are few keywords on which the researchers have studied. The textile Industry has the highest frequency of 30, whereas handloom has a frequency of 18. The topic of Employment has also been in trend having a frequency of 16.



Figure 9: Word Cloud

Source: Authors' Compilation

The word cloud is a visual representation of the most frequently occurring word or phases in the asset of bibliographic records or documents. The most common or ds or phases extracted are as follows The Word cloud shows the word cloud of keywords and it demonstrates that the word Textile Industry, Handloom and India is the most used in the literature. The other words used in the previous studies are employment, occupational diseases, economic information etc.

Figure 10: Thematic Map
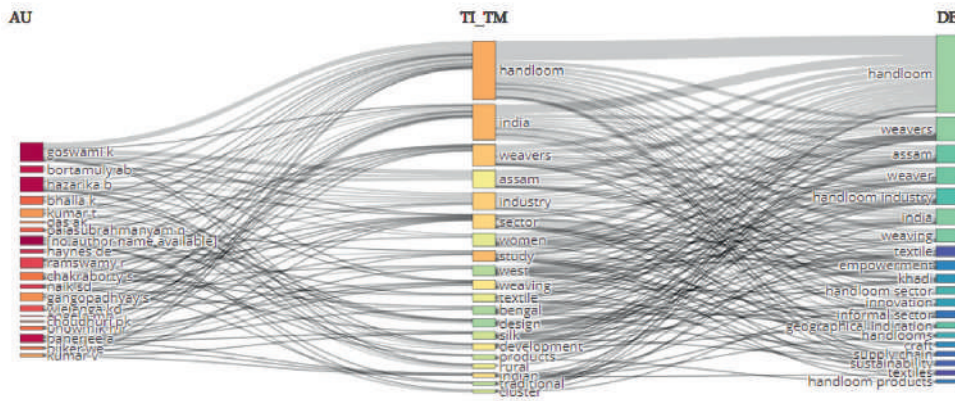
Source: Authors' Compilation

Thematic Map displays the spatial distribution of research activity in a particular field of topic. It identifies the areas of research that are clustered for specific reasons. Motor themes consist of well-known topics of research such as employment, international trade, export, handloom weaving etc. The niche themes or peripheral themes have three topics in total i.e. sustainable development, textile and technology. These topics have weak external linkages. Basic themes which represent the lower left quadrant represent cotton, silk, design etc.
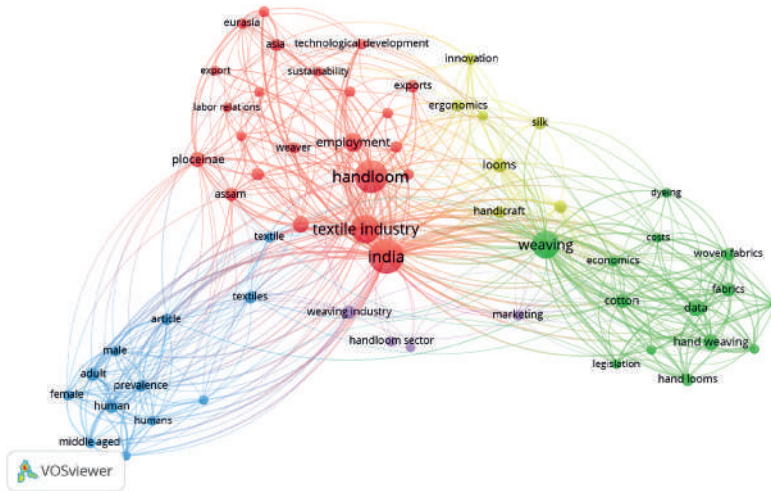
Figure 11: Keyword Co-occurrence Network
Source: Authors' Compilation

Different keywords were used in the title and abstract terms were used in the phrase co-occurrence analysis for the keyword co-occurrence analysis. It was found that the words


Figure 12: Three fields Plot
Source: Authors' Compilation

"handloom," "textile industry," "India," and "employment," were most commonly utilized in the largest cluster, which is red-highlighted. The second cluster, which is denoted by the colour blue, is particularly concerned with textiles, prevalence, the weaving industry, the handloom sector etc. Whereas weaving, handloom, cotton, dyeing, marketing etc. are all addressed in the third cluster, which is underlined in green.

Figure 12 depicts the three fields plot. It is a graphic with three elements: Author, Title and Keywords. A grey line that connects the three parts is related to each of them and connects them. How many papers are connected to each of these elements is shown by the size of the rectangle.
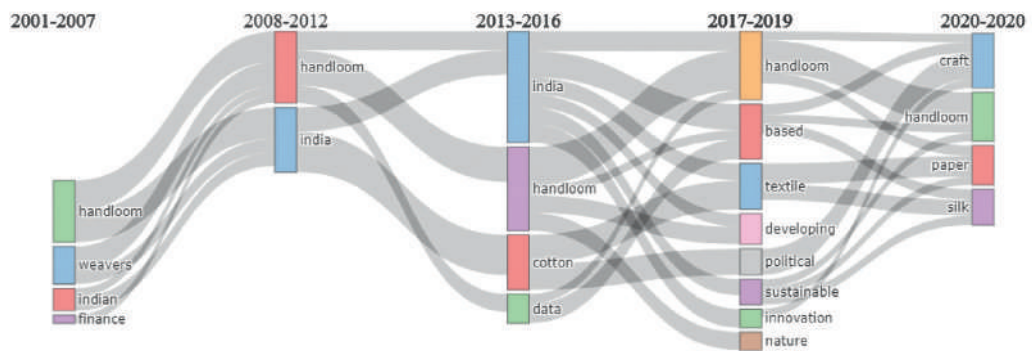
Figure 13: Thematic Evolution
Source: Authors' Compilation

Thematic evolution is done to track the emergence and evolution of research topics over time and to explore the relationship between research activities and other factors. This systematic mapping of research themes and research areas aids in the identification of research interests and their evolution over time, as well as providing insights into future research directions. The first cut-off we have taken is the year 2007. In this period the key areas of research were handloom weavers in India and finance. The second time slice is from 2008 to 2012. From the figure above it is evident that most of the research has been done on the innovation and sustainability of the Handloom Sector. These two keywords are mostly registered in any database, as maximum research works have been conducted on these topics. So far as the handloom sector is concerned, the term innovation is always been an important keyword (Ramana, *et al.* 2019).

4. CONCLUSION AND SCOPE FOR FUTURE RESEARCH

In conclusion, the bibliometric analysis of the research landscape of Indian handloom provides valuable insights into the current state of research on this important cultural and economic

sector. The analysis reveals that there is a significant amount of research being conducted on Indian handloom, with a particular focus on the socio-economic aspects of the sector, such as livelihoods, sustainability, and market trends. However, there are still gaps in research, particularly in areas such as design innovation, product development, and technology adoption. The findings of this analysis can be useful for policymakers, researchers, and practitioners working in the handloom sector, as they provide a better understanding of the existing knowledge base and identify opportunities for further research and collaboration.

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