

Bibliometric Analysis: *Emotional Intelligence* on Leadership

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ABSTRACT

Introduction/Main Objectives: This study explores research trends on Emotional Intelligence (EI) within transformational leadership. As EI increasingly emerges as a critical competency for effective leadership in dynamic organizational settings, examining its scholarly development is essential. **Background Problems:** Despite extensive EI research across disciplines, its integration into transformational leadership remains fragmented. Limited understanding persists regarding how EI supports leadership development across cultural and institutional contexts. This study addresses these gaps by analyzing global research trends and directions of EI within transformational leadership. **Novelty:** This paper presents a comprehensive bibliometric review mapping the global landscape of EI-related studies in leadership. It highlights underexplored dimensions such as cultural diversity, digital work environments, and leadership development programs—areas often overlooked in previous studies. **Research Methods:** Using the Scopus database, 1,428 documents were retrieved with the keyword “Emotional Intelligence,” restricted to the Business, Management, and Accounting field. Bibliometric analysis with VOSviewer examined co-authorship, keyword co-occurrence, publication trends, and geographical distribution. **Finding/Results:** Publications on EI have grown steadily between 1999 and 2024, peaking during 2005–2010 and 2016–2024. Thematic links connect EI with emotional regulation, motivation, empowerment, and innovation. The United States, United Kingdom, and Australia were identified as leading contributors, with influential scholars including Neal M. Ashkanasy and Ronald H. Humphrey. **Conclusion:** The findings reaffirm EI’s critical role in transformational leadership and highlight the need for further exploration in cross-cultural and digital contexts. The study offers insights for developing emotionally intelligent leadership frameworks to enhance adaptability and organizational performance.

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1. Introduction

The world of leadership continues to undergo significant transformation in the face of increasingly complex challenges in various sectors. One competency that is increasingly recognized in supporting modern leadership effectiveness is Emotional Intelligence (EI). Research results by (Kwasi Dartey-Baah, 2017) show that high Emotional Intelligence contributes significantly to leadership effectiveness.

Leaders with high Emotional Intelligence are better at managing their own emotions and understanding the emotions of others, which enhances their ability to lead effectively. In the past seven years, research on EI has shown increasing attention to its role in the context of transformational leadership, especially in addressing dynamic organizational challenges (Wong & Law, 2017); (Miao et al., 2018).

Across the world, EI has been shown to support leaders' success in building harmonious relationships, managing conflict, and making strategic decisions. Recent research shows that in Western countries, EI is starting to become part of the leadership training curriculum in large organizations (Lopez-Zafra et al., 2019). Meanwhile, in Asia, particularly in Japan and South Korea, aspects of EI are used to enhance a collaborative work culture to drive innovation (Chen et al., 2020). In Indonesia, the understanding of the importance of EI is growing, especially in the creative industry and technology sectors. However, the challenges of a hierarchy-oriented work culture often limit its maximum application (Wahyuni & Al Rasyid, 2022).

Emotional Intelligence is defined as the ability to recognize, understand, and manage one's own emotions, as well as influence the emotions of others (Goleman & Boyatzis, 2017). In the context of transformational leadership, EI becomes a key element as this model emphasizes empowering team members, creating a shared vision, and driving positive change (Bass & Riggio, 2006). Leaders who have high levels of EI are able to inspire their teams to achieve organizational goals, while meeting the needs of individuals in the team.

Recent research suggests that EI contributes to leader effectiveness in enhancing motivation, empathy, and interpersonal skills (Bass & Riggio, 2006). However, there are still research gaps that need to be addressed, especially in the context of applying EI to different types of leadership and organizational cultures around the world. This study aims to review the development of studies on EI in transformational leadership over the past seven years, identify key contributions in the literature, as well as provide recommendations for future research.

Given the growing attention to Emotional Intelligence (EI) in organizational Contexts, it is essential to understand how this research area has evolved over time. Therefore, the first reasearch question (RQ1) seeks to trace the progression of EI-related studies from 1999 to 2024 in five-year

intervals, with the aim of identifying thematic shifts, increasing focus areas, and significant trends in the field.

In addition, as EI becomes increasingly relevant in global leadership settings, the second research question (RQ2) explores the geographic distribution and development of EI-related research in the top ten contributing distribution countries. This helps highlight international research contributions and differences in regional priorities.

The third research question (RQ3) addresses the identification of the most influential researchers and institutions in the field of EI. Mapping these key contributors is important to understand how knowledge is built, disseminated, and developed in the scholarly community.

The evolution of EI research and the rich insights accumulated over time suggest that EI has reached a sufficient level of maturity to warrant a comprehensive review. While there are several literature reviews relating to the concept of EI, they are limited in some aspects, such as many studies being conducted in controlled environments, such as assessment centers, which may not accurately depict real-world scenarios. This limits the generalizability of the findings to actual workplace environments. As a result, this study does not adequately describe the role of EI as a whole. As EI is a vast literature, this study helps to generalize it. Therefore, this study used a biometric review to map the landscape of published research on EI.

Despite the growing body of research on Emotional Intelligence in leadership, there remains a lack of comprehensive mapping that consolidates findings across different cultural and organizational contexts. Much of the existing literature is fragmented—either focused on specific regions, limited leadership styles, or conducted in controlled environments that may not reflect the complexities of actual workplace settings. This creates a gap in understanding how EI is applied in diverse, real-world leadership situations, particularly within transformational leadership across varying cultures. Furthermore, there is a lack of clarity regarding which countries, institutions, and scholars are leading the field, and how research trends have evolved over time.

To address these gaps, this study conducts a bibliometric analysis of EI-related research within transformational leadership over the last 25 years. By identifying research trends, geographic distributions, influential contributors, and overlooked areas, this study aims to provide a clearer roadmap for future research and practical application.

Previous studies have highlighted the growing importance of Emotional Intelligence (EI) in leadership, yet inconsistencies remain regarding its theoretical integration and empirical development (Ashkanasy & Daus, 2005; Miao et al., 2018). There is also evidence that global research on EI tends to cluster within specific regions and authors, indicating disparities in scholarly collaboration (Humphrey, 2013; Lopez-Zafra et al., 2019). Furthermore, existing literature has seldom mapped the evolution of

EI studies across time, geographical boundaries, and institutional networks. These observations form the foundation of this study's research questions, which aim to identify how EI-related scholarship has evolved, who contributes most to the field, and what conceptual gaps remain for future exploration.

The following questions were formulated to address the research contribution:

RQ1: How has EI-related research progressed every 5 years, from 1999 to 2024?

RQ2: What is the distribution and development of research on EI topics in the top 10 countries?

RQ3: What are the results of identifying the most influential researchers or institutions in the field of EI?

RQ4: What are the research gaps found in the topic of EI, and what are the recommendations for future research?

2. Literature Review

The concept of Emotional Intelligence (EI) was first introduced by Salovey and Mayer (1990) as the ability to recognize, understand, and manage one's own and others' emotions. Later, Goleman (1995) popularized this concept by highlighting its relationship to personal and professional success, defining EI as a set of emotional abilities encompassing five core dimensions—self-awareness, emotion management, motivation, empathy, and social skills. Over the past decade, research on EI has grown rapidly, with scholars examining its application in diverse contexts such as leadership, education, and mental health. For instance, Wong and Law (2017) emphasized that EI enhances leaders' interpersonal competencies and fosters team performance through harmonious workplace relationships and improved job satisfaction. Similarly, Brackett et al. (2019) argued that EI contributes to intrinsic motivation and effective conflict management, while Sharma (2024) found that EI facilitates decision-making and strengthens relational dynamics between leaders and subordinates. Supporting these claims, a meta-analysis by Narendran et al. (2024) confirmed that EI significantly enhances leadership effectiveness across industries, positioning it as a crucial competency in modern management practices.

In addition, Mayer, Caruso, and Salovey (2016) refined the *ability model* of EI by clarifying its theoretical components and emphasizing measurable emotional abilities. Miao, Humphrey, and Qian (2018) expanded this by demonstrating that leader EI positively affects subordinate task performance and organizational citizenship behavior across cultures. Nasir and Saidi (2024) provided further evidence by linking transformational leadership and employee well-being through EI and organizational culture. This indicates that EI serves as a mediating variable in leadership effectiveness, influencing both individual and organizational outcomes. Moreover, recent literature on educational and psychological domains has reinforced the multidimensional role of EI in emotion regulation, interpersonal functioning, and resilience (Pasquier et al., 2022; Petrides et al., 2018).

Complementary studies have also examined how EI interacts with external factors such as burnout, culture, and collective intelligence. Sanchez-Gomez and Bresó (2020) demonstrated that EI mitigates burnout and enhances job performance, while Wahyuni and Al Rasyid (2022) showed its developmental importance in early education, particularly in fostering children's independence. At the group level, Woolley et al. (2010) introduced the concept of "collective intelligence," suggesting that team EI significantly predicts group performance. Together, these studies reveal that EI not only operates at the individual level but also functions as a social and organizational capability, reinforcing its relevance to transformational leadership research.

3. Method, Data, and Analysis

This article aims to conduct an in-depth bibliometric analysis of Emotional Intelligence. The research focuses on identifying the core of the research that has been conducted, including author and co-author relationships, citation analysis, distribution of research locations by country, publication sources, documents, leading organizations, funding agencies, bibliographic clustering, co-occurrence of keywords, and the relationship between these elements. This study uses a quantitative bibliometric method by analyzing metadata from previous publications indexed in Scopus, including document titles, abstracts, author, names, institution affiliations, publication years, countries, keywords, sources of publication, and citation counts. The analysis focuses on mapping the patterns of scientific output, author collaboration networks, country distribution, and thematic trends using the VOS viewer software. The article selection process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, which involved four main steps: identification, screening, eligibility, and inclusion (Page et al., 2021). To obtain the necessary data, the first step was to access the Scopus platform and perform a search using the following Boolean operators:

("Emotional Intelligence")

At the initial stage of the search, 17,494 documents were obtained. This process was then continued by applying inclusion and exclusion criteria to the Subject Area "Business, Management, and Accounting," which resulted in 2,936 documents. This filter was used to provide a focus on managerial and organizational aspects related to Emotional Intelligence. It also helped to identify keywords such as management issues, organizational capabilities, and the impact of Emotional Intelligence, while limiting the exploration of other Subject Areas that may offer additional perspectives.

The next step was to filter the documents based on the Document Type criterion "Article," which resulted in 2,141 documents. In the final stage of the search process, the main keyword "Emotional Intelligence" was applied, which filtered the results into 1,428 relevant documents. This

data was then used for further analysis by utilizing the Analysis Result feature available on the Scopus platform.

The Analysis Result feature allows analysis of document distribution based on various categories, such as publication year, country of origin, author, institution, and document type. The data displayed in this feature is presented in the form of bar graphs, pie charts, or tables, making it easier to understand research trends. In this study, the data retrieved includes a graph of publication year and a graph of distribution by country

Both graphs were chosen because they provide deep insights into publication trends over time as well as the geographical distribution of research. The publication year graph helps identify patterns in research trends, while the geographic distribution graph shows regions with significant contributions to the field. This visual data is used to understand relationships with other factors, such as global policies or technological developments, and is complemented by additional analysis to produce more integrated conclusions. This approach aims to produce a systematic and targeted visual analysis

After obtaining the results from Analysis Result for descriptive analysis, the next step was to save the final search results, namely 1,428 documents, in CSV format. This format is used for further bibliometric analysis with the help of VOS viewer software. Bibliometrics is a statistical method that can quantitatively analyze research articles related to a particular topic using a systematic approach (C. Chen et al., 2014). . Bibliometric analysis serves to explain and map scientific knowledge that has been influenced by various contexts so as to facilitate the review of the research domain (Donthu et al., 2021).

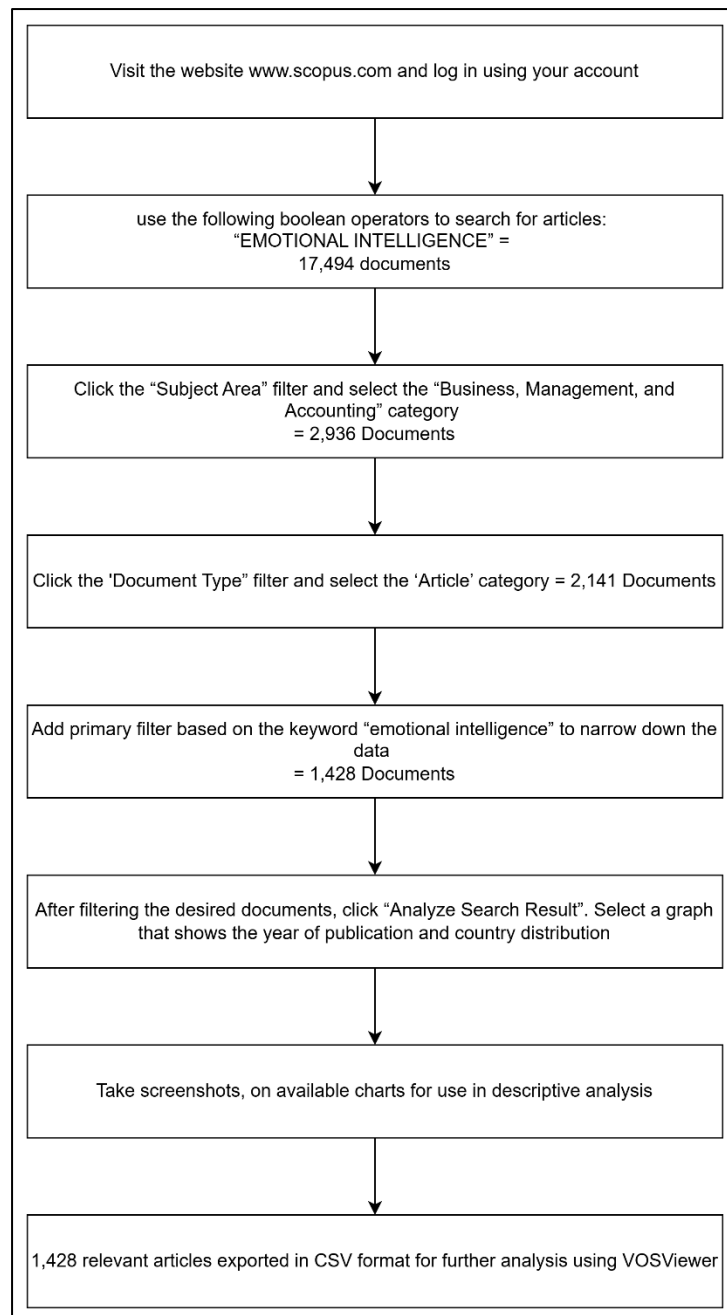


Figure 1. Steps for Retrieving and Filtering Research Data Using Scopus
Source: Author's Elaboration

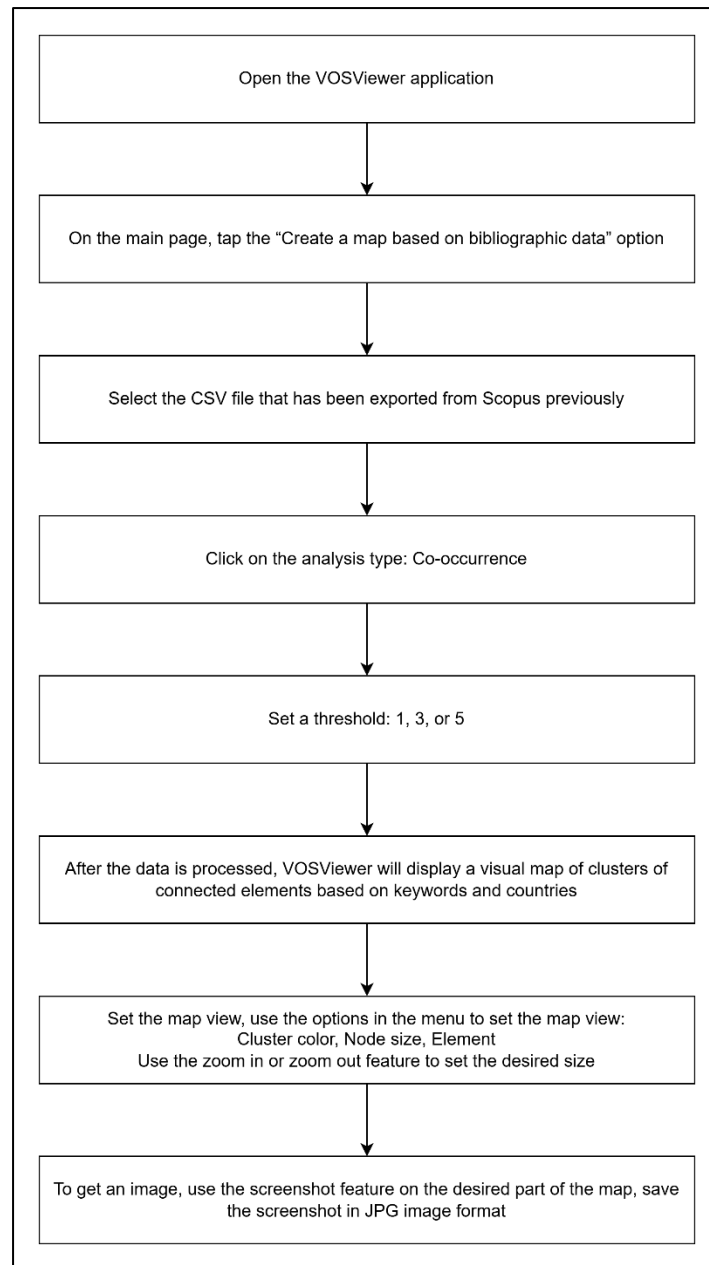
This analysis was conducted using VOS viewer software version 1.6.20. This approach allowed the examination of collaboration patterns between authors, thematic distribution based on keywords, as well as relationships between elements in the research. In addition, VOS viewer helped identify existing research gaps in the articles and provided recommendations for future research.

The first step in analysis using VOS viewer is to open the application to start processing data. Once the application is open, select the main option "Create a map based on bibliographic data" to

create a map based on bibliographic data. Then, upload the CSV file previously exported from Scopus. Next, select the Co-occurrence analysis type to identify relationships between data elements. Specify threshold values of 1, 3, and 5 to measure the level of relatedness between components that will be displayed in the analysis.

Once the data has been processed, VOS viewer will generate a visual map showing clusters of connected elements, such as keywords and countries. The appearance of this visual map can be customized through various options in the menu, such as changing the color of the cluster, adjusting the size of the nodes (elements), and zooming in or out with the zoom in and zoom out features.

The last step is to save the visualization results from VOS viewer by taking a screenshot of the desired part of the map, then saving the image in JPG format. The visualization results will be further analyzed and presented in the form of a bibliometric analysis map. This approach helps to understand the dynamics of EI-related topics, including emerging trends and potential research gaps that can form the basis of recommendations for future research. This analysis also provides targeted insights to support literature development and determine future research directions.

**Figure 2.** Steps to Process Data in VOS Viewer

Source: Author's Elaboration

4. Result and Discussion

4.1. Result

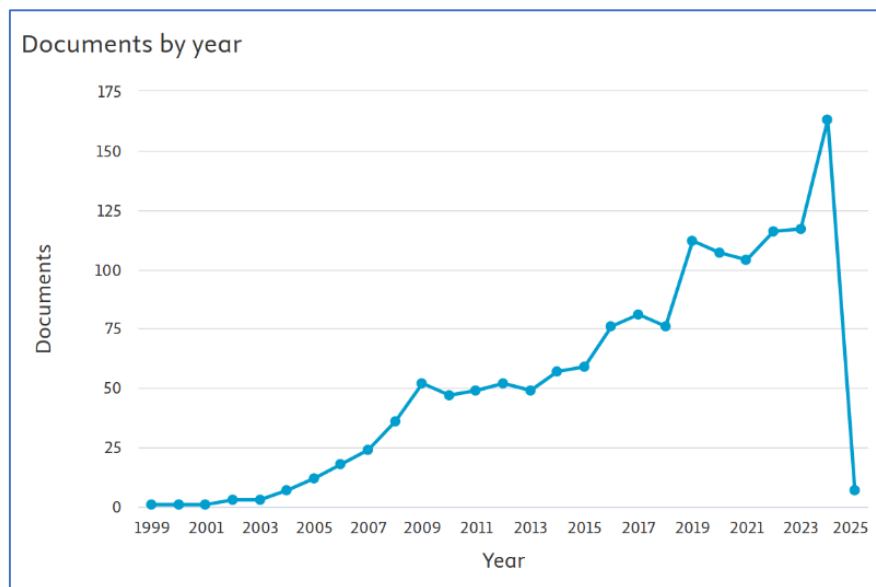


Figure 3. Development of EI Research in Scopus (1999-2025)

Source: Analyze Result Scopus

The figure above shows the development of research on Emotional Intelligence from 1999 to 2024. Although EI was first introduced by Salovey in 1990 where research focused on the main components of EI, that EI includes skills such as empathy, emotion regulation, and emotion recognition in various contexts (Salovey & Mayer, 1990). And many researchers began to publish on the topic of EI in the following year. However, these publications are not included in the limited scope of Business, Management, and Accounting. So that from the period 1990-1998 there are no publications that discuss with these restrictions

In 1999-2004, research on EI deepened. In addition, EI has entered the world of organizations, leadership, and teaching. EI plays a central role in effective leadership, helping leaders understand and manage emotions to enhance cooperation, flexibility, and organizational identity (George, 2000). EI contributes to the quality of teaching and learning, particularly through emotional understanding and emotion regulation in interactions between teachers and students. Research shows differences in "emotional geography" between primary and secondary school teaching, where emotional intensity is higher in primary schools, while professional distance in secondary schools can reduce the emotional understanding necessary for quality teaching (Hargreaves, 2000). It is also during this period that EI begins to intersect with the world of mental health and social relationships such as experiential avoidance, alexithymia, and psychological symptoms. Mindfulness skills, such as accepting without

judgment and acting with awareness, also showed a significant relationship with EI, providing a basis for interventions that support individual well-being (Baer et al., 2004).

Continuing the research trend that occurred in the 1999-2004 period, in the 2005-2006 period, research on EI increasingly focused on the measurement of EI itself. Measures such as the Multifactor Emotional Intelligence Scale (MSCEIT) and the Political Skill Inventory (PSI) have been validated to identify the relationship of EI with various aspects of personality, political skills, and emotion regulation (Daus & Ashkanasy, 2005). Then the contribution of EI is increasingly significant to leadership effectiveness. Leaders with high EI tend to be more effective in building working relationships, motivating teams, and managing conflict (Rosete & Ciarrochi, 2005). In addition, high emotion regulation skills are associated with more positive social interactions, such as interpersonal sensitivity and prosocial tendencies (Lopes et al., 2005).

The role of EI in the world of work has been growing in the period 2007-2012. Besides leadership, Emotional Intelligence also contributes to job performance, especially in jobs that require high emotional interaction (Joseph & Newman, 2010). This is because EI is not only important at the individual level, but also in groups. The collective intelligence factor was found to correlate with group members' social sensitivity, even distribution of speaking turns, and the proportion of women in the group (Woolley et al., 2010). Similarly, in a psychological context, EI is part of psychological capital that includes efficacy, hope, optimism, and resilience. This capital can be developed to improve individual and organizational performance (Luthans et al., 2007). Later this period also saw Social and Emotional Learning (SEL) programs. Meta-analysis shows that school-based SEL programs have a significant impact on improving students' social-emotional skills, attitudes, behaviors, and academic achievement (Durlak et al., 2011). Other developments in the context of emotion regulation, performance, and psychological well-being have increased over time

Increased understanding and implementation of EI began to develop rapidly in the 2013-2018 period. In the article (Mayer et al., 2016), they reformulated the EI ability model based on seven key principles. This model emphasizes the importance of the mental ability to understand, regulate and use emotions, which is now positioned more clearly among other intelligences, such as personal and social intelligence. The use of technology's role in EI has also begun to be carried out massively. The development of this technology shows in understanding human emotions more objectively. Research on physiological signal-based emotion recognition shows how emotions can be identified through physiological data, which is applied in various fields such as safe driving and healthcare (Shu et al., 2018).

The development of new models and principles about EI emerged in the 2019-2024 period. During this period, the COVID-19 pandemic also occurred, even so research on EI did not decline. In this period, research on EI in the focus of leadership is getting deeper. The importance of EI makes healthy leadership an organizational resource that can help employees manage their short-term fatigue and avoid prolonged burnout (Bakker, A.B 2021). Emotional expression also affects group decision-making, negotiation and leadership, and how EI can play a role in social interactions in leadership contexts (Kleef, 2022). In another article highlights the importance of psychological resilience and self-care in the context of the COVID-19 pandemic, focusing on how EI can support medical personnel in dealing with stress and pressure (Ni'matuzahroh et al., 2021). Starting from the COVID-19 pandemic until now, from the period of 2021-2024, more and more EI research is associated with the development of digital technology. Starting from cyber bullying, EI and empathy act as protective factors in reducing the risk of cyber bullying among adolescents (Zhu, 2021). Then in the following years, EI started to integrate with AI Chatbot. The addition of emotional intelligence elements, such as human avatars and gamification, can increase the effectiveness of AI chatbots in supporting learning (Lin & Yu, 2024). Even the use of ChatGPT is linked to the role of EI. ChatGPT has an excellent ability to respond to emotional scenarios, with higher performance than the general population (Elyoseph et al., 2023).

The results of this descriptive analysis show that from 1999 to 2024, the topic of EI has continued to evolve and become more relevant along with various dynamics of change. Initially, it focused more on the general role and measurement tools used. However, over time this topic has grown to include various issues such as leadership, performance, health, and even the adaptation of digital technology that continues to develop.

In addition to the year-on-year development trend, the figure below shows the number of publications published on EI in different countries or regions.

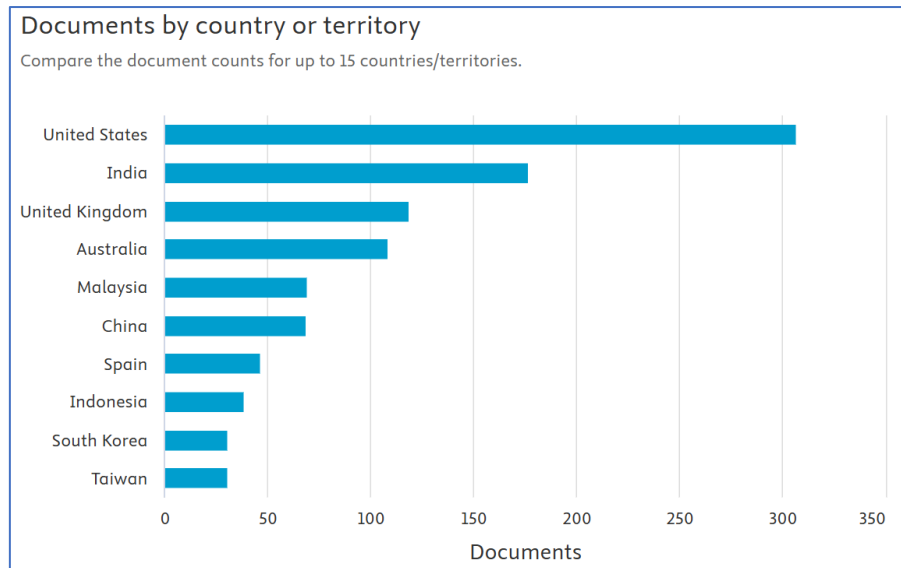


Figure 4. Number of Scopus Publications in Different Countries
Source: Analyze Result Scopus

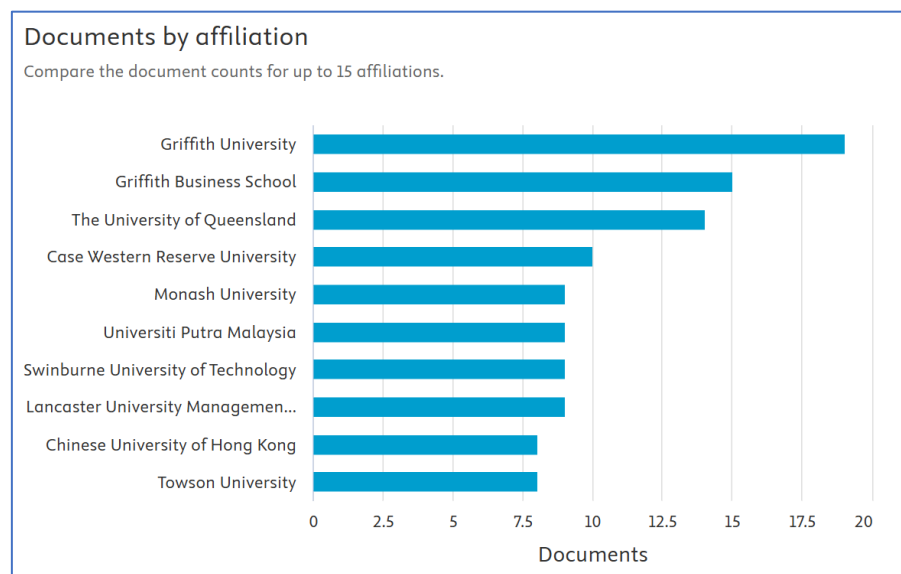


Figure 5. Number of Scopus Publications from Agencies in Various Countries
Source: Analyze Result

The most productive country with the highest total publications on EI is the United States with a total of 306 documents, followed by India with a total of 176 documents, then the United Kingdom with 118 documents. Although the total publications of academic institutions from Universities in the United States namely, Case Western Reserve University and Towson University with a combined total of 17 publications are lower than Universities in Australia such as, Griffith University, Griffith Business

School with a combined total of 34 documents, the United States has more research Universities than Australia, which contributes to the overall high total publications.

Looking at the list of the most productive academic institutions in EI publications, there are three Universities in the Top 100 QS World University Ranking 2024 - Monash University at 30th, Chinese University of Hong Kong at 36th, and The University of Queensland at 40th. This shows that the best Universities are making EI one of their research focuses.

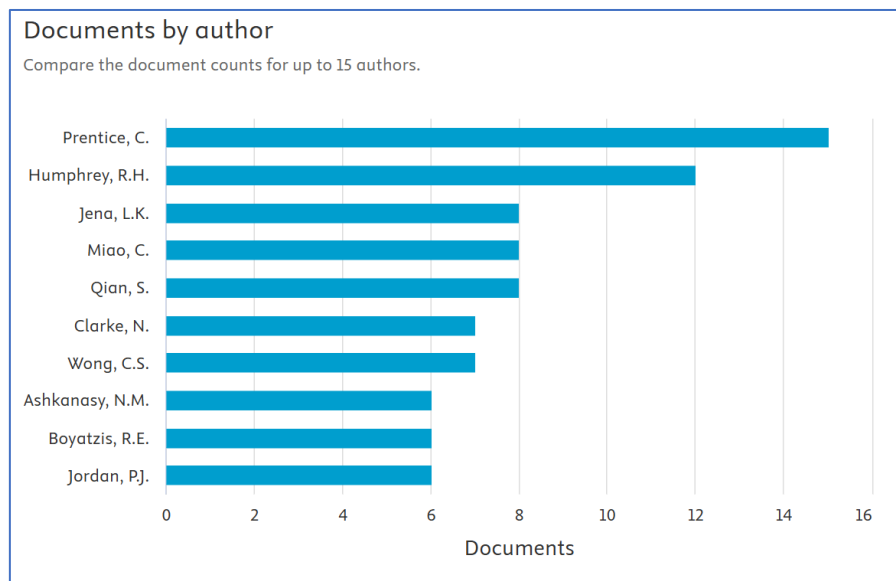


Figure 6. Top 10 Lead Authors in EI Research
Source: Analyze Result

The top 10 most prolific authors in the field of EI research show that researchers from Australia have the highest representation with 3 researchers, the United Kingdom and the United States are equal with 2 researchers, and one researcher from India, as well as Hong Kong. The earliest publication among these authors dates back to 1990 by Peter Salovey. This publication was the first to coin the term EI and attracted the interest of other researchers. Even in the first publications, there were affiliations of the authors involved. For example, in Peter Salovey's 1990 publication, the other authors involved were John D. Mayer and Maria DiPaolo.

Prentice, C. from University of Southern Queensland, Australia is the author with the most publications on EI in Scopus at 15 documents and 123 total publications since 2011, with 36 h-index, and 4,654 total citations. The second top author is Humphrey, R.H. from Lancaster University Management School, United Kingdom. Who has a total of 63 publications since 1996, with 29 h-indexes, and 5,218 total citations. The other top 10 authors are Jena, L.K (96 publications, Xavier Institute of Management, India), Miao, C (41 publications, Salisbury University, United States), Clarke,

N (51 publications, Kent Business School, United Kingdom), Wong, C.S (76 publications, Chinese University of Hong Kong, Hong Kong), Ashkanasy, N.M (253 publications, 12,802 citations, The University of Queensland, Australia), Boyatzis, R.E (124 publications, 6,337 citations, Case Western Reserve University, United States), Jordan, P.J (68 publications, Griffith Business School, Australia). The ranking would be different if based on the number of citations, where Ashkanasy, N.M (12,802 citations) and Boyatzis, R.E (6,337 citations) have a higher number of citations compared to other authors. Other reputable authors were not included in the list simply due to varying selection criteria. By sorting the list of authors by number of citations (including EI restricted to Business, Management, and Accounting), authors such as Prentice, C., Humphrey, R.H., Jena, L.K. make the list of the most prolific authors in EI.

4.2. Discussion

The results of the bibliometric analysis conducted using VOS viewer software version 1.6.20 revealed a clear pattern of keywords in the EI research literature. This analysis shows a consistent growth trend in research in this area, characterized by a significant increase in the number of publications from year to year. This finding reflects the growing attention of researchers to EI as a relevant and important topic of study, both in individual and organizational contexts. This increase also indicates an expansion in the exploration of new themes related to EI as the need for a deeper understanding in this area grows.

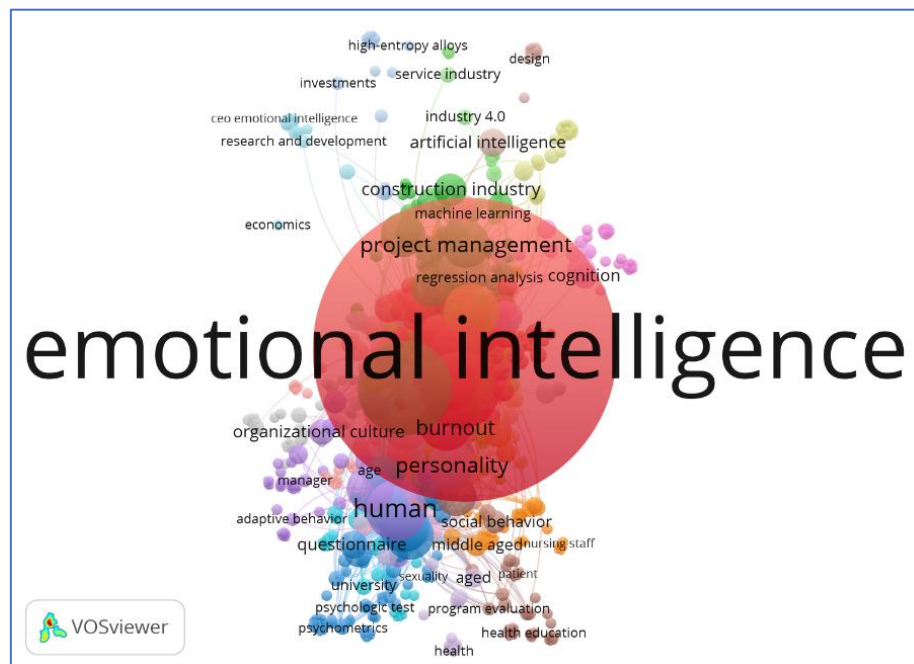


Figure 7. Network Visualization of Co-Occurrence of Keywords (Threshold 1)
Source: Author Elaboration Results in VOS Viewer version 1.6.20

Visualization of keyword co-occurrence analysis results with a threshold of 1 provides a comprehensive overview of the EI-related research landscape. This approach allows for the inclusion of low-frequency keywords that are not represented in visualizations with higher thresholds, thus expanding the scope of the analysis. The visualization includes new emerging themes as well as topics that have been the focus of research at an early stage. The analysis identified 1,000 items grouped into 25 clusters, with 18,053 links between elements and a total link strength of 25,047. These results reflect the complexity and depth of the keyword network, provide important insights into the thematic structure and relationships between concepts in the literature, and provide a basis for exploring research trends, emerging themes and future research directions.

The results of this analysis reveal the complexity and deep interconnections between keywords, while reflecting the wide range of interconnected topics in Emotional Intelligence (EI) research. Data visualizations that include the lowest-frequency keywords provide an opportunity to explore topics that have not been widely discussed so far, but have the potential to flourish in future research. These findings not only enrich the understanding of the existing knowledge structure, but also help identify new areas that can be the main focus of future research, thus contributing to the expansion of the scope of EI studies in various fields.

At threshold 1, significant keywords were found that have not received sufficient attention in research related to the topic of Emotional Intelligence (EI). Some of the keywords that appear, such as organizational culture, organizational effectiveness, emotional regulation, and others, show potential for further exploration. This can be seen from the size and color of the nodes in the visualization. If the size of the nodes is relatively small and the color is fainter or less conspicuous, it indicates that the keyword has a low co-occurrence frequency or has not been widely researched in relation to key concepts in the EI topic.

Keywords that appear smaller and fainter suggest that some factors, such as organizational culture, organizational effectiveness, and emotional regulation, have not been sufficiently explored in the context of leadership-related Emotional Intelligence (EI). This also indicates a lack of research that addresses how cultural differences affect perceptions of EI in leadership, as well as how EI is applied in various cultural contexts. Furthermore, based on the results of Co-Occurrence Threshold 3 shown in Figure 8, the overlay visualization provides a more in-depth picture of the relationship between keywords that appear with lower frequency, but are interconnected in a more specific context. Threshold 3 resulted in 514 keywords, 14 clusters, 6,958 links, and 13,693 total link strengths.

Table 1. Cluster Distribution Based on EI Topics

Cluster	Keyword
Cluster 1	Abusive supervision, artificial intelligence, banking, banking sector, china, conflict, conflict management, conservation of resources theory, consumer behavior, consumption behavior, creative performance, cultural values, customer orientation, consumer service, digital leadership, education leadership, emotional recognition, emotional regulation, emotional understanding, emotional utilization, empirical analysis, employee turnover, employee attitudes, employee behavior, employee performance, employment, frontline employee, Greece, hospitality, hospitality industry, hospitality management, hotel industry, hotels, individual differences, intention to quit, interpersonal skills, Lebanon, life satisfaction, machine learning, Malaysia, negative affect, numerical model, organizational change, organizational support, Pakistan, perception, Portugal, positive affect, psychology capital, psychology, quantitative research, rapport, regression analysis, relationship quality, research work, self-monitoring, service encounter, service failure, service quality, service recovery, service sector, Spain, spirituality, structural equation model, Taiwan, theoretical study, tourism management, tourism destination, wisdom.
Cluster 2	Competition, complexity, conservation of resources, construction industry, construction organizational, construction professional, construction project management, construction projects, construction worker, covid-19, customer loyalty, design/methodology, emotional dissonance, emotional intelligence, emotional labor, employee well-being, ethical behavior, factor analysis, hospitals, human capital, human resources management, industry 4.0, investment, job burnout, least squares approximations, managers, mediating roles, moderating effect, nurse, nursing, occupational risks, occupation stress, organization, organizational behavior, organizational performance, personal training, PLS-SEM, profitability, project management, project manager, project success, project team, research, research and development, research design, Saudi Arabia, structural equation model, surface acting, surveys, tacit knowledge, team working, workers, work-family conflict.
Cluster 3	Achievement, adaptation, adolescent, adult, aged, anxiety, Australia, authentic leadership, controlled study, education, effectiveness, emotion, emotion regulation, emotions, female, human, humans, interpersonal relations, major clinical study, male, mental health, middle ages, mindfulness, organizational and management, patients,

	program aspect, psychological aspect, psychological, psychometrics, quality of life, questionnaire, questionnaires, randomized controlled, schools, self-concept, self-efficacy, self-esteem, social behavior, socioeconomic factors, statistics, student, students, surveys and questionnaires, trait emotional intelligence, universities, university, university sector, university students, well-being, young adult
Cluster 4	attitudes, behavior, burnout, career satisfaction, comparative study, core self-evaluation, counterproductive work, creativity, cross-culture, EI, emotional labor, emotional stress, employee commitment, empowering leadership, entrepreneurial intention, extraversion, happiness, happiness at work, higher education institute, hospitality employees, interpersonal conflict, learning, mediation, meta-analysis, moderated mediation, moderation, multiple regression, negative emotions, neuroticism, OCB, organizational citizenship, organizational citizenship, organizational citizenship, organizational justice, personal resources, personality traits, political skill, political skills, psychological empower, psychological well-being, relationship, relationship conflict, service industry, skills, social networks, task performance, teachers, work climate, work engagement, workplace spirituality.
Cluster 5	academic leaders, academic performance, awareness, bank, coaching, conflict resolution, correlation, customer satisfaction, development, effective leadership, employee development, employees' performance, ethics, experiential learning, higher education, HRD, HRM, human resource, human resource development, human resources, India, leader development, loyalty, management, performance management, qualitative analysis, quality of work life, quantitative analysis, relationship management, school culture, self-awareness, self-control, self-management, self-regulation, social awareness, social skills, spiritual intelligence, stress, workplace performance
Cluster 6	banks, change management, commitment, competences, conflict management, emotion and leadership, emotional competencies, employee creativity, employee engagement, intercultural competence, interpersonal skill, Iran, it sector, Italy, job performance, Jordan, knowledge hiding, leadership behavior, leadership development, leadership skills, leadership style, locus of control management development, narcissism, organizational behavior, organizational climate, organizational commitment, organizational culture, organizations, proactive personality, productivity,

	public sector, servant leader hip, training, transformational leaders, values, work productivity, workplace ostracism
Cluster 7	ability model, adaptability, age, assessment, attitude, behavioral research, career development, construction, cross-cultural adjustment, culture, decision making, depression, employee behavior, engineering education, expatriates, hostility, individual psychology, job autonomy, motivation, Nigeria, perceived organizational, personality, selection, self-esteem, service performance, sustainability, sustainable developer, teaching, turnover intentions, united kingdom, work-family conflict, workplace incivility
Cluster 8	adaptive performance, benchmarking, business ethics, career success, corporate governance, corporate social responsibility, cultural intelligence, emotional exhaustion, emotional quotient, employee performance, human resource practice, Indian service sector, information management, information technology, intelligence quotient, knowledge, knowledge management, knowledge sharing, knowledge-sharing, learning organizations, mentoring, organizational learning, performance, performance assessment, psychological resilience, quantitative, sales, sales performance, service, service marketing, small and medium enterprise, social capital, trust, Vietnam, workplace bullying
Cluster 9	ability, achievement motivation, affective commitment, appraisal theory, college students, demographic factors, emotional contagion, employability, engagement, faculty performance, hope, job engagement, job insecurity, job involvement, leader, leader-member exchange, leadership styles, management education, management skills, optimism, positive psychology, resilience, satisfaction, school principal, self-efficacy, subjective well-being, transactional leadership, undergraduates, WLB, work life balance, work performance, work life balance
Cluster 10	accounting education, bibliometric analysis, cognitive ability, competence, competencies, emotional ability, emotional competency, employee motivation, entrepreneurship, family business, firm performance, Ghana, intrinsic motivation, leadership effectiveness, non-technical skills, organizational performance, public administration, public service, small business, SMEs, soft skills, south Africa, success, thematic analysis, transformational leadership, women entrepreneur, work experience
Cluster 11	big five, career adaptability, career decision-making, cognition, diversity, employees, gender, gender differences, goal commitment, healthcare, industrial performance,

	innovation, intelligence, interpersonal communication, leaders, measurement, modeling, personnel, professional commitment, social intelligence, team cohesion, team performance, teams, technological development
Cluster 12	adaptive behavior, article, communication, critical thinking, demography, emotionality, empathy, health care personnel, health personnel, human experiment, leadership, manager, medical education, medical leadership, occupation, personnel management, physician, physicians, psychological safety, resident, responsibility, stress management, teamwork, wellbeing,
Cluster 13	affect, demographic characteristics, employee, health care quality, intention to leave, job satisfaction, job stress, meta-analysis, nurse administrator, nurse administrators, organization, public relations, self-report, skill, turnover intention, united states, work attitudes, work environment, working conditions, workplace
Cluster 14	Intelligence test, management effectiveness.

The clusters formed in this analysis describe groups of items that are more strongly related to each other than to other items in the dataset. Each cluster reflects closely related topics or research areas, which can be analyzed through Co-Occurrence, Co-Citation, or Co-Authors patterns in the analyzed articles. Through these clusters, major trends in research related to EI can be identified. In addition, total link strength refers to the strength or intensity of the relationship between two elements in the network, such as keywords, authors, or documents that are interconnected. Total link strength gives an idea of the extent to which two elements are interrelated, reflecting the closeness of certain topics or concepts in the research. The greater the total link strength value, the thicker the line connecting the elements, indicating a stronger relationship between the two.

Table 2. Total Link Strength Co-Occurrence Threshold 3

Keyword	Occurrences	Total link strength
emotional intelligence	1430	3933
human	57	742
leadership	139	628
female	37	560
male	36	547
humans	37	537
adult	32	476
article	35	469
psychology	45	450
job satisfaction	93	382
project management	36	242
student	16	238
education	26	227
transformational leadership	54	198
students	20	193
young adult	12	193
managers	31	192
human experiment	12	177
emotion	27	173
job performance	51	171

In the visualization shown in Figure 8, keywords that have strong linkages are shown with brighter colors and larger node sizes, while keywords that appear less frequently are shown with smaller sizes and dimmer colors. In addition, in the Co-Occurrence Visual Overlay results, the occurrence of keywords can also be seen based on the publication year, which is identified through the color variation on each node. Lighter or darker colors reflect the years in which the keywords appear more frequently in the analyzed literature. Thus, this Co-Occurrence Visual Overlay provides a clearer picture of relatively new research areas that have received less attention in the existing literature.

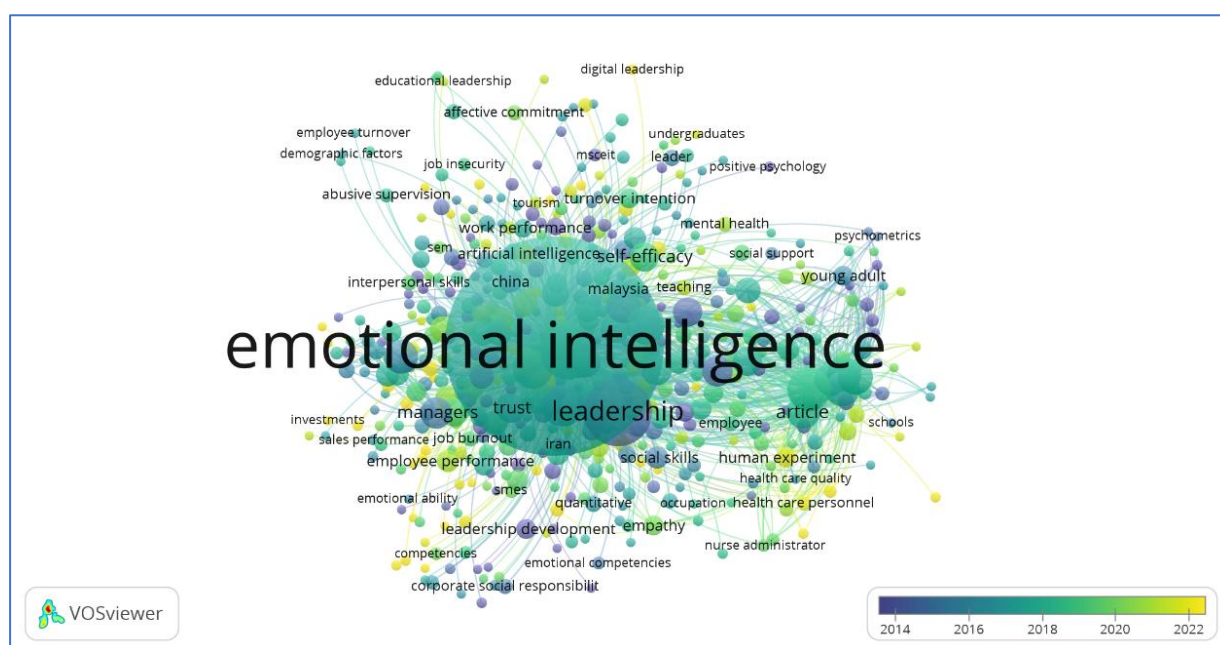


Figure 8. Visual Overlay of Co-Occurrence of Keywords (Threshold 3)

Source: Author Elaboration Results in VOS Viewer version 1.6.

Figure 8 illustrates the development of keywords from 2014 to 2022, with blue representing 2014, green for 2018, and yellow for 2022. The Emotional Intelligence (EI) keyword is located at the center of the network, showing strong connections with other topics such as employee behavior, artificial intelligence, and organizational change. Some keywords, such as work-life balance and leadership, are at the edge of the network with significant connections, signaling their important relevance in the context of this study. On the other hand, topics such as self-regulation and digital leadership, with nodes in yellow, indicate their more recent emergence and potential for greater attention in the future.

Furthermore, analysis using Co-Occurrence Density Overlay provides an overview of the concentration or density of a topic or keyword in the network. In this visualization, darker or lighter colors are used to indicate the density of relationships between elements, with dark colors indicating a higher concentration of relationships, and light colors indicating lower relationships. Based on the results of the Co-Occurrence Density Overlay analysis, it can be seen that topics such as EI, leadership, and artificial intelligence have a higher concentration, which is reflected in the darker colored areas. This reflects the greater research focus on these topics in the analyzed literature.

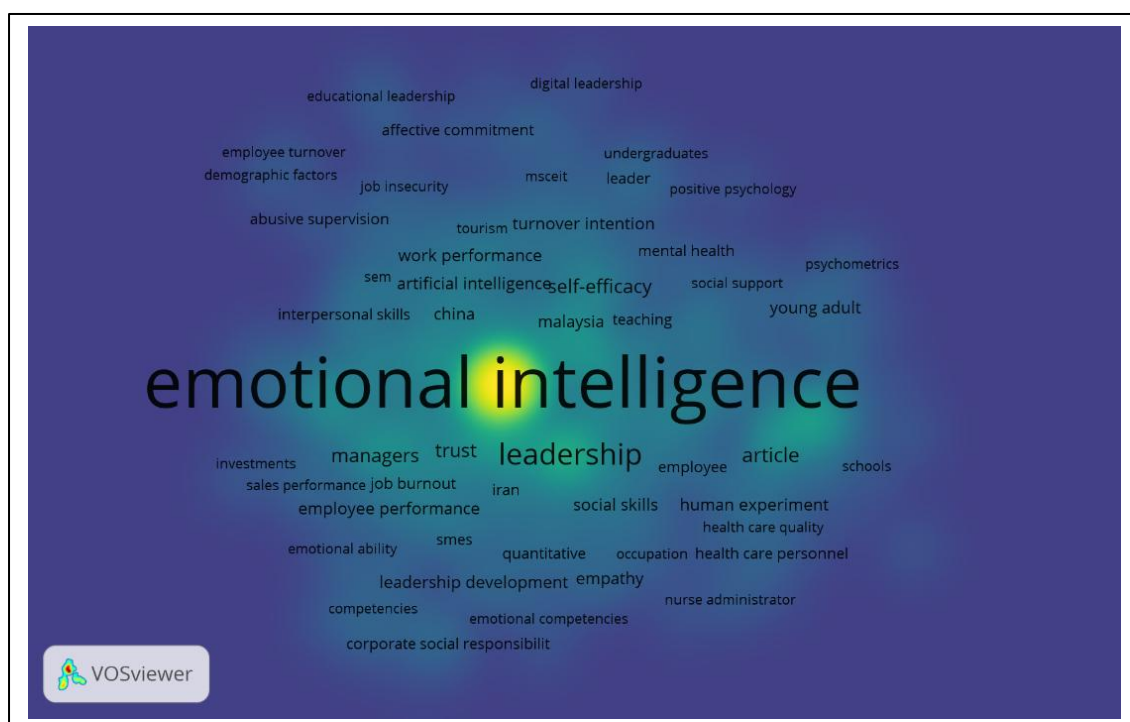


Figure 9. Density Overlay of Co-Occurrence of Keywords (Threshold 3)

Source: Author Elaboration Results in VOS Viewer version 1.6.20

It can be seen in Figure 9 that these areas are widely researched topics and have strong linkages with other topics. In contrast, low-density areas such as digital leadership, emotional ability indicate topics that are still rarely researched or require more attention in future research. This shows that these topics are relevant and there is still room for further exploration.

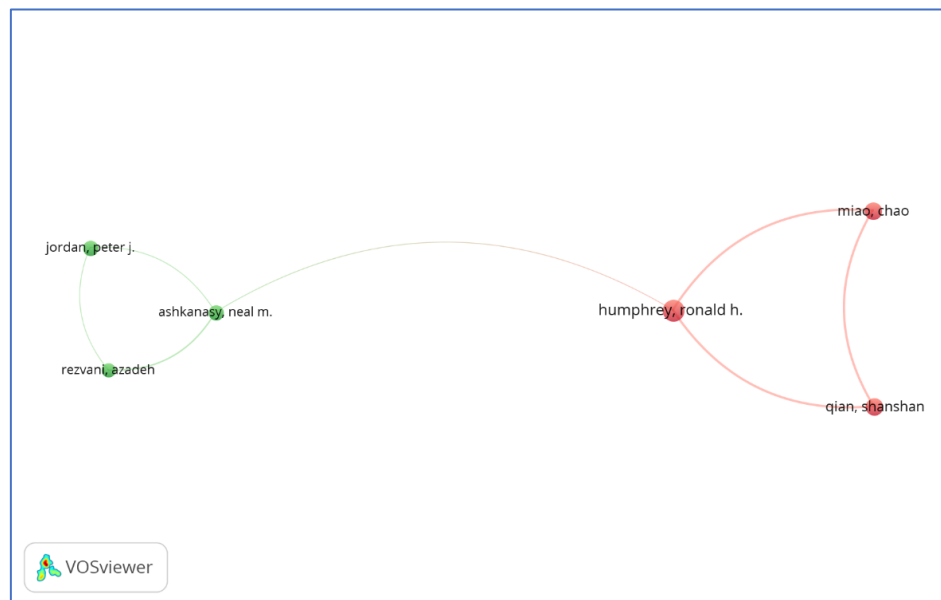


Figure 10. Co-Authorship Unit of Analysis Author
Source: Author Elaboration Results in VOS Viewer version 1.6.20

The next discussion will review the results of the Co-Authorship analysis which describes the collaboration between two or more authors in research publications. Co-Authorship analysis is very important to map the collaboration network of authors in a particular field. Authors who have many links with other authors are often considered key figures in the field, and these collaborations can reveal emerging areas of research. Collaboration between authors also reflects that the topic is top of mind in the academic community and is receiving greater attention.

In this analysis, two clusters are clearly visible: the green and red clusters. The green cluster consists of authors such as Ashkanasy, Neal M.; Jordan, Peter J.; and Rezvani, Azadeh, while the red cluster includes Humphrey, Ronald H.; Miao, Chao; and Qian, Shanshan. These two clusters are interconnected with a connecting line indicating collaboration between the authors.

From these results, it can be concluded that authors such as Neal M. Ashkanasy, Peter J. Jordan, and Azadeh Rezvani have close relationships within their groups, reflecting a similar research focus or intense collaboration. On the other hand, Ronald H. Humphrey has a strong relationship with Miao Chao and Qian Shanshan, indicating a significant collaboration within their group. In addition, a collaborative relationship between Ronald H. Humphrey (red cluster) and Neal M. Ashkanasy (green

cluster) is also evident, indicating cross-group linkages albeit at a lower frequency than within-group linkages.

In Figure 10, the bibliographic coupling analysis with the country unit of analysis shows bibliographic relationships between countries based on the similarity of cited literature. This bibliographic coupling technique is different from co-authorship, as it measures the similarity of sources cited by authors, rather than collaboration between authors. Countries with more than 10 publications related to EI topics are shown in a darker color, indicating a higher density of literature in the country.

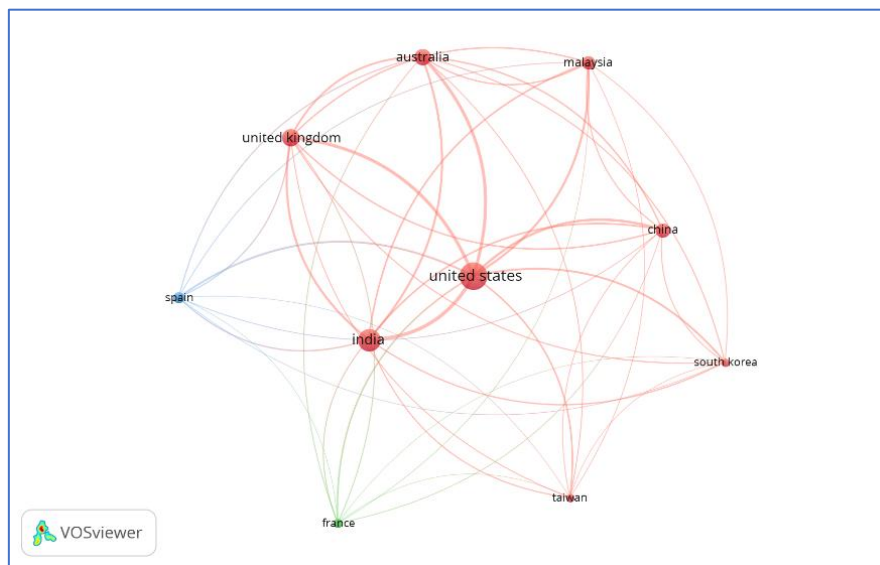


Figure 11. Bibliographic Coupling Unit of Analysis Countries
Source: Author Elaboration Results in VOS Viewer version 1.6.20

Based on the results of the bibliographic coupling analysis with the country unit of analysis, it shows that research on EI is evenly distributed in various countries around the world. The countries identified in this analysis come from almost every continent, such as Asia (India, Malaysia, South Korea, Taiwan, China), Europe (France, Spain, UK), Australia/Oceania (Australia), and North America (United States). Nonetheless, the United States remains a major leader in the number of publications and influence in the global literature on this topic. These findings indicate significant international collaboration, with the United States playing a central role in the development of theory and research on EI.

Table 3. Table Unit of Analysis Countries Threshold 10

Country	Documents	Citations	Total link strength 
united states	334	14856	275247
india	215	2270	169415
united kingdom	125	4059	137987
australia	112	4228	130499
china	85	2154	87667
malaysia	81	672	80557
south korea	32	1239	55877
spain	53	973	53266
taiwan	34	1067	42379
france	35	1952	36032

This study addressed Research Question 4 by identifying key gaps in the literature related to the implementation of green human resource management (GHRM) practices in small and medium enterprises (SMEs). While previous studies have focused predominantly on large organizations with well-established environmental strategies, our findings show that SMEs adopt GHRM practices in more adaptive and informal ways due to resource limitations. This study contributes to closing the gap by highlighting how SMEs align GHRM practices with organizational culture and employee engagement strategies. The study offers a nuanced understanding that GHRM in SMEs is not a scaled-down version of that in large enterprises but follows a different logic that emphasizes flexibility, informal communication, and intrinsic motivation. These insights provide a foundation for future research to further explore contextualized GHRM frameworks for SMEs, particularly in emerging economies.

Overall, this bibliometric analysis highlights several research gaps that warrant further attention in the field of Emotional Intelligence (EI). Despite the increasing number of publications, existing studies remain fragmented in linking EI to specific leadership outcomes across diverse organizational settings. Most research has focused on Western cultural contexts, creating a geographic and contextual imbalance that limits the generalizability of findings. Moreover, there is a lack of longitudinal and experimental studies that could provide stronger causal evidence regarding the influence of EI on leadership performance and employee well-being. Conceptually, future studies should advance beyond the traditional trait-based and ability-based frameworks by integrating EI with emerging constructs such as digital leadership, emotional labor, and adaptive intelligence. Addressing these research gaps will enable the development of a more holistic and culturally inclusive understanding of emotionally intelligent leadership in the modern workplace.

5. Conclusion and Suggestion

The findings of this bibliometric study reveal that research on Emotional Intelligence (EI) has grown significantly between 1999 and 2024, indicating an increasing scholarly interest in understanding its relationship with leadership effectiveness. The analysis highlights that most publications are concentrated in Western countries, particularly the United States and the United Kingdom, while Asian nations such as China and India are emerging contributors to the field. This trend shows a positive shift toward greater global engagement in EI research, although regional disparities still persist.

In terms of influential authors and institutions, the study identifies key contributors who have shaped the theoretical and methodological development of EI, with prominent works by Mayer, Salovey, Goleman, and Miao consistently cited across decades. These findings emphasize the strong foundation of EI theory while signaling the need for broader collaboration among scholars in developing countries to enrich global perspectives. Furthermore, the dominance of specific publication outlets and recurring research themes suggests that the field has achieved maturity, but also faces saturation in traditional approaches, creating opportunities for interdisciplinary expansion and the incorporation of digital, cultural, and contextual variables.

Based on the identified gaps, future research should explore the integration of EI with contemporary leadership frameworks such as digital leadership, servant leadership, and ethical leadership, to adapt to rapidly changing organizational environments. Studies should also consider cross-cultural validations and employ mixed-method approaches to deepen the understanding of how EI contributes to employee well-being, innovation, and performance. Strengthening global collaboration and increasing open-access publication practices could also foster more inclusive and diverse contributions to EI scholarship. Ultimately, this study contributes to the theoretical advancement and practical implementation of EI by providing a clear research roadmap that supports the development of emotionally intelligent leaders in diverse and evolving organizational contexts.

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