Unraveling the MSME research potential in India: A bibliometric analysis

A. Hanna* | A. Dunstan Rajkumar

Abstract MSME (micro, small, and medium enterprise) is a day-to-day emerging and evolving concept across various fields. Although professionals and academics are becoming increasingly interested in MSME research, limited literature has offered a thorough analysis of current trends and potential future implications for MSME research in India. Rather than providing a comprehensive understanding of the field, previous reviews on MSME have frequently confined themselves to conceptual (construct) or contextual (finance, marketing) insights obtained through the use of conventional review methods (descriptive). This review performs a bibliometric analysis of 346 articles published in Scopus-indexed journals between 2010 and 2023 using VOSviewer version 1.6.18. Thus, scholars can use this review as a one-stop, up-to-date summary of MSME to guide and shape future MSME research. It also highlights the main patterns in the performance of the article, author, organization, and journal, as well as the patterns and potential repercussions for MSME research in India in the future.

Keywords: micro, small and medium enterprises, thematic trends, review

1. Introduction

Micro, small, and medium-sized enterprises (MSMEs) are critical for driving economic growth, creating job opportunities, and fostering innovation in India’s diverse economy (Dubey and Sahu, 2020). Notably, these enterprises are characterized by their ability to operate flexibly, form the backbone of India’s industrial ecosystem, and demonstrate impressive resilience in the face of ever-changing market conditions (Kochukalam et al., 2016). To position itself as a global economic powerhouse, the nation must prioritize a comprehensive understanding of the MSME sector (Gupta and Barua, 2016; Raghuvanshi and Garg, 2018). This research aims to explore the intricacies of MSMEs in India by examining their unique challenges, promising opportunities, and profound impacts on the country’s socioeconomic landscape. The MSME sector in India is composed of diverse industries and faces a wide range of challenges (Bisht and Singh, 2020; Srinivasan et al., 2015). These challenges include difficulties accessing finance, adopting technology, complying with regulations, and penetrating the market. It is crucial to understand these challenges and identify practical solutions to unlock the sector’s potential and promote sustainable growth. Despite facing numerous challenges, MSMEs in India have shown incredible innovation, adaptability, and entrepreneurship capabilities, as stated by Chandreshkumar (2018). MSMEs are becoming increasingly crucial for the evolution of local and global markets. By drawing investments, they have a long-lasting effect on the trading, production, and service sectors (Sipa et al., 2015). Audretsch et al. (2006) explained how, in practically every nation in the world, policymakers currently place an enormous emphasis on developing environments that are conducive to entrepreneurship and MSME development. In comparison to large industries, MSMEs have higher labor-to-capital ratios and overall growth, as per the 2010 Task Force report on MSME. According to Walczuch et al. (2000) and O’Regan et al. (2005), the key characteristics of SMEs are as follows:

- An increased focus on customer satisfaction, employee empowerment, and managerial leadership.
- Tendency to be more productive in research and development.
- Rapid information exchange between the business and its clients.
- Cross-functional training, a focus on people, less interaction, and information sharing.
- Streamlined organizational structures, less complexity, improved communication, informal relationships, and increased adaptability.

Realizing the importance of MSME, this study aims to identify key players and influential works in the MSME scholarly landscape, providing valuable insights for scholars, policymakers, and industry stakeholders. It seeks to go beyond traditional assessments and provide a comprehensive understanding of the academic dimensions surrounding MSMEs in India, contributing to the growth, innovation, and sustainability of the sector.

1.1. Definition of MSMEs in India
The MSME’s definition varies for every economy, but in India, since 2006, the definition of MSME was based on manufacturing enterprises and service enterprises. After the impact of COVID-19 and for the ease of doing business, the government of India revised the definition upwardly, and it was announced in the Atmanirbhar Bharath Scheme, 2020. The revised definitions are given in Table 1. According to this announcement, the definition was based on investment and turnover.

<table>
<thead>
<tr>
<th>Classification</th>
<th>Micro</th>
<th>Small</th>
<th>Medium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing and services</td>
<td>Investment &lt; Rs. 1cr. and Turnover &lt; Rs. 5 cr.</td>
<td>Investment &lt; Rs. 10 cr. and over &lt; Rs. 50 cr.</td>
<td>Investment &lt; Rs. 20 cr. and Turnover &lt; Rs. 100 cr.</td>
</tr>
</tbody>
</table>

Source: Compiled authors using data available at msme.gov.in

2. Review of Literature

The significance of SMEs in India’s economic landscape has been studied by both academics and researchers. The future expansion of SMEs is portrayed by Venkatesh and Muthiah (2012) as a crucial area for the industrial sector. Their claims highlight how crucial SMEs are to the country’s economic health, leading to a strong cry for continued assistance in this area.

By examining the dynamics of SMEs in India, a thorough literature review covering performance, growth, and the various obstacles that MSMEs face is conducted. Singh et al. (2012) added a chapter on the performance of small-scale industries in India. They also provide insight into legislative changes that have opened up new avenues for growth and development in the small-scale industry (SSI) sector.

In emphasizing the discourse, Mali (1998) added depth to the imperative for advancements in infrastructure development, technology upgrading, product diversification, and enhanced management and marketing strategies. Against the backdrop of intensifying global competition, the call for evolution and adaptability within SMEs resonates strongly. Similarly, Panigrahi (2012) emphasized the significance of managerial competence in risk management, acknowledging the critical role that MSMEs play in India’s manufacturing output, employment, and exports. In the meantime, Mukherjee (2018) examined the export trends of the Indian coir industry, blaming a lack of suitable technology for the industry’s diminishing competitiveness and pushing for more funding for research and development.

A survey by Ilahi (2015) highlighted the problems that MSMEs in Delhi face. These problems include infrastructure, technology, marketing, design, and funding procedures. The survey offers solutions to these problems, including government support, technological advancements, and simplified loan applications.

Notably, Shaik et al. (2017) described many advantages of the MSME sector to employment and fixed asset growth in addition to highlighting persistent challenges such as timely credit, high credit costs, procurement challenges, storage and design issues, inadequate infrastructure, low technology levels, and a lack of skilled labor.

To strategically address the challenges presented by globalization, Uma (2013) advocates that small businesses in India comply with international standards and technological requirements. In line with this idea, Kadivar (2016) undertakes a thorough examination of India’s policies designed to support SMEs, emphasizing how successful these initiatives have been in helping these businesses outperform both local and foreign competitors.

According to Kadivar (2016), policies have a substantial impact on India’s GDP and are essential for promoting regional development and economic growth. The story emerges from the patchwork of academic contributions, portraying the variety of opportunities and challenges woven throughout India’s SME landscape and realizing the importance of MSME. Singh et al. (2023) stress the adoption of long-term and short-term strategies since they aid in revitalizing companies in mitigating uncertain situations.

3. Research Questions

This study aims to create a literature map and examine the current state of MSME research in India. Additionally, it will suggest new research directions to address gaps in the existing body of research. First, the researchers formulated the following research questions (RQs).

RQ1: How has the body of knowledge regarding MSME development in India evolved?
RQ2: In the scientific literature, what are the salient themes and pressing concerns about MSME research in India?
RQ3: In terms of theoretical and practical ramifications and future research directions, what contributions does this work make?

4. Research Methodology
The terms "MSME" and "MSMEs" are widely used for referring to “Micro, Small, and Medium Enterprises”. In this review, the researchers used the keyword 'MSME' and followed the guidelines suggested by the “Preferred Reporting Items for Systematic Reviews and Meta-Analyses” (PRISMA) statement by Moher (2009) for analysis and conclusions presented in Figure 1.

4.1. Data collection

To gather information for the study, the researchers used Scopus, a database that includes a sizable number of randomized, rigorously reviewed studies published in high-impact factor journals (Groff et al., 2020). The researchers utilized a methodical technique to arrive at the final figure of 346 articles in Table 1. The researchers used a list of diverse disciplines and searched for English-language articles using the keywords “MSME,” “MSMEs,” “Micro, small and medium enterprises,” and “Micro, small and medium-sized enterprise.” Extracting or downloading data from online databases may lead to inaccuracies due to bibliographical and bibliometric errors in subsequent publications. (Donthu et al., 2021). Therefore, the researchers had to go through several steps to clean and organize the data to produce accurate results. To achieve this goal, the researchers followed the recommendations of Donthu et al. (2021) and Zupic and Cater (2015) regarding the visualization and interpretation of the results for the bibliometric data. To enhance the analysis and findings, the researchers utilized the VOS viewer to eliminate certain terms that were present in the titles, abstracts, and keywords of the articles. For example, the researchers changed a number of plural nouns—such as enterprises to enterprise and MSMEs to MSME—to singular. Researchers have also translated larger variants into shorter ones, such as total quality management (TQM). Finally, these cleanup techniques helped achieve theme assessment uniformity.

4.2. Selection of the technique for analysis

Text and data were analyzed and quantified using quantitative methods with a set of instruments known as bibliometric analysis (Mishra et al., 2018; Goyal and Kumar, 2021). Using this technique makes it possible to acquire new data from the literature reviews for use in upcoming research projects (Suominen et al., 2016; Groff et al., 2020). To accomplish this, biographies on themes must be written and published, trends in a field of study must be recognized, and research
publications that provide an overview of the state of the field must be evaluated (Gao et al., 2021; Hossain et al., 2022). Citation, bibliographic coupling, cocitation, and co-occurrence analysis are bibliometric analysis techniques used by researchers to examine biographic data by Donthu et al. (2021).

5. Results and Discussion

To help researchers find reputable academics and well-known journals in this field, this section lists the most productive nations/regions, organizations, journals, and authors. Additionally, network analysis is examined in this section, including author collaboration relationships and journals. Thus, the researchers responded to the initial research question: RQ1. How has the body of knowledge regarding MSME development in India evolved?

5.1. Analysis of Performance

The publication trends in the field of MSME India are depicted in Figure 2. The line graph shows the total number of documents from 2010 to 2023 for each year. The number of documents has generally been increasing over time, with a few fluctuations. For instance, the quantity of documents increased significantly in 2014 before declining in 2015. Then, until 2019, the quantity of documents grew gradually before declining once more. The quantity of documents has since risen. In various fields, such as finance, production, and marketing, Gupta and Barua (2016) conducted a study on decision-making techniques using the best–worst method as a research theme. Looking at the current trend, it is expected that the number of studies in MSME will increase in the coming years.

![Figure 2 Publication trends in the area of MSME in India.](image)

5.2. Noticeable authors and organizations for MSME research in India

Citation analysis is a potent technique used in many academic and research domains to assess the influence of research and examine the connections between documents. It entails examining the citation patterns found in a corpus of work to comprehend the dissemination, uptake, and expansion of ideas. Table 2 specifies the significance of the authors for MSME research in India. Gupta (217) and Mohanty (133) are the most influential authors. Their articles introduced decision-making models in the field of MSME and green supply chain management practices in India. Likewise, the significant organizations are “The National Institute of Technology, Durgapur”, with 128 citations, and “Maharaja Agrasen Institute of Technology, and Sharda University”, with 83 citations each, followed by 2 documents. In addition, the Management Development Institute is the most effective organization in India for MSME research, and Singh is the most effective author.

<table>
<thead>
<tr>
<th>TC</th>
<th>Author</th>
<th>TP</th>
<th>TC</th>
<th>Organization</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>217</td>
<td>Gupta H.</td>
<td>1</td>
<td>128</td>
<td>NIT, Durgapur</td>
<td>2</td>
</tr>
<tr>
<td>133</td>
<td>Mohanty R.P.</td>
<td>1</td>
<td>83</td>
<td>Maharaja Agrasen Institute of Technology, Delhi.</td>
<td>2</td>
</tr>
<tr>
<td>132</td>
<td>Singh M.P.</td>
<td>2</td>
<td>83</td>
<td>Sharda University, Greater Noida</td>
<td>2</td>
</tr>
<tr>
<td>95</td>
<td>Sahoo P.</td>
<td>1</td>
<td>75</td>
<td>Jamia Millia Islamia, Delhi.</td>
<td>2</td>
</tr>
<tr>
<td>93</td>
<td>Upadhye N.</td>
<td>1</td>
<td>69</td>
<td>Indian Institute of Technology, Madras.</td>
<td>3</td>
</tr>
<tr>
<td>89</td>
<td>Khanzode A.G.</td>
<td>1</td>
<td>67</td>
<td>Sikkim University, Gangtok</td>
<td>2</td>
</tr>
<tr>
<td>88</td>
<td>Singh M.</td>
<td>1</td>
<td>66</td>
<td>Management Development Institute, Gurgaon</td>
<td>4</td>
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<tr>
<td>73</td>
<td>Raut R.D.</td>
<td>1</td>
<td>58</td>
<td>National Institute of Technology, Hamirpur,</td>
<td>3</td>
</tr>
<tr>
<td>70</td>
<td>Kharub M.</td>
<td>2</td>
<td>55</td>
<td>National Institute of Industrial Engineering, Mumbai.</td>
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<tr>
<td>64</td>
<td>Upadhyay P.</td>
<td>1</td>
<td>50</td>
<td>Neoma Business School, France.</td>
<td>2</td>
</tr>
</tbody>
</table>

*Note(s): Total citations (TCs) and the total number of published articles (TPs)*
5.3. The leading journals for MSME research in India

Table 3 specifies the leading journals of MSME research in India. The leading journals for MSME research in India are “The Journal of Cleaner Production”, with 364 citations and 12 documents, followed by “Benchmarking”, with 248 citations and 19 documents. The most productive journal is “Global Business Review”, with 4 publications, followed by “Production Planning and Control”, with 3 documents.

<table>
<thead>
<tr>
<th>TC</th>
<th>Journal</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td>364</td>
<td>Journal of Cleaner Production</td>
<td>12</td>
</tr>
<tr>
<td>248</td>
<td>Benchmarking</td>
<td>19</td>
</tr>
<tr>
<td>217</td>
<td>Technological Forecasting and Social Change</td>
<td>1</td>
</tr>
<tr>
<td>159</td>
<td>Production Planning and Control</td>
<td>3</td>
</tr>
<tr>
<td>127</td>
<td>Global Business Review</td>
<td>4</td>
</tr>
<tr>
<td>118</td>
<td>Resources, Conservation, and Recycling</td>
<td>1</td>
</tr>
<tr>
<td>112</td>
<td>The International Journal of Management Science and Engineering management</td>
<td>2</td>
</tr>
<tr>
<td>73</td>
<td>Journal of High Technology Management Research</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>Journal of Enterprise Information Management</td>
<td>2</td>
</tr>
<tr>
<td>68</td>
<td>Small Business Economics</td>
<td>2</td>
</tr>
</tbody>
</table>

Note(s): Total citations (TCs)

5.4. Most significant articles on MSME research published in India

Table 4 specifies the most significant with the most citations in the area of MSME research in India. With 218 citations, the article “Identifying enablers of technological innovation for Indian MSMEs using best–worst multicriteria decision-making method” by Gupta and Barua (2016) is the most influential. Their study concentrated on significant facilitators of technological innovation in Indian MSMEs. They discovered that government policies, project resources and capabilities, and entrepreneurs’ technical expertise are the main facilitators influencing MSME technological development. With 133 citations, Mohanty and Prakash (2014) conducted the second most influential study on “green supply chain management practices in India: An empirical study”. This study focuses on the pressures given by external and internal stakeholders on green practices in supply chain management. As a result, the study revealed that the adoption of GSCM was fully mediated by internal pressures.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
<th>TC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gupta H.; Barua M.K.</td>
<td>“Identifying enablers of technological innovation for Indian MSMEs using best–worst multicriteria decision-making method”</td>
<td>217</td>
</tr>
<tr>
<td>Mohanty R.P.; Prakash A.</td>
<td>“Green supply chain management practices in India: An empirical study”</td>
<td>133</td>
</tr>
<tr>
<td>Singh M.P.; Chakraborty A.; Roy M.</td>
<td>“Developing an extended theory of planned behavior model to explore circular economy readiness in manufacturing MSMEs, India”</td>
<td>118</td>
</tr>
<tr>
<td>Sahoo P.; Ashwani</td>
<td>“COVID-19 and Indian Economy: Impact on Growth, Manufacturing, Trade and MSME Sector”</td>
<td>95</td>
</tr>
<tr>
<td>Upadhye N.; Deshmukh S.G.; Garg S.</td>
<td>“Lean manufacturing system for medium size manufacturing enterprises: An Indian case”</td>
<td>93</td>
</tr>
<tr>
<td>Khanzode A.G.; Sarma P.R.S.;</td>
<td>“Modeling the Industry 4.0 adoption for sustainable production in Micro, Small &amp; Medium Enterprises”</td>
<td>89</td>
</tr>
<tr>
<td>Manlga S.K.; Yuan H.</td>
<td>“Analysis and prioritization of Lean Six Sigma enablers with environmental facets using the best worst method: A case of Indian MSMEs”</td>
<td>88</td>
</tr>
<tr>
<td>Singh M.; Rathi R.; Garza-Reyes J.A.</td>
<td>“Examining the critical success factors of cloud computing adoption in the MSMEs by using ISM model”</td>
<td>73</td>
</tr>
<tr>
<td>Raut R.D.; Gardas B.B.; Jha M.K.; Priyadarshinee P.</td>
<td>“Factors influencing ERP implementation in Indian manufacturing organizations: A study of micro, small and medium-scale enterprises”</td>
<td>64</td>
</tr>
<tr>
<td>Upadhyya P.; Jahanyan S.; Dan P.K.</td>
<td>“Gender, small firm ownership, and credit access: some insights from India”</td>
<td>63</td>
</tr>
</tbody>
</table>

Note(s): Total citations (TCs).

5.5. Knowledge underpinnings of Indian MSME research using cocitation analysis

The semantic correlations of cocited references are revealed by cocitation analysis, which highlights the underlying understanding of a subject (Donthu et al 2021). The relationships between references for which the review corpus’s articles were cited at least thirty times are depicted in Figure 3. The works of a specific field of MSME research in India have been frequently cited by Gunasekaran, Singh, Dubey, Sarkis, and Deshmukh (red nodes). In a similar vein, the works of a specific field of MSME research in India have been significantly cited by Kumar, Kumarr, Hair, Sarstedt, and Ringle (green nodes).
Awan, Barua, Govindan, and Gupta (the pink nodes) have cited a specific area of MSME research in India extensively. The works of a specific field of MSME research in India have been frequently cited by Antony, Shankar, Garza-Reyes, and Gijo (yellow nodes). A specific field of MSME research in India has seen a high citation rate among the works of Raut, Gardas, and Narkhede (orange nodes). Similarly, a specific field of MSME research in India has seen a high citation rate for the works of Dana and Ramadani (blue nodes).

5.6. Topical impact via bibliographic coupling

Another purpose of this study was to provide bibliographic coupling between the documents for the 346 articles that were selected. Forty-six articles are selected once the minimum number of citations required for an article is set at 18. Five clusters were also formed as a result of the analysis based on citations (van Eck and Waltman 2013). A review of the bibliographic document, as shown in Fig. 4, by Walsh and Renaud (2017), indicated that the bibliographical coupling indices and the number of documents are proportionate to the thickness of the link and the size of the circles. The closer the two circles are, the stronger the relationship between the corresponding documents, according to the reference numbers. This study reviews the literature found through bibliographic coupling analysis because its goal is to present a thorough overview of MSME research in India (Table 5). The findings of the bibliographic coupling (Table 5) analysis are shown in the following figure.
Table 5 Bibliographic coupling clusters.

<table>
<thead>
<tr>
<th>Cluster 1</th>
<th>C</th>
<th>Cluster 2</th>
<th>C</th>
<th>Cluster 3</th>
<th>C</th>
<th>Cluster 4</th>
<th>C</th>
<th>Cluster 5</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amrita et al.</td>
<td>47</td>
<td>Khanzode et al.</td>
<td>89</td>
<td>Gupta et al.</td>
<td>51</td>
<td>Raut et al.</td>
<td>73</td>
<td>Gupta &amp; Barua</td>
<td>218</td>
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<tr>
<td>Behl et al.</td>
<td>47</td>
<td>Singh et al.</td>
<td>88</td>
<td>Kharub &amp; Sharma</td>
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<td>Kumar et al.</td>
<td>47</td>
<td>Panigrahi &amp; Rao</td>
<td>36</td>
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<tr>
<td>Bhat et al.</td>
<td>42</td>
<td>Khurana et al.</td>
<td>54</td>
<td>Kharub et al.</td>
<td>30</td>
<td>Raut et al.</td>
<td>45</td>
<td>Goyal et al.</td>
<td>19</td>
</tr>
<tr>
<td>Ravikumar et al.</td>
<td>28</td>
<td>Khurana et al.</td>
<td>46</td>
<td>Kharub &amp; Sharma</td>
<td>21</td>
<td>Sivathanu</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alora &amp; Barua</td>
<td>25</td>
<td>Khurana et al.</td>
<td>31</td>
<td>Gupta et al.</td>
<td>19</td>
<td>Raut et al.</td>
<td>25</td>
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</tr>
<tr>
<td>Tripathi &amp; Singh</td>
<td>25</td>
<td>Mishra et al.</td>
<td>31</td>
<td>Virmani et al.</td>
<td>19</td>
<td>Narwane et al.</td>
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<td>Mishra et al.</td>
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</table>

Note(s): Citation (C).

5.7. Thematic trends of MSME research in India

By using insights into thematic areas to visualize the scope and evolution of MSME research in India, the authors can identify research gaps and recommend future directions. In this session, the researchers answer the second research question, RQ2. In the scientific literature, what are the salient themes and pressing concerns about MSME research in India?

Using co-occurrence analysis, the researchers examine thematic trends in MSME digital marketing studies. Co-occurrence analysis makes use of the authors’ keywords. To find the topical development of MSME research in India that appears at least four times in our review corpus, those keywords are put through a chronological filter.

![Figure 5 Author’s map of co-occurrence.](image)

5.7.1. Cluster 1: Technological Catalysts for Sustainable Growth

The keywords in cluster 1 (blue) focus on "adoption," which is about important technology elements that are necessary to advance sustainable development (total link strength: 102; occurrences: 44). This phrase denotes the broad adoption of ground-breaking inventions using the deep integration of state-of-the-art technologies throughout a range of industries. Notable components of the cluster, such as "cloud computing" and the "circular economy" (link strengths: 10 and 15, respectively), highlight how important they are as forces behind improvements in manufacturing practices that will especially help SMEs. According to the Ellen MacArthur Foundation (2013), the circular economy promotes a closed-loop system within its economic model to maximize resource utilization and reduce waste. Although the circular economy is a widely accepted concept, Mutz (2015) indicates that India is only now beginning to implement it. The primary barriers to implementing the circular economy, as stated in the Fusion Report (2014), are the lack of funding, inconsistent environmental laws, and a lack of commitment. By enhancing accessibility, data management, and overall efficiency, cloud computing integration helps businesses build more resilient and interconnected ecosystems. In 2011, the National Institute of Standards and Technology (NIST) defined cloud computing as "a model for enabling ubiquitous, convenient, on-demand
network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. Cloud computing has been identified as one of the current emerging trends in technology and business (Mell and Grace, 2011). The circular economy’s guiding principles for sustainable production and consumption patterns are highlighted by this cluster.

5.7.2. Cluster 2: Business Resilience and Sustainability Amidst Pandemic Challenges

The keywords in cluster 2 (green) provide a comprehensive context with a total link strength of 102 and 64 occurrences. Its main themes are the impact of the COVID-19 pandemic, sustainability, and corporate resilience. Remarkably, "COVID-19" and "resilience" exhibited strong connection strengths of 18 and 36, respectively, suggesting a focused analysis of the difficulties posed by the pandemic. According to Sahoo and Ashwani’s (2020) report, India’s economy is predicted to grow by 0.5 percent in 2020. However, the worst-case scenarios suggest that growth could be negative by 3.7 percent, which would have a major negative impact on the trade, manufacturing, and MSME sectors. "COVID-19" highlights the unique difficulties that businesses encountered during the pandemic, and "resilience" highlights the tactics used to overcome obstacles. According to Belhadi et al. (2021), resilience makes it possible to respond to disruptions effectively, adjust quickly to change, and maintain performance levels. Organizational, operational, and technological barriers are the three factors that Gupta and Singh (2023) identify as affecting the resilience of MSME. They then suggest strategies based on worker skill diversification, flexible manufacturing, alternative supplier identification, and modifications to supply chain network design. The use of "structural equation modeling" denotes a methodical approach to comprehending complex dynamics in business operations, especially in times of crisis. The terms "supply chain" and "sustainability" highlight how crucial it is to have resilient supply chains and sustainable business practices in the face of the pandemic's global challenges. In light of the pandemic’s challenges, Cluster 2 illuminates businesses’ plans for resilience, strategies for adapting, and pursuit of sustainable practices. It promotes a research-based method called "structural equation modeling" to examine intricate business dynamics in times of crisis. The emphasis on the "supply chain" and "sustainability" in the face of enduring global problems points to a strategic alignment toward enhancing supply chain resilience and embracing sustainable practices as crucial components of resilient business models.

5.7.3. Cluster 3: Entrepreneurial Dynamics and Firm Performance in the Indian Context

The keywords in Cluster 3 (navy blue) focus on entrepreneurship, firm performance, and innovation, particularly in the context of Indian business (total link strength: 134; occurrences: 93). While "entrepreneurship" takes precedence and emphasizes the dynamic nature of business formation, "firm performance" emphasizes a focus on evaluating outcomes and success indicators. The mention of "India" and "Indian MSME" specifically indicates a thorough investigation of innovation and entrepreneurship in the MSME sector of India, illuminating the distinct prospects and obstacles that exist in the country. In the context of Indian business, the term "innovation" highlights the vital role that creative ideas play in bolstering firm performance and entrepreneurship. In "Inside Drucker’s Brain," Kremes (2008) states that Drucker believes that innovation is essential for preserving organizational strength and preventing crises. Drucker’s viewpoint stands in stark contrast to the propensity of many managers to ignore the inevitable changes that lie ahead and concentrate only on the day-to-day operations of the business. Cluster 3 explores the complexities of the Indian entrepreneurial landscape, clarifying the function of innovation in Indian MSMEs as well as the processes involved in company formation and performance evaluation.

5.7.4. Cluster 4: Overcoming Challenges in Industry 4.0 through Lean Manufacturing and Quality Management

The keywords in cluster 4 (yellow) have a total link strength of 50 and 28 occurrences. Its main themes are "barriers," "lean manufacturing," and "TQM" (total quality management). These concepts are fundamental to problem solving in the context of Industry 4.0. The addition of Industry 4.0 emphasizes a critical analysis of the implications of the fourth industrial revolution. Businesses of all sizes must address the global challenge of integrating Industry 4.0 technologies, sustainability practices, and operations and supply chain management (OSCM). Compared to larger organizations, MSMEs have made less progress in implementing Industry 4.0, which suggests that this entire sector may be caught off guard by the revolution, especially in regard to supply chain optimization. Within the Industry 4.0 framework, "lean manufacturing" has become a key component, a strategic way to improve productivity and optimize workflows. Although this lean manufacturing approach has shown results in developed economies and certain large Indian companies, SMEs are beginning to increasingly recognize it. Talha (2004) noted that total quality management (TQM) comprises an extensive set of management and control procedures and is a crucial part of Industry 4.0 implementation. The entire company and its workforce should be aligned to provide goods or services that best meet the needs of customers. The “cross-impact matrix multiplication applied to classification” (MICMAC) technique, which methodically looks at the connections between these concepts, is denoted by the term "MICMAC". In brief, Cluster 4 explores the tactics and difficulties related to Industry 4.0, stressing the significance of breaking down barriers by combining lean manufacturing ideas with efficient quality control methods.
5.7.5. Cluster 5: Scaling Dynamics in Business Enterprises

Scaling is the expansion of a focal topic combined with a performance gain that exceeds the topic's growth in proportion, Palmie et al. (2023). Cluster 5 (purple) categorizes business enterprises according to size using terms such as "micro," "small," "medium enterprise," and "small business" (total link strength: 150; occurrences: 54). This cluster promotes the study of scaling dynamics in the corporate setting, emphasizing businesses of different sizes. While "micro," "small," and "small business" imply a more in-depth examination of the traits and workings of smaller businesses, the term "medium enterprise" suggests an investigation of the distinctive opportunities and challenges faced by companies functioning at this intermediate level. The cluster explores factors such as resource management, market access, and regulatory considerations that differ among various business sizes. In conclusion, Cluster 5 provides insights into the complex nature of business enterprises by explaining the dynamics and difficulties faced by businesses of various sizes in the modern business landscape.

5.7.6. Cluster 6: Using Statistical Analysis to Reveal Factors Affecting MSME Performance

Cluster 6 (red) covers the relationship between "performance," "MSME," and "factor analysis," (total link strength: 189; occurrences: 153). The fundamental idea behind "factor analysis" is a methodical process intended to pinpoint and understand the critical variables or factors impacting MSME performance. Murphy (1996) asserted that firm performance is a complex idea that encompasses indicators such as production, finance, and marketing (Sohn 2007) and outcomes such as growth and profit (Wolff 2006). The word "performance" suggests a review of these companies' outcomes and key performance metrics. This cluster investigates the statistical methods used to identify and examine the factors influencing MSME performance, providing academics, government decision makers, and business experts with insightful information. To put it simply, Cluster 6 uses factor-based methodologies and careful statistical analysis to perform a thorough investigation of the elements influencing the outcome of MSMEs.

5.7.7. Cluster 7: Using ICT and the Analytical Hierarchy Process to Increase the Supply Chain Efficiency Combination

Cluster 7 (orange) focuses on the themes of "analytical hierarchy process" (AHP), "information and communication technology" (ICT), and "supply chain management," with a total link strength of 33 and 16 occurrences, respectively. This cluster looks into strategies and tools designed to increase supply chain effectiveness. The AHP is a term used to describe a systematic approach to decision-making that has several applications in supply chain management. The inclusion of ICT emphasizes how digital innovations are transforming traditional supply chain procedures. According to Okundaye et al. (2019), ICT comprises a variety of internet-based, electronic, and digital tools designed to reduce effort and increase productivity. This is a trend that, in the highly competitive global economy, applies equally to MSME. The focus on supply chain management suggests a thorough analysis of strategies and technical developments to optimize the flow of products and data in supply networks. This cluster investigates how supply chain process optimization, decision-making, and overall efficiency are improved by the integration of AHP and ICT. In summary, information and communication technology in supply chain management practices can be improved by utilizing technological advancements and analytical methods.

A bibliometric analysis of MSME research conducted in India identified several important patterns. The notable increase in publications during the previous ten years is indicative of the growing significance of MSMEs in the Indian economy as well as the increasing interest of researchers. The preponderance of articles in national journals underscores the emphasis on domestic problems and issues pertinent to the Indian setting. The analysis also showed that MSME research tends to concentrate on particular themes. The importance of research on funding, innovation, and government assistance is a reflection of the significant obstacles MSMEs encounter in these domains. The emphasis on COVID-19's effects and the adoption of digital technologies demonstrate how research can change to keep up with emerging trends and disruptions. Furthermore, the existence of research on social impact and sustainability indicates an increasing understanding of the wider societal ramifications of MSME operations. Notwithstanding these worthwhile additions, the analysis also highlights certain shortcomings and gaps in the field's current body of work. The preponderance of quantitative studies indicates the need for additional qualitative research that explores MSME owners' and employees' perspectives and lived experiences in greater detail. Furthermore, the emphasis on data at the national level ignores the variety of experiences that MSMEs have in various sectors and geographical areas. Studies that examine how well government initiatives support MSME are needed, as evidenced by the paucity of research on policy evaluation and impact assessment.

6. Future research directions

The research related to MSME research in India and its historical development are thoroughly evaluated by bibliometric analysis. The researchers responded to RQ3, the last research question. What contributions does this work make to future research directions?

6.1. Sustainability Practices and Global Integration in Indian MSME
The importance of incorporating sustainable business practices into the Indian MSME landscape is emphasized by this research project. A thorough examination of the implementation of environmentally friendly procedures, renewable energy sources, and circular economy concepts is needed to strengthen small businesses’ social and environmental sustainability. Simultaneously, it is essential to critically assess how Indian MSMEs participate in global value chains. This research aims to enhance the competitive standing of small businesses in India within the global market by investigating the advantages and challenges related to internationalization, export promotion, and joint ventures with multinational corporations.

6.2. Digital Transformation and Financial Inclusion in Indian MSME

A thorough investigation into the effects of digital technologies, including blockchain, Industry 4.0, and artificial intelligence, on Indian MSMEs is necessary. The goal of this research is to investigate how these technologies are revolutionizing market expansion, operational effectiveness, and overall competitiveness in the small business domain. Concurrently, an analysis of creative financial models and mechanisms is necessary to determine how they contribute to MSMEs’ increased financial inclusion. The purpose of this research is to assess how fintech, microfinance, and government programs support small business growth by providing affordable and easily accessible capital.

6.3. The effectiveness of policies and the dynamics of entrepreneurial ecosystems in MSMEs in India

This study emphasizes how critical it is to evaluate the effectiveness of current government programs and policies aimed at assisting MSMEs in India. With an emphasis on taxation, incentives, and regulatory frameworks, this study aims to pinpoint areas where policies can be improved to foster an atmosphere that supports the expansion of small enterprises. Furthermore, it becomes imperative to investigate the dynamics that distinguish entrepreneurship ecosystems in various Indian regions. This study employs an analytical framework to examine the functions of this research aim and support networks in the development and maintenance of MSMEs. The focus is on identifying optimal strategies to promote creativity, adaptability, and sustainable expansion in this industry.

7. Final considerations

Bibliometric analysis can have an impact on the creation of collections, the characterization of institutional strengths in scholarship and citation patterns, and the proposal of visible citation networks of schools of thought. The present study provides a visual depiction of the themes, research trends, and noteworthy studies in MSME research conducted in India. The largest biography database, Scopus, was used for data extraction and analysis (Amiri et al. 2023). The themes and research trajectory of MSME research in India over different periods were provided by the study. The path of MSME research in India has been outlined in this study, along with potential avenues for future research for academics. Researchers could carry out a study on the developing field of MSME in India, which could provide practitioners and policymakers with more insightful information. In this sense, the current study provides advanced knowledge of the evolution, new fields, and future directions of MSME research in India.

8. Limitations of the study

The bibliometric analysis of biographical information was retrieved solely from the Scopus database because many high-calibre publications are listed in only one of Scopus or Web of Science, and combined bibliography data from both sources could be used in future research. Furthermore, future research might only conduct bibliometric analysis on publications that are listed on the ABDC, SCI, and SSCI lists to fully understand the research paradigm through reputable publications.

9. Implications of the study

The current study has various implications for researchers, academics, business owners, and marketers. They should be taught a synopsis of the most recent studies conducted in this area. They might utilize these articles to find solutions to the current problems facing academia and business by being aware of the significant and influential contributors in this field of study, as well as the factors that led them to achieve that status. Additionally, it would direct them toward future research directions that will help them carry out studies in the future and identify gaps in the body of current literature. Therefore, this paper attempts to untie in the Indian context, where MSME can grow and flourish with endless possibilities, and scholars will also benefit from having their work published in highly influential journals.

Ethical considerations

Not applicable.

Conflict of interest
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References


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