

A Comprehensive Bibliometric Analysis of Bangladesh's Ready-Made Garment Industry Research

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ABSTRACT

Purpose: This study aims to portray a comprehensive bibliometric picture of the studies related to Bangladesh's RMG industry to unearth the trend, themes, research collaboration, and historiography of the related literature.

Methodology: We amassed 228 papers through the WoS database within the broad periphery of business, economics, and management and utilized VOSviewer and R to analyze and visualize the bibliometric landscape, i.e., key journals, institutions, research groups and collaborations, co-occurrence networks, thematic mapping, and historiography.

Findings: Research interest in Bangladesh's RMG industry emerged in the 1900s, focusing on early developmental factors; it remained limited until the late 2000s, when scholars covered mostly the notions of labor rights, industry accountability, and governance tied to fast fashion and export growth dynamics. However, the number of publications spiked significantly after 2013, following the Rana Plaza disaster. Recently, researchers have become more concerned about the social sustainability management endeavors of suppliers and international buyers, along with the contested compliance regimes. Strategic management, governance, and labor rights are motor themes, while social justice and empowerment remain emerging ideas. Interestingly, Bangladesh's RMG sector has received global scholarly attention as 23 top research institutions are investigating this segment, illustrating a high international collaboration rate of 46.05%.

Originality/Value: This paper provides a comprehensive literary picture of Bangladesh's RMG industry-focused studies, highlighting the lineage and growth of this research domain.

Practical Implications: Academics of the related domain can reflect on their research interest and build on their research themes. Moreover, the managers of this industry may note the contemporary research themes to prepare for upcoming challenges.

Limitations: This study used one database, WoS, and bibliometric tools solely.

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1. Introduction

The textile industry in Bangladesh, particularly the Ready-Made Garments (RMG) sector, has been a significant contributor to the country's economic development and employment generation. Originating in the late 1970s, the RMG industry in Bangladesh experienced rapid growth from the 1980s onwards. Currently, it accounts for approximately 80% of the country's total export earnings and provides employment to about 4 million people (Akter, 2020). This growth trajectory is an outcome of the country's strategic positioning in the global supply chain, which allows for leveraging its cost advantage through optimizing labor resources (Chowdhury & Shajahan, 2022). The major export destinations include developed countries in Europe and North America, and the other emerging markets are Japan, Brazil, and Russia; this mass reach has positioned Bangladesh firmly into global supply chains (Ahmed, 2009; Adnan et al., 2015). While this growth has substantially contributed to Bangladesh's economic development and poverty reduction, it has also given rise to concerns regarding workers' rights and welfare, including issues of low wages, long working hours, and poor working conditions (Ahmed, 2024; Rahim & Islam, 2020; Uddin et al., 2023). Moreover, challenges related to sustainability have emerged, such as environmental pollution, inefficient resource utilization, and supply chain opacity (Bala et al., 2019; Biswas et al., 2024; Sarkar et al., 2020;).

In recent years, researchers have responded to these concerns by increasing their focus on Bangladesh's RMG sector (Ahmed, 2024; Alamgir & Alakavuklar, 2020; Alamgir & Banerjee, 2019; Anner, 2020; Bair et al., 2020; Bala et al., 2019; Biswas et al., 2024; Chowdhury, 2024; Chowdhury & Shajahan, 2022; Chowdhury et al., 2019; Chowdhury, 2020; Huq & Stevenson, 2020; Kabeer, 2024; Kabir et al., 2019; Menzel & Woodruff, 2021; Park-Poaps et al., 2021; Rahim & Islam, 2020; Sarkar & Peau, 2020; Talapatra & Uddin, 2019; Talapatra et al., 2020; Uddin et al., 2023). Indeed, the industry has garnered significant attention from scholars worldwide. However, much of the existing research is characterized by phenomenon-driven, interdisciplinary approaches, resulting in a fragmentation of topics and a lack of clarity in the knowledge structure (Tranfield et al., 2003). To address this gap, the present study aims to conduct a comprehensive review of the extant literature on Bangladesh's RMG industry. Specifically, we employ bibliometric analysis techniques to assess research trends and visualize the knowledge structure objectively. Bibliometric analyses in the academic arena hold a few common objectives that are generally accepted academically. These studies tend to identify influential research trends by noting most cited papers, influential authors and leading journals (Merigó & Yang, 2017; Özköse et al., 2022); map intellectual structures with the aid of citation and co-citation analyses (Charvet et al., 2008); Ciomaga, 2013); and analyze research trends and dynamics, i.e., to note emerging areas and shifts in focus through keyword analysis (Ardito et al., 2019; Siao et al., 2022). Lastly, bibliometric papers also provide future research directions by identifying gaps in the existing literature and potential areas for further exploration (Özköse et al., 2022); Ortiz-Pimentel et al., 2020). Hence, this paper aims for the quantitative examination of large volumes of literature data, revealing key papers, research institutions, researchers and research groups, and the evolution of research topics through bibliometric analysis. Furthermore, this study will incorporate theme-based cluster analysis judiciously, reviewing several significant studies in detail.

While there have been several comprehensive literature reviews on Bangladesh's RMG industry, many have focused on specific aspects, such as the physical and mental health vulnerabilities of RMG workers (Kabir et al., 2019) or systematic reviews of Green Human Resource Management (GHRM) (Chowdhury, 2024). Comprehensive reviews encompassing a broad range of topics still need to be expanded. This study aims to address this limitation by covering a wide array of topics and utilizing the Web of Science (WoS) database in conjunction with analytical tools such as R and VOSviewer to paint a holistic picture of existing literature.

The core contribution of this paper is academically significant. It elucidates the developmental stages of research interests, triggering events for research paradigm shifts, knowledge structure, and

boundaries of research interests, along with the connectedness of these ideas related to Bangladesh's RMG industry, while suggesting future research directions. Apart from academics, the managers and owners of this industry may take note of the contemporary research interests to prepare for the upcoming operational and strategic challenges.

Findings suggest that research interest in Bangladesh's RMG sector originated in the 1900s, initially examining early developmental aspects; however, scholarly focus expanded significantly post-2000s to encompass labor rights, industry accountability, and governance linked to fast fashion and export dynamics, particularly after the 2013 Rana Plaza disaster. Recent inquiries emphasize social sustainability management practices among suppliers and buyers, with strategic management, governance, and labor rights as core themes, while social justice and empowerment emerge as significant considerations, reflecting a notable global scholarly engagement and international collaboration.

The remainder of this paper is structured as follows: Section 2 outlines the research methodology, Section 3 presents a detailed analysis of the results, and Section 4 discusses the findings, offering theoretical and practical implications and suggestions for future research.

2. Methodology

This study employs bibliometric analysis techniques to elucidate research trends and visualize the knowledge structure of literature pertaining to Bangladesh's Ready-Made Garments (RMG) industry (Aria & Cuccurullo, 2017; Zupic & Čater, 2015). The methodological approach comprises the following steps:

2.1 Data Source and Keyword Selection

The Web of Science (WoS) database serves as the primary source for collecting literature data. WoS is a widely recognized repository for academic research and is frequently utilized in bibliometric analyses. Moreover, it is particularly appropriate for this study given the call from Bangladeshi researchers for publications in higher-quality journals (Islam et al., 2022).

The search query was formulated as follows:

TS = ("Bangladesh" AND ("RMG" OR "Garment*" OR "Textile*" OR "Apparel*" OR "Cloth*" OR "Fashion*"))*.
(1)

To focus on management studies and related fields, we restricted our search to the following categories: Business, Management, Economics, Industrial Relations Labor, and Social Sciences Interdisciplinary.

2.2 Search Strategy and Article Selection Criteria

The aforementioned search query was applied to the WoS Topics field. The search was limited to articles published up to and including 2023, ensuring a comprehensive coverage of the literature while allowing for a complete analysis of full calendar years. The language was restricted to English, and only journal articles were included. The selection criteria for inclusion in the analysis were as follows: (i) the primary focus of the study is on Bangladesh's RMG industry, (ii) the publication is an original research article in a peer-reviewed academic journal, (iii) the article is written in English, and (iv) the article was published no later than December 31, 2023.

2.3 Data Cleaning and Preprocessing

Metadata (including authors, titles, publication years, and keywords) were extracted from the selected articles to construct a database. Duplicate records were removed during this process. Further data cleaning, including keyword standardization and extraction of co-authorship relationships, was performed to prepare the data for analysis.

2.4 Data Refinement Process

The initial search yielded 318 results (as of July 10, 2024). We first limited the results to articles and reviews only. After removing two duplicates, we conducted a thorough screening process. This involved reading the titles, author keywords, and abstracts of each paper to determine its relevance to research on Bangladesh's RMG industry. In cases where the relevance was unclear, we examined the full text. Studies deemed insufficiently relevant were excluded. This refinement process resulted in a final dataset of 228 articles for analysis.

2.5 Analytical Tools and Techniques

The analysis was conducted using the bibliometric package in R and the VOSviewer software. These tools are widely employed in bibliometric analyses due to their robust data visualization and statistical analysis capabilities. The following analytical techniques were applied:

2.5.1 *Descriptive statistical analysis*: To provide an overview of research trends, we calculated basic metrics such as the number of publications, citation counts, number of authors, and country distribution.

2.5.2 *Co-authorship analysis*: We visualized researcher networks based on co-authorship relationships to identify key researchers, research groups, and patterns of international collaboration.

2.5.3 *Keyword analysis*: Using article keywords, we examined the evolution of research topics and the emergence of new research areas. Additionally, we explored the relationships between research topics through keyword co-occurrence analysis.

2.5.4 *Co-citation analysis*: We visualized the knowledge structure of the research field based on citation relationships between papers. This allowed us to identify research topic clusters and seminal papers.

3. Results

3.1 Overview of Analyzed Publications

This section presents a descriptive statistical overview of the publications subjected to bibliometric analysis in this study. Table 1 illustrates key indicators of research literature on Bangladesh's garment industry from 1990 to 2023. Focusing on the most significant indicators, 228 publications (limited to articles and reviews in this study) were collected from 139 distinct sources. The high annual growth rate of 10.62% suggests rapid expansion in this research field.

Table 1. Overview of Analyzed Publications

Description	Results
MAIN INFORMATION ABOUT THE DATA	
Timespan	1990:2023
Sources	139
Documents	228
Annual Growth Rate %	10.62
Document Average Age	5.43
Average Citations per doc	20.25
References	12295
DOCUMENT CONTENTS	
Keywords Plus (ID)	603
Author's Keywords (DE)	768

AUTHORS	
Authors	466
Authors of single-authored docs	31
AUTHORS COLLABORATION	
Single-authored docs	35
Co-Authors per Doc	2.76
International co-authorships %	46.05
DOCUMENT TYPES	
Article	227
Review	1

Source(s): Research data from WoS

The average age of the publications is relatively recent at 5.43 years, with a substantial average of 20.25 citations per document, indicating high impact. Regarding authorship, there are 466 total authors, of whom 31 are single-author paper writers. The average of 2.76 co-authors per document indicates that collaborative research is common. The high international collaboration rate of 46.05% demonstrates that this research field is developing within a global cooperative framework.

3.2 Overall Trends in RMG Industry Research

Figure 1 illustrates the annual publication output on Bangladesh's RMG industry from 1990 to 2023. The 1990s and early 2000s saw relatively few publications, with only a handful per year, suggesting limited research interest as the industry was still developing.

However, publication numbers began to surge in the late 2000s, with a notable spike in 2013. This increase likely reflects heightened international attention to labor safety and social responsibility in Bangladesh's RMG industry following the Rana Plaza collapse. Subsequently, the field has consistently produced around 30 papers annually, indicating sustained high interest in Bangladesh's RMG industry research.

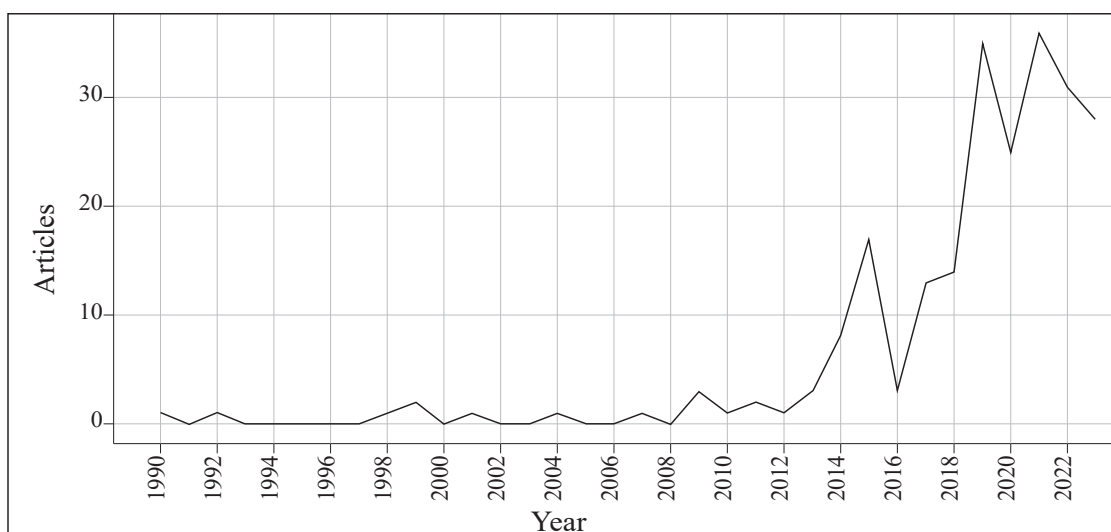


Figure 1. Yearly Research Output

Source(s): Research data from WoS

3.3 Key Journals, Papers, and Research Institutions

This section identifies the most influential journals, papers, and research institutions. Table 2 lists the journals that have published the most research on Bangladesh's garment industry, with a threshold of 3 publications. The table shows each journal's number of publications (NP), total citations (TC), and year of first publication (PY_start).

In terms of publication count, "International Labour Review" and "Business Strategy and Development" lead with 8 papers each, highlighting the importance of research on labor issues and strategic aspects of the industry. "Supply Chain Management – An International Journal" follows with 5 papers, indicating active research from a supply chain management perspective. "Journal of Business & Industrial Marketing" and "Journal of Fashion Marketing and Management" also published 5 papers each, emphasizing the significance of marketing and management research in this field.

Table 2. *Journals with the Highest Number of Publications and Citations*

Source	NP	TC	PY_start
International Labor Review	8	64	2019
Business Strategy and Development	8	85	2019
Supply Chain Management – An International Journal	5	179	2019
Journal of Business and Industrial Marketing	5	83	2017
Journal of Fashion Marketing and Management	5	23	2020
Journal of Business Ethics	4	225	2017
World Development	4	145	1990
International Journal of Emerging Markets	4	45	2015
Journal of Development Economics	4	183	2001
Journal of Asian Finance Economics and Business	4	11	2018
Benchmarking – An International Journal	3	126	2018
Critical Perspectives on International Business	3	98	2014
International Journal of Lean Six Sigma	3	11	2021
International Journal of Physical Distribution & Logistics Management	3	43	2017
Journal of Business Research	3	193	2020
Journal of International Economics	3	57	2012
Applied Economics	3	17	1999
Global Business Review	3	36	2016
International Journal of Productivity and Performance Management	3	25	2019
Social Responsibility Journal	3	24	2021
South Asian Journal of Human Resource Management	3	17	2018
International Journal of Business and Society	3	1	2017

Source(s): Research data from WoS

Regarding citation impact, "Journal of Business Ethics" stands out with 225 total citations for just 4 papers, demonstrating the influence of research on ethical aspects. "Journal of Business Research" and "Journal of Development Economics" also show high impact with 193 and 183 citations for 3 and 4 papers, respectively.

The earliest publication year varies, with "World Development" publishing on the garment industry as early as 1990, while journals like "International Journal of Lean Six Sigma" and "Social Responsibility Journal" began publishing more recently, reflecting the diversification and evolution of research in this field.

Table 3. *Top 20 Most Influential Papers*

Rank	Document	TLC/t	TLC	TGC/t	TGC
1	ALAMGIR F, 2019, HUM RELAT	3.67	22	18.67	112
2	ANNER M, 2020, REV INT POLIT ECON	2.20	11	17.80	89
3	BAIR J, 2020, ILR REV	1.60	8	9.20	46
4	SCHUESSLER E, 2019, ILR REV	1.50	9	5.33	32
5	HUQ FA, 2014, INT J OPER PROD MAN	1.45	16	22.18	244
6	AHLQUIST JS, 2021, REV INT ORGAN	1.25	5	4.00	16
7	ANNER M, 2015, LABOR HIST-UK	1.20	12	10.30	103
8	TAPLIN IM, 2014, CRIT PERSPECT INT BU	1.00	11	7.27	80
9	RAHIM MM, 2017, J BUS ETHICS	1.00	8	5.00	40
10	PARK-POAPS H, 2021, J FASH MARK MANAG	1.00	4	2.25	9
11	CHOWDHURY NMH, 2023, SUPPLY CHAIN M	1.00	2	7.00	14
12	AHMED FZ, 2014, WORLD DEV	0.91	10	4.82	53
13	HUQ FA, 2016, J OPER MANAG	0.89	8	22.11	199
14	JACOBS BW, 2017, J OPER MANAG	0.88	7	14.63	117
15	AHMED FU, 2019, INT MARKET REV	0.83	5	6.33	38
16	AHMED FU, 2019, ASIA PAC J MANAG	0.83	5	4.83	29
17	ALAMGIR F, 2020, J BUS ETHICS	0.80	4	7.00	35
18	HOQUE I, 2020, INT J PRODUCT PERFOR	0.80	4	3.60	18
19	ALAM MS, 2017, J ASIA PAC ECON	0.75	6	1.63	13
20	REINECKE J, 2021, J MANAGE STUD	0.75	3	10.00	40

Source(s): Research data from WoS

Table 3 presents the top 20 most influential papers on Bangladesh's garment industry. The influence is evaluated using four indicators: average local citations per year (TLC/t), total local citations (TLC), average global citations per year (TGC/t), and total global citations (TGC). The papers are ranked by TLC/t. The most influential paper by TLC/t is (Alamgir & Banerjee, 2019), published in Human Relations. This paper discusses how international efforts to improve working conditions in Bangladesh's garment industry contribute to multinational corporations' legitimacy while failing to address structural issues and potentially weakening workers' rights through connections with state power. Analysis of the author keywords reveals that these papers primarily focus on a) protection of workers' rights and corporate social responsibility in global supply chains, b) changes in governance and responses after the Rana Plaza collapse, c) social and environmental sustainability of supply chains, d) policy and institutional initiatives for industry development and labor issue resolution.

Table 4. *Research Institutions with the Highest Number of Publications*

Affiliation	Articles
Universiti Malaya	11
Monash University	9
Pennsylvania Commonwealth System of Higher Education (PCSHE)	9
Sheffield Hallam University	9
University of Technology Sydney	9
Deakin University	8
North Carolina State University	8
Pennsylvania State University	8
Curtin University	7
Royal Melbourne Institute of Technology (RMIT)	7
Taylor's University	7
University of Dhaka	7
University of Dhaka	7
Bangladesh Rural Advancement Committee (BRAC)	6
BRAC University	6
Khulna University of Engineering and Technology (KUET)	6
Lappeenranta-Lahti University of Technology (LUT)	6
Macquarie University	6
North South University (NSU)	6
The World Bank	6
University of Chittagong	6
University of London	6
University of Manchester	6

Source(s): Research data from WoS

Table 4 lists the top 23 research institutions that have published the most papers on Bangladesh's garment industry. These institutions span globally, including Bangladesh, Australia, the UK, the USA, Malaysia, and Finland. Universiti Malaya in Malaysia leads with 11 publications, followed by Monash University (Australia), Pennsylvania Commonwealth System of Higher Education (PCSHE) (USA), Sheffield Hallam University (UK), and University of Technology Sydney (Australia), each with 9 publications.

Among Bangladeshi institutions, the University of Dhaka has published 7 papers. In contrast, Bangladesh Rural Advancement Committee (BRAC), BRAC University, Khulna University of Engineering and Technology (KUET), North South University (NSU), and the University of Chittagong have each published 6 papers. Moreover, international organizations like The World Bank have also contributed 6 papers indicating engagement in policy-oriented research on the development and challenges of Bangladesh's garment industry.

Overall, this analysis reveals that research on Bangladesh's garment industry is actively conducted not only by local institutions but also by universities and research organizations worldwide. This reflects the industry's significant position in global supply chains and the international interest in its development and challenges.

3.4 Key Research Groups

To identify key research groups, we analyzed the co-authorship network. We limited our analysis to authors with at least one publication and 10 or more citations. Figure 2 visualizes the co-authorship relationships among 16 authors in Bangladesh's garment industry research. Created using VOSviewer, each node represents an author, with links indicating co-authorship. Node size corresponds to the number of publications.

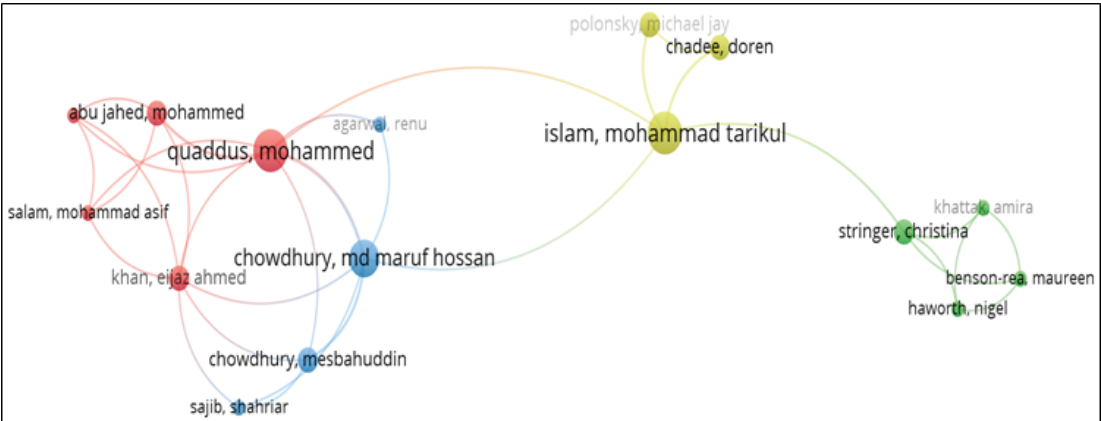


Figure 2. Co-authorship Network

Source(s): Research data from VOSviewer

Our analysis revealed four distinct clusters in the co-authorship network: Cluster 1, the largest, comprises five members centered around Quaddus from Curtin University, focusing on supply chains and decision-making systems (Jahed et al., 2022). The next cluster, somewhat isolated from the main network, consists of four members led by Stringer from the University of Auckland, who are researching social upgrading in Bangladesh's RMG industry (Khattak et al., 2017). Cluster 3, with four members, is centered around Chowdhury from the University of Technology Sydney (UTS) and shows strong connections with Cluster 1. Their research focuses on supply chain resilience and crisis response (Chowdhury & Quaddus, 2017). The smallest final cluster, with three members, is centered around Islam from the University of South Australia, focusing on supplier and overall supply chain performance in global value chains (Islam & Polonsky, 2020).

This network analysis reveals that research on Bangladesh's Ready-Made Garment (RMG) industry is conducted from multiple angles by researchers from various universities and countries. Each cluster maintains specific research themes or perspectives while interconnecting within the broader framework of supply chain management.

3.5 International Research Collaboration

Figure 3 is a world map illustrating the network of international collaborations in Bangladesh's RMG industry research. Dots on the map represent countries, with connecting lines indicating collaborative relationships. The thickness of these lines represents the intensity or frequency of collaboration.



Figure 3. Countries' Collaboration

Source(s): Research data from VOSviewer

The figure clearly shows Bangladesh at the center of a web of international collaborations. Particularly strong connections are evident with English-speaking countries such as the USA, UK, and Australia. This suggests that universities and research institutions in these countries are keenly interested in Bangladesh's RMG industry and actively collaborating with local researchers.

Collaborations are also visible with Canada and European countries, possibly reflecting their involvement in RMG industry supply chains and consequent interest in Bangladesh's situation. Interestingly, collaborations with neighboring countries like India and Pakistan appear relatively limited. This might indicate restricted academic exchange despite geographical proximity, possibly due to differences in industrial characteristics or academic interests.

In a nutshell, this figure demonstrates that research on Bangladesh's RMG industry is conducted within a global network. While collaborations with English-speaking and European countries are vibrant, cooperation with neighboring countries appears more limited. The following sections will delve deeper into the content of the research.

3.6 Co-occurrence Network

To elucidate the central themes of discussion in this research area, we examined the co-occurrence of keywords.

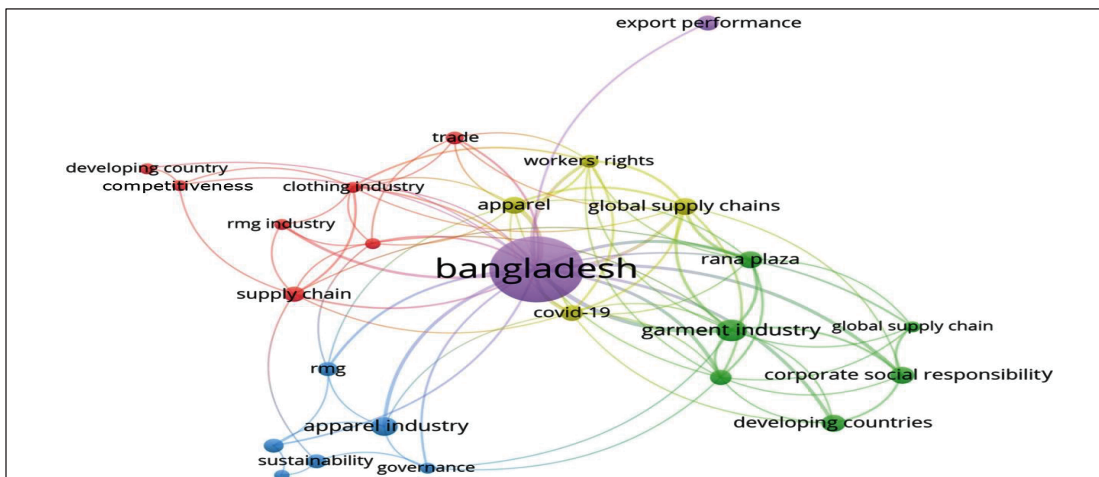


Figure 4. Keyword Co-occurrence Network

Source(s): Research data from VOSviewer

This figure, created using VOSviewer, illustrates the co-occurrence network of author keywords in research on Bangladesh's RMG industry (limited to those appearing 5 or more times). A co-occurrence network visualizes the relationships between keywords assigned by authors, revealing the structure and connectivity of research topics. Five major clusters are identified here through cluster analysis:

Cluster 1: it comprises keywords such as "clothing industry," "competitiveness," "developing country," "RMG industry," and "supply chain," represents research topics related to the competitiveness and supply chain of the clothing industry in developing countries.

Cluster 2: it includes "corporate social responsibility," "developing countries," "garment industry," and "global supply chains," suggests research on corporate social responsibility in the apparel industry within global supply chains.

Cluster 3: this cluster consists of keywords like "apparel industry," "competitive advantage," "governance," and "RMG," which reflects research topics on competitive advantage and governance in the apparel industry.

Cluster 4: holding "apparel," "COVID-19," "global supply chains," and "workers' rights," this cluster indicates research on global supply chains and workers' rights in the context of the COVID-19 pandemic.

Cluster 5: with keywords such as "Bangladesh" and "export performance," it suggests research topics specifically focused on the export performance of Bangladesh's RMG industry.

This analysis reveals that research on Bangladesh's RMG industry encompasses a wide range of topics, including industrial competitiveness in developing countries, corporate social responsibility in global supply chains, industry governance, the impact of COVID-19 and workers' rights, and export performance. These interrelated topics reflect the complexity of the management challenges faced by Bangladesh's RMG industry.

3.7 Thematic Map

To analyze research trends in Bangladesh's RMG industry, we employed a Thematic Map to visualize key themes (Figure 5). This analytical technique positions research themes based on their centrality (x-axis) and density (y-axis), visually representing the structure and development of the research field (Aria & Cuccurullo, 2017). Notable observations include:

1. Motor Themes (Upper Right Quadrant): Five themes emerged as core to this research group: "competitive advantage, dynamic capabilities, networks," "commitment, engagement, models," "mediating role, firm performance, moderating role," "governance, labor, right," and "performance, impact, management." These themes broadly fall into strategic and international management, human resource management, and labor rights protection and governance.

2. Basic Themes (Lower Right Quadrant): Two basic themes were identified: "governance, labor, right" and "performance, impact, management," overlapping with the motor themes. This corroborates our earlier findings that management research and worker protection and governance studies are fundamental themes in this field.

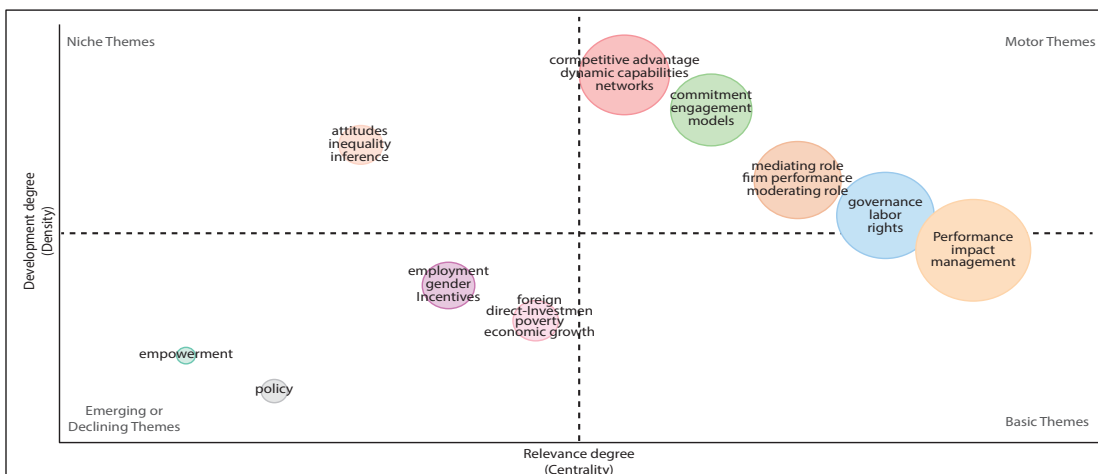


Figure 5. Thematic Map

Source(s): Research data from VOSviewer

3. *Niche Themes (Upper Left Quadrant)*: The theme "attitudes, inequality, inference" appears highly developed within specific research communities but has not yet reached the center of industry research. This may include studies on topics such as gender wage gaps (Menzel & Woodruff, 2021).

4. *Emerging or Declining Themes (Lower Left Quadrant)*: Themes such as "employment, gender, incentives," "foreign direct investment, poverty, economic growth," "empowerment," and "policy" were positioned as emerging or re-emerging themes.

These results suggest that research on Bangladesh's RMG industry employs traditional management approaches focusing on competitive strategy, organizational capabilities, and networks. It also addresses social issues such as attitudes, inequality, justice, and socioeconomic themes, such as economic growth, employment, and poverty reduction.

3.8 Historiography

To illustrate the evolution of research in this field, we present a Historiography of 25 key papers (Figure 6). Historiography arranges papers chronologically and uses arrows to indicate citation relationships between papers, representing the flow of knowledge and influence.

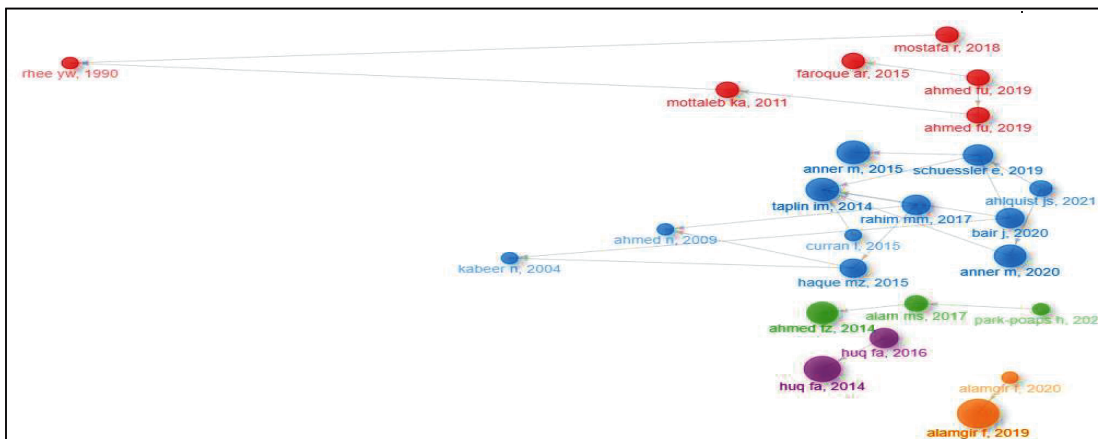


Figure 6. Historiography

Source(s): Research data from VOSviewer

The figure reveals several distinct research lineages:

1. *Rhee's Foundational Research*: Rhee (1990) pioneered the exploration of key factors contributing to Bangladesh's success in garment exports. This seminal work laid the groundwork for subsequent studies on the industry's early-stage success factors.
2. *Kabeer's Labor Rights and Industry Responsibility Stream*: This research stream focuses on workers' rights and industry accountability. Kabeer (2004) analyzed the dilemmas of global labor standards and women's rights. Taplin (2014) re-examined fast fashion industry responsibility post-Rana Plaza disaster. Bair et al. (2020) investigated the political economy of regulation in post-Rana Plaza Bangladesh. Rahim (2017) proposed new governance approaches for enhancing social responsibility in RMG industries.
3. *Ahmed's Governance and Export Growth Stream*: This stream examines the relationship between governance and export growth. Ahmed et al. (2014) explored the paradox of export growth in areas with weak governance. Alam et al. (2017) studied determinants of Bangladesh's garment exports in the post-MFA environment. Park-Poaps et al. (2021) analyzed technology adoption by Bangladeshi manufacturers in the global free trade context.
4. *Huq's Social Sustainability in Global Supply Chains Stream*: Huq and colleagues focused on social sustainability in global supply chains. Huq et al. (2014) conducted an exploratory study on the social sustainability practices of suppliers in Bangladesh's RMG industry. Huq et al. (2016) investigated social management capabilities of multinational buying firms and their emerging market suppliers. These studies comprehensively examine the challenges and realization of social sustainability in global supply chains, using Bangladesh's garment industry as a case study.
5. *Alamgir's Compliance Regimes and Labor Rights Stream*: Alamgir's research stream concentrates on compliance regimes and workers' rights. Alamgir & Banerjee (2019) analyzed contested compliance regimes in global production networks. Alamgir & Alakavuklar (2020) studied the impact of compliance codes on the (mis)representation and (non)recognition of women workers in Bangladesh's apparel industry.

This Historiography analysis demonstrates the evolution of research on Bangladesh's RMG industry, showing how scholarly focus has shifted in response to the industry's developmental stages.

3.9 Bibliographic Coupling

To analyze the research trends in the Bangladeshi RMG industry, we conducted a network analysis of the literature using bibliographic coupling (Figure 7). Bibliographic coupling assumes a strong relationship between two articles when they share numerous references. By employing this technique, we can visually represent the knowledge structure and research trends within the RMG industry research. The following visual groups arise:

Cluster 1 (16 items, including Alamgir & Banerjee (2019), Anner (2020), and Bair et al. (2020)): This cluster focuses on labor issues, working conditions, and governance in Bangladesh's garment industry. These papers examine workplace safety after the Rana Plaza disaster, labor rights, worker protests, and public/private regulation of labor standards.

Cluster 2 (11 items, including Cherkashin et al. (2015), Demidova et al. (2012), Goedhuys et al., (2014)): These papers take an economic perspective, analyzing firm productivity, technology adoption, knowledge transfer, and export competitiveness of Bangladeshi garment manufacturers. Some use advanced econometric methods.

Cluster 3 (8 items including Ahmed et al. (2014), Haque & Azmat, (2015), Heath & Mobarak (2015)): This cluster examines the socioeconomic impacts of the garment industry in Bangladesh, such as its effects on women's empowerment, household welfare, and local economic development. Heath & Mobarak (2015) specifically examines how garment jobs affect women's lives.

Cluster 4 (7 items including Chowdhury et al. (2019), Chowdhury et al. (2020), Chowdhury & Quaddus (2015)): Supply chain management is the focus here, with papers examining topics like supply chain sustainability, resilience, and vulnerabilities in Bangladesh's apparel supply chains; here, Chowdhury is a key author.

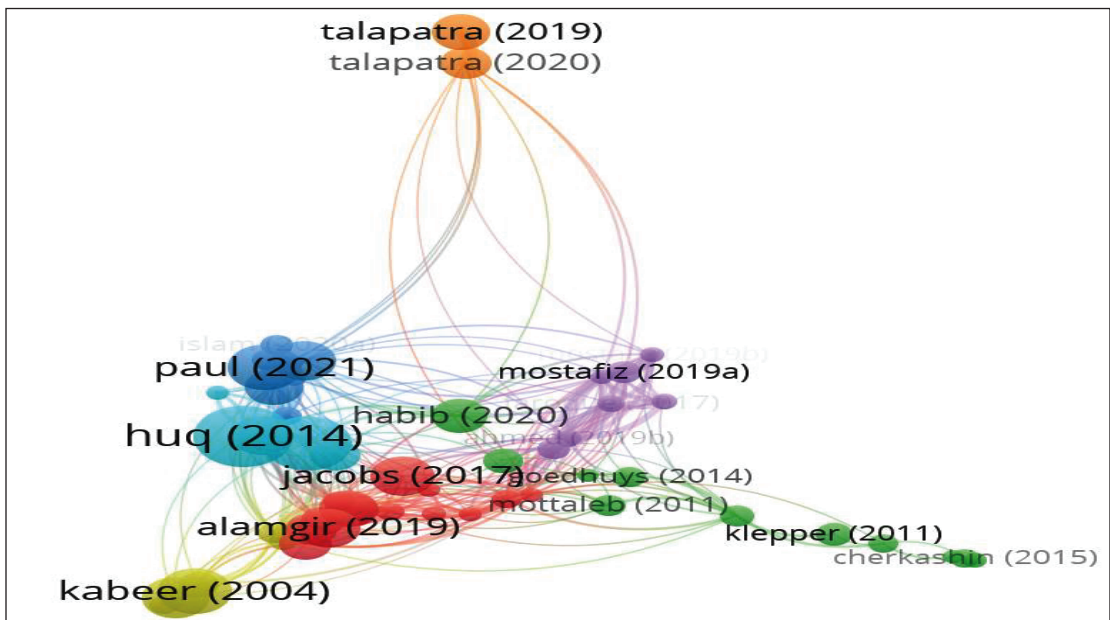


Figure 7. Bibliographic coupling

Source(s): Research data from VOSviewer

Cluster 5 (7 items including Ahmed & Brennan (2019), Faroque et al. (2017), Mostafiz et al. (2019)): These papers take a strategic management perspective, examining issues like dynamic capabilities, international entrepreneurship, and export performance of Bangladeshi garment firms.

Cluster 6 (4 items including Huq et al. (2014), Huq et al. (2016), Huq & Stevenson (2020)): Here, Huq is the lead author, looking at how multinational brands govern social and environmental issues in their Bangladeshi supplier factories. Key topics are social sustainability and suppliers' social management capabilities.

Cluster 7 (2 items): This small cluster with papers by Talapatra et al. (2020) and Talapatra & Uddin (2019) focuses on implementing quality management practices, such as total quality management and lean manufacturing in Bangladeshi garment factories.

In summary, this body of research examines Bangladesh's garment industry through multiple lenses: labor conditions, global value chains, firm strategy, and sustainability. The Rana Plaza disaster was an inflection point, sparking new work on labor governance. The literature largely highlights the industry's importance for Bangladesh's economy while also critically examining its social, environmental, and economic challenges.

4. Findings and Discussion

This study conducted a bibliometric analysis of existing research on Bangladesh's Ready-Made Garment (RMG) industry, yielding several significant findings. The bibliometric approach enabled a more objective review of the literature (Linnenluecke et al., 2020; Williams et al., 2021).

Firstly, a trend analysis revealed that RMG industry research commenced in the 1990s and has expanded rapidly since the late 2000s, particularly following the 2013 Rana Plaza collapse. The high annual average growth rate of 10.62% indicates the field's rapid expansion.

Secondly, analysis of key journals, papers, and research institutions demonstrated the interdisciplinary nature of RMG industry research. Journals such as "International Labour Review" and "Business Strategy and Development" prominently feature studies on labor issues and strategic aspects of the industry. Research is conducted in Bangladesh and by universities and research institutions worldwide.

Thirdly, co-authorship analysis revealed that RMG industry research is organized within a global network. Collaborations are particularly active with English-speaking countries such as Australia, the UK, and the USA, suggesting strong cooperation between local researchers and international counterparts.

Fourthly, the analysis of international cooperation reaffirmed the global nature of RMG industry research networks. While collaborations with English-speaking countries are robust, partnerships with neighboring countries like India and Pakistan are comparatively limited.

Fifthly, keyword co-occurrence analysis identified the main themes in RMG industry research. Topics range from competitiveness and social responsibility to governance, the impact of the COVID-19 pandemic on workers' rights, and export performance. The interrelation of these topics reflects the complexity of managerial challenges facing the RMG industry.

Sixthly, thematic map analysis elucidated the knowledge structure of RMG industry research. While studies on competitive advantage, dynamic capabilities, and networks form the core, there is growing interest in social issues such as attitudes, inequality, justice, and socioeconomic themes: economic growth, employment, and poverty reduction.

Seventhly, Historiography analysis revealed the evolution and knowledge flow in RMG industry research. Research lineages were identified in industry nurturing and development, global labor standards and social clauses, realization and challenges of social sustainability, and women's rights and voices.

Eighthly, bibliographic coupling analysis reconfirmed the knowledge structure and evolution of RMG industry research, suggesting a deepening of core research themes and an exploration of new research topics.

This study's primary contribution lies in providing a comprehensive review of research on Bangladesh's RMG industry. Previous studies often focused on specific aspects, making it challenging to grasp the overall picture of industry research. This study successfully portrayed research trends objectively and multi-dimensionally using bibliometric analysis. In essence, it provides a foundation for understanding individual studies in context and more effectively approaching the complex challenges facing the RMG industry.

5. Conclusion

This study conducted a bibliometric analysis of existing research on Bangladesh's RMG industry, elucidating research trends and knowledge structures in this field. The results revealed that RMG industry research is rapidly expanding, employing interdisciplinary approaches, and being conducted within global networks. The research covers a wide range of themes, including competitiveness, social responsibility, and labor issues. The study also illuminated the interconnectedness of research themes and their evolutionary processes.

The findings of this study provide strategic insights for the sustainable development of Bangladesh's RMG industry. In particular, an interdisciplinary approach integrating diverse stakeholder perspectives is essential for balancing industry competitiveness enhancement with social issue resolution. Theoretically, this study demonstrates the effectiveness of interdisciplinary research focusing on global industries in developing countries.

Several limitations bind this study. Firstly, it utilized the Web of Science (WoS) database, excluding research indexed in other databases (e.g., Scopus). For a more comprehensive review, combining multiple databases would be desirable. Secondly, this study relied on bibliometric methods and did not delve into the content of individual studies. Acknowledging the limitations of this study, future research directions could include more comprehensive reviews, combinations of bibliometric methods with content analysis, and comparative studies with other developing countries or industries. These approaches are expected to further deepen research in this field.

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