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Human Resource Management Research Trends Based on Total Quality Management (TQM)

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ABSTRACT

This study aims to explore the research trends and intellectual structure of scholarly publications at the intersection of Human Resource Management (HRM) and Total Quality Management (TQM) using bibliometric analysis. Drawing data from the Scopus database and analyzing it through VOSviewer, the study maps co-authorship networks, co-citation patterns, keyword co-occurrences, and temporal evolution of themes between 2000 and 2024. The results reveal that TQM has progressively evolved from a process- and control-oriented framework into a more human-centered and knowledge-driven paradigm, with HRM functioning as a critical enabler of quality culture, employee development, and organizational effectiveness. Influential authors such as Schroeder, Prajogo, and Sohal emerge as central nodes in the literature, while countries like the United States, India, and Malaysia demonstrate strong international research collaboration. Emerging themes include job satisfaction, personnel training, knowledge management, and sectoral applications in healthcare and education. This study highlights research gaps in digital integration and theoretical diversity, offering insights for future scholarly directions and strategic HRM practices embedded in quality improvement.

Keywords: *Total Quality Management (TQM), Human Resource Management (HRM), Bibliometric Analysis, VOSviewer.*

INTRODUCTION

In the era of globalization and rapidly evolving markets, the importance of human capital has become more pronounced than ever. Organizations are increasingly recognizing that their competitive advantage largely hinges on the effective management and development of their human resources. As such, Human Resource Management (HRM) has transitioned from a supportive administrative function to a strategic partner in organizational success [1]. The need for systems that align individual and organizational goals has ushered in various performance management frameworks. Among these, Total Quality Management (TQM) emerges as a vital approach that integrates quality-focused strategies into all organizational processes, including HRM [2].

Total Quality Management, initially conceived as a tool for improving manufacturing efficiency and product quality, has evolved to influence various domains beyond production, including healthcare, education, and service sectors [3]. Central to TQM is the principle of continuous improvement, customer focus, and the involvement of all organizational members. When applied to HRM, TQM fosters a culture of quality across all employee-related practices such as recruitment, training, performance appraisal, and employee engagement [4]. This intersection of HRM and TQM is increasingly attracting scholarly attention, particularly as organizations face complex quality-related challenges in a dynamic labor market.

Recent decades have witnessed a surge in academic interest in how TQM principles can reshape HRM strategies to improve employee performance, satisfaction, and retention. Numerous studies have explored the mediating role of HRM in sustaining quality practices, highlighting its impact on organizational outcomes like innovation, operational efficiency, and customer satisfaction

[5], [6]. The adoption of TQM-driven HRM practices is seen as a way to embed quality consciousness into employee behavior and organizational routines. This integration also aligns with the broader movement toward sustainable and socially responsible business practices. However, the scope, direction, and thematic concentration of research at the intersection of HRM and TQM remain fragmented. While some studies emphasize the role of leadership and organizational culture in facilitating TQM in HRM, others focus on the tools and techniques for measuring HR quality. There is also a growing body of research exploring cross-cultural perspectives and the applicability of TQM in HRM across different sectors and economies [7], [8]. These varied approaches point to the richness and complexity of the field, but also signal a need for a systematic understanding of how research trends have evolved and where potential gaps lie.

Bibliometric analysis offers a powerful methodological approach to mapping the intellectual structure of academic fields. By analyzing patterns in academic publications, bibliometric studies can identify the most influential authors, institutions, keywords, and collaborations within a specific domain. In the context of HRM and TQM, a bibliometric perspective can provide insights into how research themes have shifted over time, what topics have gained prominence, and which areas remain underexplored. It allows researchers, practitioners, and policymakers to understand the evolution of knowledge and the strategic directions for future inquiry [9].

Despite the increasing integration of TQM principles in HRM practices and a growing number of scholarly publications in this area, there is a lack of consolidated understanding regarding the intellectual structure and development of research at the intersection of HRM and TQM. Previous studies often focus on specific case applications or conceptual discussions without offering a comprehensive overview of research trends, dominant themes, or influential contributions over time. Consequently, there is limited guidance for researchers aiming to position their work within this evolving field or identify unexplored research avenues. The absence of such a systematic mapping restricts the advancement of theoretical frameworks and the application of best practices in diverse organizational contexts. The objective of this study is to conduct a bibliometric analysis of academic research on Human Resource Management that incorporates principles of Total Quality Management (TQM).

METHOD

This study adopts a bibliometric analysis approach to systematically examine the research trends, intellectual structure, and thematic evolution at the intersection of Human Resource Management (HRM) and Total Quality Management (TQM). Bibliometric analysis is a quantitative method that enables the identification and visualization of patterns in scientific literature based on publication metadata such as authorship, keywords, citations, and co-occurrence networks [9]. The software VOSviewer (version 1.6.x) was employed for data processing, mapping, and visualization of bibliometric networks.

The bibliographic data for this study were retrieved from the Scopus database, which is widely recognized for its comprehensive coverage of peer-reviewed academic literature in business, management, and social sciences. The search was conducted using a combination of keywords related to HRM and TQM, ensuring that both concepts were explicitly present in the title, abstract, or keywords. The search string used was: (TITLE-ABS-KEY("human resource management" OR "HRM")) AND (TITLE-ABS-KEY("total quality management" OR "TQM")). The search was limited to articles, reviews, and conference papers published in English between 2000 and 2024 to capture two decades of research development. After applying filters and removing duplicate entries, the final dataset comprised [insert number] documents, including metadata such as title, authors, affiliations, publication year, abstract, keywords, sources, and citation counts.

Before analysis in VOSviewer, the raw bibliometric data were exported from Scopus in CSV format, including full records and cited references. The data underwent cleaning to unify variations in author names, institutional affiliations, and keyword synonyms. For example, terms such as

"TQM" and "Total Quality Management" were merged, as were "HRM" and "Human Resource Management". VOSviewer's thesaurus function was utilized to consolidate these variants, ensuring consistency in network generation. Three major bibliometric techniques were applied using VOSviewer such as co-authorship analysis, co-occurrence analysis of keywords, and citation analysis. Threshold values were set in VOSviewer to ensure the clarity of visualizations. For example, in keyword co-occurrence analysis, only keywords that occurred at least five times were included. Similarly, in co-authorship analysis, authors with a minimum of three publications were included. These thresholds balanced the depth and readability of the maps.

RESULT

Co-Authorship Analysis

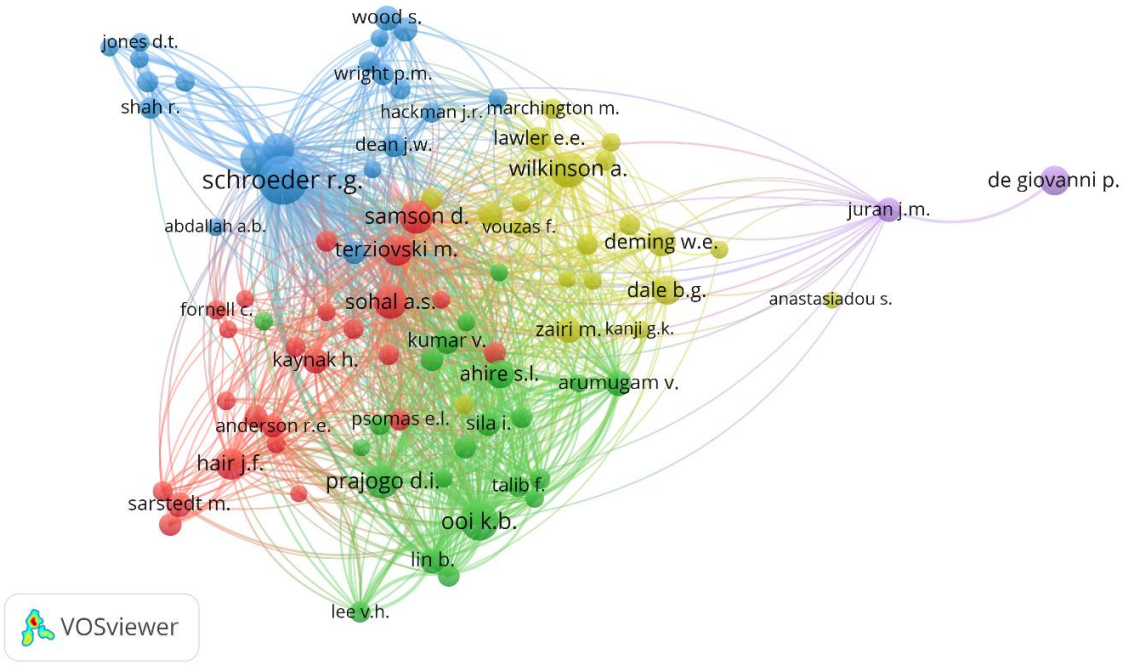

Figure 1. Author Visualization
Source: Data Analysis

The co-citation network visualization illustrates the intellectual structure of research in Human Resource Management and Total Quality Management (TQM) by mapping the most frequently co-cited authors. The network is divided into several color-coded clusters, each representing a thematic grouping of authors with strong bibliographic linkages. At the center of the map, prominent scholars like Schroeder R.G., Sohal A.S., Prajjog D.I., Psomas E.L., and Ooi K.B. emerge as central figures, indicating their foundational influence and frequent co-citation within the field. The blue cluster appears to emphasize strategic HRM and organizational performance themes, while the green and red clusters likely focus on quality systems, process integration, and empirical validation of TQM principles. Notably, Juran J.M. and De Giovanni P. form a separate purple cluster, showing limited co-citation with the main body.

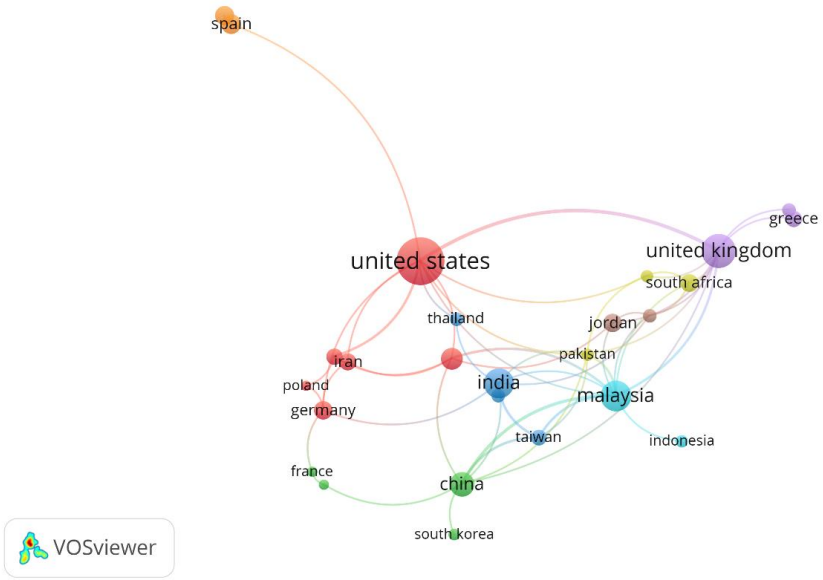

Figure 2. Country Visualization
Source: Data Analysis

The country collaboration map illustrates the international research network in the field of Human Resource Management and Total Quality Management (TQM). The United States stands out as the most influential and collaborative hub, indicated by its large node size and multiple strong links with countries like India, Malaysia, Germany, Iran, and the United Kingdom. This suggests that U.S.-based researchers often co-author papers with international counterparts, contributing significantly to global knowledge production. The United Kingdom also forms a key collaborative node, particularly with South Africa, Greece, and Malaysia, indicating strong regional academic ties. India, China, and Malaysia show substantial collaboration within Asia, reflecting the growing research activity and regional cooperation in these emerging economies. Meanwhile, countries like Spain, France, and Poland appear more peripheral with fewer connections, suggesting limited global collaboration in this field.

Co-Occurrence Analysis

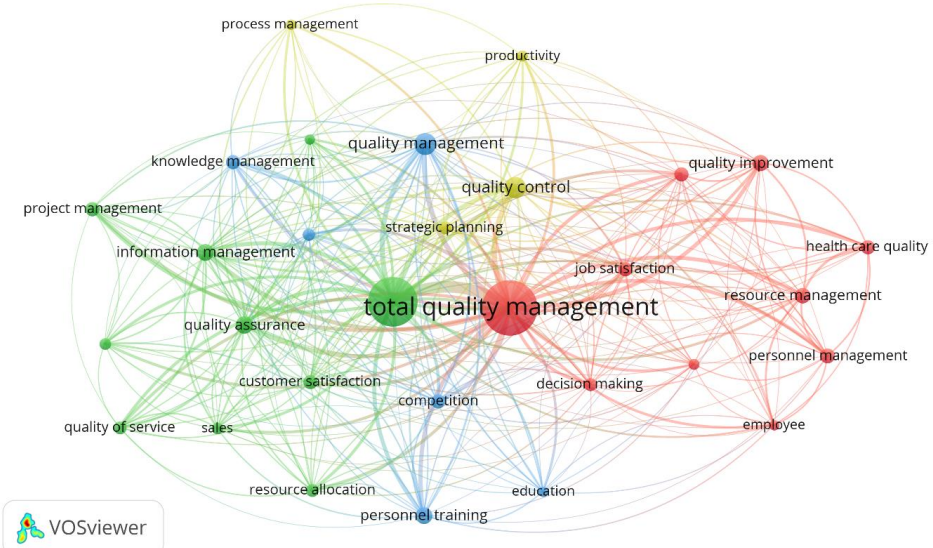

Figure 3. Network Visualization
Source: Data Analysis

The keyword co-occurrence map presents the thematic structure of scholarly publications relating to Total Quality Management (TQM) in the context of human resource management and organizational performance. At the core of the network, the term "total quality management" dominates the visualization, acting as the central node with extensive connections to numerous concepts. This centrality confirms TQM's foundational role in interdisciplinary research, bridging themes of quality, human resources, organizational effectiveness, and strategy. The map shows how various keywords cluster around TQM, indicating recurring combinations of themes that represent dominant research directions. The green cluster on the left focuses heavily on operational and strategic processes, linking keywords such as quality assurance, information management, project management, customer satisfaction, sales, and resource allocation. This suggests a strong connection between TQM practices and operational efficiency, emphasizing how TQM is applied to streamline workflows, ensure consistency in service delivery, and align internal processes with customer expectations. This cluster often reflects the use of TQM in systems thinking and performance monitoring in both manufacturing and service industries.

On the other hand, the red cluster on the right concentrates on human-centric aspects of TQM. It includes terms like job satisfaction, personnel management, employee, resource management, and healthcare quality. These terms indicate a body of research that integrates TQM principles into human resource practices, addressing how quality-focused environments affect employee attitudes, well-being, and productivity. The appearance of healthcare quality also signifies that TQM research is increasingly applied to the service sector, especially in human-sensitive domains like healthcare, where personnel performance is deeply tied to service outcomes. The blue cluster below the central node includes keywords such as education, training, competition, and decision making, pointing toward a knowledge-based interpretation of TQM. This area of research explores how learning, strategic planning, and human capital development contribute to sustaining a culture of quality within organizations. It reflects the role of employee empowerment, skills enhancement, and informed decision-making in implementing TQM systems effectively. This cluster may also represent studies that intersect with education management or institutional quality improvement frameworks. The yellow cluster at the top-right combines technical quality terms such as productivity, quality control, and process management. This suggests a domain of literature that emphasizes measurable quality outputs and system-based improvements, often rooted in industrial or production-based research traditions. While this area is traditionally detached from HRM, its strong linkages to the central TQM concept show the interdisciplinary nature of quality management systems.

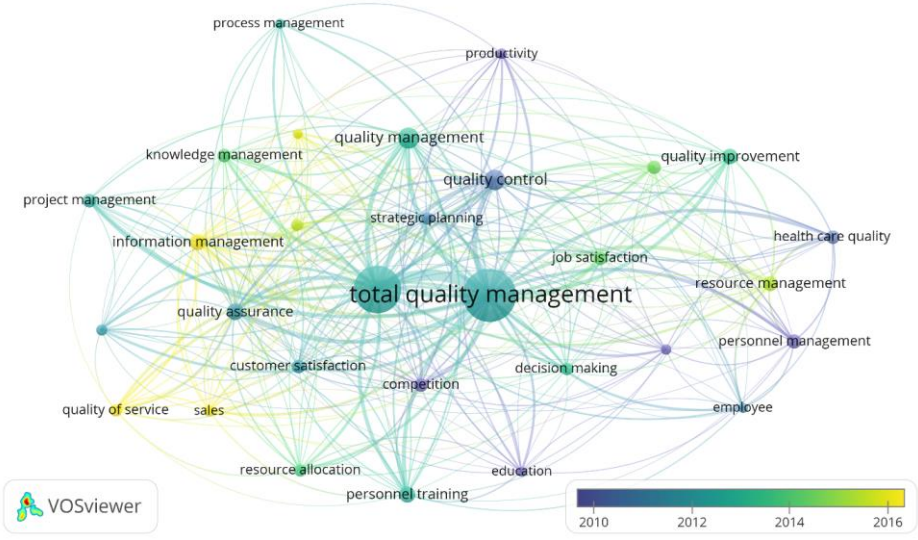

Figure 4. Overlay Visualization
Source: Data Analysis

The overlay visualization reveals the temporal evolution of research themes in the domain of Total Quality Management (TQM). The color gradient, ranging from blue (earlier years, around 2010) to yellow (more recent years, around 2016), indicates the average publication year associated with each keyword. The central node, "total quality management," is represented in teal, suggesting that it has remained a consistently relevant term across the entire timeline. Surrounding it are various thematic areas, each with distinct temporal trends. Keywords like decision making, productivity, and education appear in darker shades (closer to blue), implying that these were more prominent in earlier stages of TQM research. In contrast, keywords such as knowledge management, resource management, quality of service, and sales are shaded in lighter green to yellow, indicating emerging or more recent research interests within the TQM landscape. This shift suggests a growing emphasis on integrating TQM with knowledge-based systems, service quality, and strategic human resource allocation, particularly in modern organizational contexts. The emergence of healthcare quality and employee in newer shades also reflects the recent extension of TQM practices into human-centric and service-driven industries, especially health and public sectors. The map also shows a temporal bridging of traditional and modern research priorities. Classical TQM domains such as quality control, quality assurance, and process management appear in earlier hues, signifying their foundational role in TQM studies. Meanwhile, concepts like customer satisfaction, project management, and information management show a broader color range, denoting their sustained importance throughout the evolution of the field.

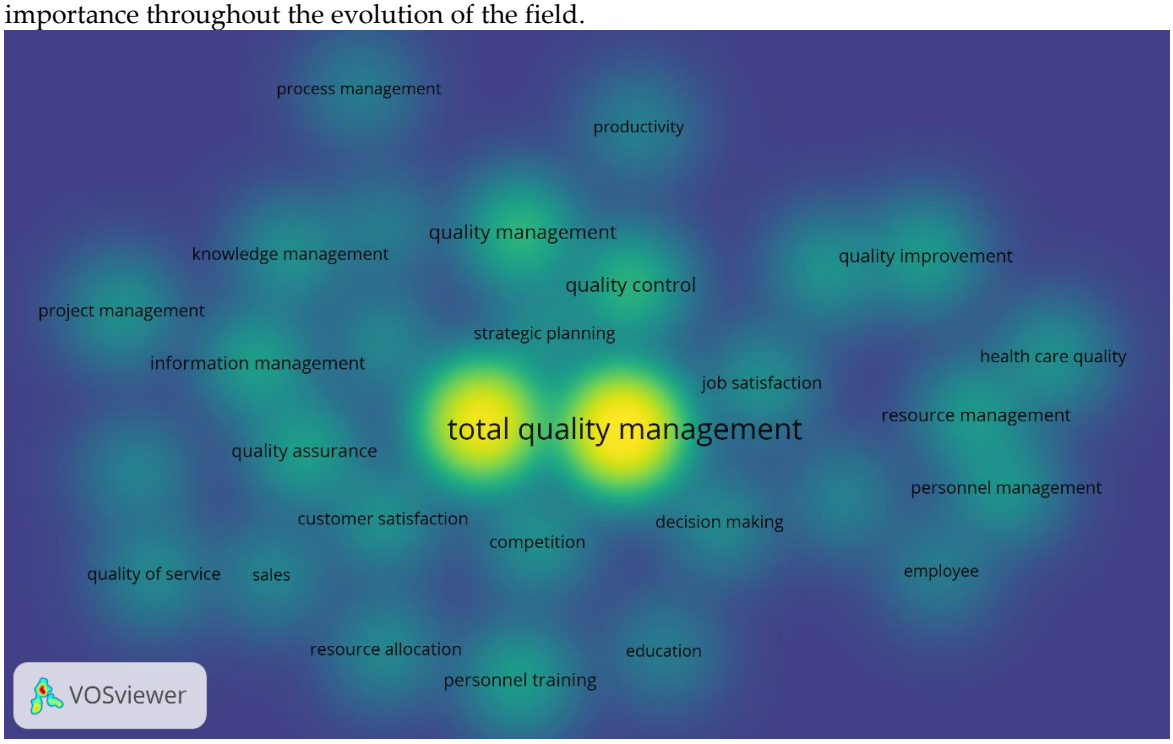

Figure 5. Density Visualization
Source: Data Analysis

The density visualization illustrates the intensity and concentration of keyword usage in the literature on Total Quality Management (TQM). The brightest area in the center, marked by the yellow glow, corresponds to the term "total quality management", which has the highest frequency and strongest connectivity with other terms. Surrounding this core are slightly dimmer but still dense keywords such as quality assurance, customer satisfaction, strategic planning, quality control, and job satisfaction. These terms are pivotal, suggesting that they are commonly addressed together in TQM research, forming the backbone of scholarly discourse in this domain. The peripheral regions of the map, represented in cooler tones (green and blue), indicate keywords with moderate to low occurrence and linkage, such as education, resource allocation, knowledge management, and health care quality. Although these terms appear less frequently, their presence suggests emerging or niche

areas within the TQM field, particularly in its applications to human-centered services and strategic development.

Citation Analysis

Table 1. Most Cited Article

Citations	Author	Title
356	[10]	Impact of total quality management on corporate green performance through the mediating role of corporate social responsibility
221	[11]	Complementarity and lean manufacturing bundles: An empirical analysis
142	[12]	Lean practices implementation and their relationships with operational responsiveness and company performance: an Italian study
138	[13]	The impact of human resource management practices on the implementation of total quality management: An empirical study on high-tech firms
120	[14]	Interrelationships among lean bundles and their effects on operational performance

Source: Scopus, 2025

DISCUSSION

This bibliometric analysis provides a comprehensive overview of research trends at the intersection of Human Resource Management (HRM) and Total Quality Management (TQM). Drawing upon co-citation, co-authorship, keyword co-occurrence, and temporal density visualizations, this study reveals the intellectual structure, collaborative networks, thematic shifts, and evolving priorities in the field. The findings shed light on how TQM principles have influenced HRM theory and practice, and how scholars around the world have contributed to shaping this knowledge domain.

One of the most prominent findings is the centrality of TQM as a cross-disciplinary construct, particularly in its role as a foundation for quality-focused HRM strategies. The keyword co-occurrence network showed that TQM is deeply intertwined with core HRM constructs such as job satisfaction, personnel management, employee performance, and resource management. This reinforces the growing recognition that successful TQM implementation depends not only on process or system improvements, but also on strategic alignment with human capital policies. Organizations that invest in employee training, engagement, and quality culture are better positioned to embed TQM into their operational fabric [15], [16]. The co-citation analysis revealed several thematic clusters of influential scholars, indicating the diverse intellectual roots of this research domain. Scholars such as Schroeder R.G., Sohal A.S., and Prajogo D.I. appear as central figures who have significantly shaped discussions on performance, process management, and organizational quality through HRM interventions. Their high connectivity with other authors suggests that these researchers have produced foundational or highly integrative works. Meanwhile, a distinct yet more isolated cluster formed around Juran J.M. and De Giovanni P., indicating a more classical or niche influence—perhaps rooted in early TQM theories or European perspectives on quality systems.

The international collaboration network further supports the idea of a globally interconnected research community. The United States emerged as the most prolific and connected country, acting as a hub in collaborative networks with countries across Asia, Europe, and Africa. Nations such as India, Malaysia, the United Kingdom, and China have also shown strong participation, with notable bilateral links suggesting joint research initiatives or shared institutional interests. Notably, emerging economies are not just passive adopters of TQM but active contributors

to its HRM integration, particularly in sectors like education, manufacturing, and healthcare where quality and workforce effectiveness are vital. The keyword overlay visualization indicated a clear evolution in research themes over time. Earlier studies (pre-2012) predominantly focused on traditional quality constructs such as quality control, process management, and decision making. These studies laid the groundwork for understanding how TQM can improve operational performance through structured systems. However, more recent studies (2014–2016) have shifted attention to concepts like knowledge management, customer satisfaction, resource allocation, and healthcare quality, highlighting the human and service dimensions of TQM. This shift suggests a growing interest in how TQM principles are being applied beyond manufacturing, particularly in service-based and knowledge-intensive industries.

The density visualization complements this trend by indicating where research activity is most concentrated. Keywords like customer satisfaction, strategic planning, and quality assurance exhibit high research density, underscoring their foundational role in the field. At the same time, emerging terms such as healthcare quality, education, and employee—while less dense—signal newer areas of inquiry that are becoming more relevant as TQM and HRM continue to converge. This is particularly evident in sectors undergoing digital transformation and facing demands for service excellence and workforce agility. One of the most significant insights from this analysis is the increasing human-centeredness of TQM research. While early TQM models emphasized standardized procedures and process controls, contemporary studies have expanded the scope to include employee involvement, motivation, and organizational learning. These human factors are now recognized as critical enablers of quality initiatives. HRM, in this context, is not merely a supporting function but a strategic driver of quality culture and continuous improvement [17]. The recurring appearance of terms like job satisfaction, personnel training, and employee performance reflects this paradigm shift.

Moreover, the findings suggest that TQM is being reframed as a knowledge-based and learning-oriented approach, rather than solely a set of procedural guidelines. This is evident from the prominence of terms such as knowledge management, education, and information management. These themes imply that organizations are increasingly focusing on building internal capabilities and learning infrastructures that can support continuous quality improvement. In this context, HRM plays a crucial role in designing training programs, fostering a culture of innovation, and facilitating the flow of knowledge across units. The growing interest in sector-specific applications of TQM, especially in healthcare, education, and public services also merits attention. The appearance of healthcare quality as a frequently co-occurring keyword suggests that TQM frameworks are being tailored to fit the needs of human-intensive and high-stakes environments. In these sectors, the role of HRM is magnified, as the quality of service delivery is closely tied to staff competencies, motivation, and interpersonal skills. The integration of TQM with HRM in such contexts reflects a holistic view of quality, one that spans systems, people, and processes.

Despite these advances, several research gaps remain. First, there is limited bibliometric evidence on the integration of emerging digital technologies with TQM-HRM systems. Concepts such as digital HRM, people analytics, and AI-assisted quality assurance were notably absent from the analyzed datasets, suggesting that future research could explore how technological innovations reshape the dynamics of quality management. Second, while cross-national collaboration is evident, regional disparities persist. Countries from Africa, Latin America, and Eastern Europe are underrepresented, highlighting the need for more inclusive and localized research that accounts for contextual differences in TQM-HRM implementation.

Additionally, methodological diversity appears to be limited. The analysis showed a dominance of conceptual and empirical studies based on survey data or case studies. Future research could benefit from mixed-method approaches, longitudinal studies, and experimental designs to better capture causal relationships and temporal effects. Moreover, theoretical development in this domain remains fragmented. Scholars could contribute by integrating TQM-HRM frameworks with

broader theories such as resource-based view (RBV), institutional theory, or organizational learning theory to enhance conceptual coherence.

CONCLUSION

This bibliometric study has provided a comprehensive overview of the research landscape at the intersection of Human Resource Management (HRM) and Total Quality Management (TQM), highlighting key themes, influential authors, collaborative networks, and evolving trends over the past two decades. The analysis reveals a progressive shift from traditional process-focused TQM models toward more human-centric and knowledge-driven approaches, where HRM plays a strategic role in embedding quality culture across organizations. Emerging themes such as job satisfaction, personnel development, and sectoral applications in healthcare and education reflect the expanding scope of TQM beyond manufacturing. The growing international collaboration, particularly among the United States, India, Malaysia, and the United Kingdom, further underscores the global relevance of this research domain. Despite the field's advancement, gaps remain in integrating digital technologies and diversifying theoretical frameworks. Future studies should focus on these emerging frontiers to strengthen the alignment between TQM practices and dynamic human resource strategies in an increasingly complex organizational environment.

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