

# **A BIBLIOMETRIC ANALYSIS OF EMOTIONAL INTELLIGENCE AND LEADERSHIP**

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## **ABSTRACT**

This research aims to conduct a bibliometric analysis of studies on the relationship between emotional intelligence and leadership. The investigation encompasses a compilation of 1136 articles sourced from Scopus, spanning from 1996 to 2023. The data analysis process involved utilizing the VOSviewer software, which facilitated the creation of maps depicting co-authorship and keywords. A combination of descriptive statistics and social network analysis techniques were employed to analyze the data. Within the 1136 articles, 105 author keywords were referenced at least five times. These keywords were subsequently categorized into 11 clusters. The prevalent terms included “training,” “competence,” “job satisfaction,” “self-awareness,” and “organizational citizenship behavior.” An exploration of the temporal aspect of the data revealed that recent scholarly interest has gravitated toward topics such as “higher education,” “job performance,” “leader development,” “soft skill,” and “employee engagement.” This study’s findings suggest potential avenues for further research in the realm of emotional intelligence and leadership. Subsequent researchers might consider conducting studies in these domains to contribute to the evolving knowledge system.

**Keywords:** Emotional Intelligence, Leadership, Bibliometric Analysis, Bibliometric Review, VOSviewer

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## **1. INTRODUCTION**

Research on emotional intelligence (EI) and leadership has been carried out in various countries and across multiple fields. For instance, school leadership during the pandemic shows that the success of leaders during this period depended on three characteristics: concern for injustice, clear and consistent communication, and EI (Jackson, 2023). Virtual leadership and EI have greatly influenced nurses’ job stress, burnout level, and job performance (Alam et al., 2023). In project

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teamwork, an authoritarian leadership style has a greater impact on emotional exhaustion when project team members are emotionally intelligent (Shahzad et al., 2023). Transformational leadership has a positive predictive effect on people-organization matching, but a conditional effect drives this positive predictive effect.

The theoretical underpinnings of EI and leadership are deeply intertwined. Initially, leadership was primarily associated with cognitive intelligence, but in recent years, there has been a significant shift towards recognizing the importance of EI for leaders (Drigas et al., 2023). Daniel Goleman, often referred to as the father of EI, has been instrumental in promoting the concept, emphasizing its important role in leadership. This is supported by identifying the five dimensions of EI (self-awareness, self-regulation, motivation, empathy, and social skills) as crucial components of effective leadership, particularly in education (Tian, 2022). Empirical studies show a positive correlation between EI and improvements in leadership and management practices in different organizations (Gransberry, 2022). In addition, EI is closely related to ethical leadership, with an emphasis on fair treatment and two-way communication, which is essential for minimizing employee stress and emotional distress (Farihah et al., 2022). The evolving nature of EI and leadership theories suggests a dynamic interplay between a leader's emotional competencies and their effectiveness, highlighting the importance of EI in addressing leadership challenges and fostering a success-oriented organizational culture (Skrzypczyńska, 2020).

Scopus, the largest database for indexing multidisciplinary research, was selected as this study's primary data mining source. This bibliometric analysis is expected to help policymakers, stakeholders, and scholars, especially those in enterprises and social human resources security departments, better understand the influencing factors and consequences of EI and leadership and put forward new research directions. This paper has four goals: (a) to study the general trend of EI and leadership-related research work; (b) to specify the contributions of scholars, institutions, and countries; (c) to explore the subjects and concepts of EI and leadership; and (d) to provide new insights for future research.

## **2. METHOD**

The present research employs bibliometric techniques, a quantitative means to assess scientific communication within a particular field (Pritchard, 1969). These methods are utilized to unveil the underlying structure of scientific thought in the research literature (Ding, 2011). The Scopus database was used for this study. The traditional concept of bibliometric analysis has been primarily focused on content analysis and citation analysis (Zupic & Cater, 2015); however, newer and improved versions now encompass author keywords, country analysis, institutional analysis, and author analysis (Noor et al., 2020).

It is important to highlight that bibliometric analysis distinguishes itself from a review paper in providing a comprehensive overview of publications. This includes examining research growth and identifying the most productive and highly cited authors, top journals, and highly influential papers (Cobo et al., 2011).

The authors first gathered bibliometric data from Scopus, the most widely used repository, which

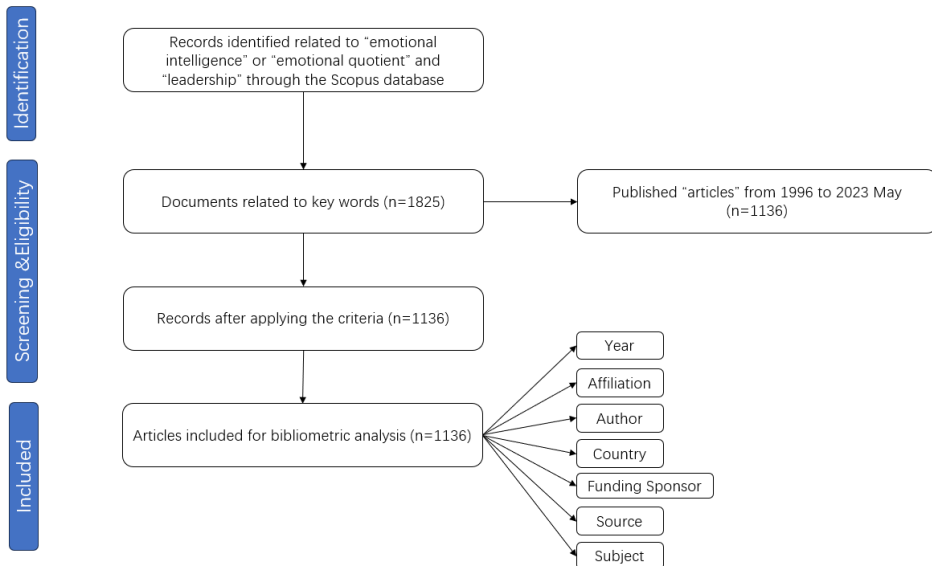
included information such as author names, paper titles, abstracts, country of publication, citation records, and author affiliations. Additionally, several performance indicators were collected for bibliometric analysis, including Total Papers (TP), which represents the total number of publications from the source; Total Citations (TC), which indicates the total number of citations received by each publication; and Total Publications per Country (TPC), which denotes the total number of publications from the leading countries.

### 3. SEARCH PROCEDURE

On 14th May 2023, a data mining process was carried out using Scopus, focusing on the central theme of “emotional intelligence and leadership.” The search looked for these keywords in the title and abstracts to investigate the worldwide research on the relationship between EI and leadership. The papers were sorted chronologically from the earlier articles published in 1996 to the latest articles published in 2023.

The PRISMA (Moher et al. 2009) methodology was applied to refine the search (Figure 1). This helped to systematically include any relevant documents and exclude those beyond the scope of the study.

**Figure 1: Prisma Flow Diagram for the Article Selection Process**



For more specific information on the query strings used, please refer to Table 1. The 1136 documents were then examined based on various criteria, including year of publication, authors, country, affiliation, subject areas, and source.

**Table 1: Search Procedure and Query Strings**

Items	Theme	Search for	Query String	Number of publications
1	Central	Emotional intelligence or emotional quotient and leadership	(TITLE-ABS-KEY("emotional intelligence") OR TITLE-ABS-KEY("emotional quotient") AND TITLE-ABS-KEY(leadership))	1825
2	Central	Emotional intelligence or emotional quotient and leadership (Article only)	((TITLE-ABS-KEY("emotional intelligence") OR TITLE-ABS-KEY("emotional quotient") AND TITLE-ABS-KEY(leadership)) AND (LIMIT-TO ( DOCTYPE, "ar" ) ) )	1136

#### 4. BIBLIOMETRIC MAP

To conduct the subsequent data analysis stage, VOSviewer version 1.6.18 was used to export the bibliographic information of the 1136 articles. VOSviewer proved to be an effective tool for visualizing the bibliometric map, highlighting the leading countries and the frequency of author keywords in the context of EI and leadership. Further discussions regarding the bibliometric map are elaborated in subsequent sections.

##### 4.1. Co-authorship analysis

In the co-authorship analysis, it was discovered that 159 authors from 82 countries were involved. To ensure accuracy, some undefined countries were removed. The countries involved were then classified into seven regions: the United States, the United Kingdom, the Middle East, Asia, Oceania, Europe, and Africa.

##### 4.2. Co-occurrence analysis

In addition, the co-occurrence analysis of author keywords identified a total of 118 distinct keywords extracted from the 1136 research papers. The authors established a minimum occurrence threshold of five keywords to generate the analysis output.

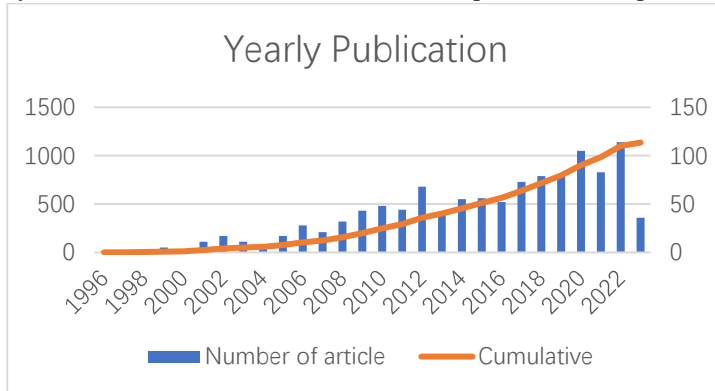
#### 5. ANALYSIS RESULTS

##### 5.1. Research growth

Figure 2 illustrates the yearly distribution of documents indexed in the Scopus database from 1996 to 2023. From 1996 to 2022, there were fluctuations in the number of publications on the topic of EI and leadership, with only one paper published in the first few years, followed by a spike in 2012 compared to the years before and after. The number surpassed 100 for the first time in 2020,

reaching 105, then dropped back to 83 in 2021 before reaching 113 papers on the topic in 2022.

**Figure 2:** Yearly Publications of Emotional and Leadership Research Output from 1996 to 2023.



Source: Scopus

The analysis of subject areas reveals that EI and leadership have attracted interest from the domains of business, management, accounting, and social science. This is evident from the top ten subject areas in Scopus, which featured articles related to this topic. The leading subject areas are Business, Management, and Accounting, with 447 articles, followed by Social Sciences, with 403 articles. Additionally, Medicine (231), Psychology (181), Nursing (129), Arts and Humanities (67), Economics, Econometrics and Finance (55), Engineering (52), Decision Sciences (41), and Health Professions (38) are among the subject areas that have published articles on this topic.

The wave-like trend in the number of articles in the Scopus database on these topics may be driven by the following factors:

Cyclical changes in research interest: Academic interest in particular topics tends to undergo cyclical changes. When new theories or concepts are proposed, it may trigger a high level of interest in the area of research. Then, as research progresses, interest may temporarily wane until a breakthrough or application occurs that sparks interest again.

Impact of social and economic events: Social, economic, and technological events significantly impact research interest. For example, events such as the global financial crisis, technological change, and pandemic outbreaks may increase research interest in leadership and EI in areas such as crisis management, telework, and teamwork.

## 5.2. Top productive journals

Table 2 provides a comprehensive overview of the leading journals that have published on the topic of EI and leadership, including their total publication and total citations. The ranking of these journals is based on the total number of publications. According to Table 2, the top ten leading journals are affiliated with five different publishers. The top three journals in terms of total publications are Leadership and Organization Development Journal, Journal of Nursing Management, and Journal of Management Development. Among these five publishers, Emerald

Publishing and SAGE have the same number of journals, each with three listed journals published by these two entities. The remaining journals in the top ten list are published by Wiley-Blackwell, Elsevier, and Frontiers Media S.A.

Most leading journals are in Q1, with only three in Q2 and one in Q3. The Leadership and Organization Development Journal has the highest number of publications on EI and leadership (39), with a citation count of 2739 citations. This is followed by the Journal of Nursing Management, which has 20 publications and a total citation of 695. The Journal of Management Development had the third highest number of publications (18) with 1013 citations. Leadership Quarterly ranked fourth with 15 publications and 3828 total citations, followed by Frontiers in Psychology with 14 publications and 92 total citations. The following journals, as Table 2 shows. What is intriguing is that the last three rankings have the same number of publications.

In terms of CiteScore (data from 2021), one journal has a score of more than 10: Leadership Quarterly with a score of 16.2, followed by Educational Management Administration and Leadership at 5.8 and Journal of Leadership and Organizational Studies at 5.7. The journal with the lowest CiteScore is the Journal of Leadership Studies (1.5) and Advances in Developing Human Resources (3.4).

**Table 2:** Leading Journals on EI and Leadership (Based on Total Publications)

Rank	Journal	TP	TC	CiteScore (2021)	Most cited article (Reference)	Times cited	Publisher
1	Leadership and Organization Development Journal  Q1	39	2739	4.9	Emotional intelligence and its relationship to workplace performance outcomes of leadership effectiveness (Rosete & Ciarrochi, 2005)	313	Emerald Publishing
2	<i>Journal of Nursing Management</i>  Q1	20	695	5.0	Emotional intelligence: A vital prerequisite for recruitment in nursing (Cadman & Brewer, 2001)	117	Wiley-Blackwell
3	<i>Journal Of Management Development</i>  Q1	18	1013	4.2	Competencies as a behavioral approach to emotional intelligence (Boyatzis, 2009)	225	Emerald Publishing

4	<i>Leadership Quarterly</i>  <i>Q1</i>	15	382 8	16.2	The effects of leader and follower emotional intelligence on performance and attitude: An exploratory study(Wong & Law, 2002)	1692	Elsevier
5	<i>Frontiers in Psychology</i>  <i>Q2</i>	14	92	4.0	Online Mindfulness Training Increases Well-Being, Trait Emotional Intelligence, and Workplace Competency Ratings: A Randomized Waitlist-Controlled Trial (Nadler et al., 2020)	21	Frontiers Media S.A.
6	<i>Journal Of Leadership And Organizational Studies</i>  <i>Q1</i>	10	545	5.7	Emotional intelligence and transformational and transactional leadership: A meta-analysis (Harms, Credé, 2010)	240	SAGE
7	<i>Educational Management Administration And Leadership</i>  <i>Q1</i>	9	177	5.8	Emotional intelligence: A study of female secondary school headteachers (Cliffe, 2011)	36	SAGE
8	<i>Advances In Developing Human Resources</i>  <i>Q2</i>	8	158	3.4	Emotions in Leadership Development: A Critique of Emotional Intelligence (Fambrough,	45	SAGE

Kaye Hart, 2008)							
9	<i>Journal Of Leadership Studies</i>  <i>Q3</i>	8	232	1.5	Academic Leadership in a Time of Crisis: The Coronavirus and COVID-19 (Fernandez, Shaw, 2020)	162	Wiley-Blackwell
10	<i>Journal Of Managerial Psychology</i>  <i>Q1Q2</i>	8	681	4.7	Leading with emotional labor (Humphrey et al., 2008)	236	Emerald Publishing

Note: TP= Total publications; TC= Total citations

### 5.3. Top nations, collaborations, and institutions

Table 3 presents a ranking of the countries that made the most significant contributions to the global growth of EI and leadership studies based on TPC (total publications of the country). The United States holds the leading position on the list, with 421 publications, accounting for 83.14% of single-country publications. This indicates that the United States is at the forefront of EI and leadership research. Following the United States is the United Kingdom, which has produced 116 publications, representing 67.24% of single-country publications, while Australia is ranked third with 73 publications, accounting for 64.38%. India has contributed 66 publications, making up 83.33% of single-country publications.

In addition to the aforementioned top four countries, five other countries (Canada, Malaysia, China, Spain, and South Africa) have also significantly contributed to EI and leadership research, each publishing between 35 and 56 papers. These countries have demonstrated a substantial commitment to advancing knowledge in this field. Furthermore, countries such as Pakistan, the Netherlands, Taiwan, Indonesia, South Korea, and Greece are ranked between 10th and 15th, with a total publication count ranging from 14 to 29. Their output is relatively lower compared to the top-ranked countries.

**Table 3:** Leading Nations and Institutes in EI and Leadership Studies

Rank	Country	TPC	SCP (%)	Leading academic institution	TPI
1	United States	421	83.14%	Case Western Reserve University	17



2	United Kingdom	116	67.24%	Henley Business School	8
3	Australia	73	64.38%	The University of Queensland	10
4	India	66	83.33%	Vellore Institute of Technology	7
5	Canada	56	64.29%	University of Toronto	6
6	Malaysia	48	58.33%	Universiti Kebangsaan Malaysia	6
7	China	47	51.06%	Renmin University of China	4
8	Spain	38	63.16%	Universidad de Granada	7
9	South Africa	35	82.86%	University of South Africa	6
10	Pakistan	29	48.28%	Universiti Malaya	4
11	Netherlands	16	25.00%	Universiteit Maastricht	4
12	Taiwan	16	62.50%	Ming Chuan University	7
13	Indonesia	15	100.00%	Hasanuddin University	3
14	South Korea	14	64.29%	Kyung Hee University	2
15	Greece	14	64.29%	University of Piraeus	4

Note: TPC: total publications of the country; SCP: single-country publications; TPI: total publications from the institute

Table 3 shows that only two countries have less than 50% SCP: Pakistan (48.28%) and the Netherlands (25%). Khudzari et al. (2018) state that a significant proportion of SCP suggests greater collaboration among these nations. International collaboration is crucial for sharing knowledge and achieving higher publication rankings.

Referring to the World University Rankings 2023, Table 3 includes several prominent academic institutions. Among them, five are listed among the top 150 universities worldwide. Notably, three universities are ranked within the top 50: The University of Queensland (50th), the University of Toronto (34th), and Universiti Malaya (70th). These rankings indicate that top global educational institutions are increasingly interested in and acknowledge the significance of EI and leadership.

Table 4 presents the top 30 nations and institutions leading studies on EI and leadership.

**Table 4:** The Top 30 Leading Institutions in EI and Leadership Studies

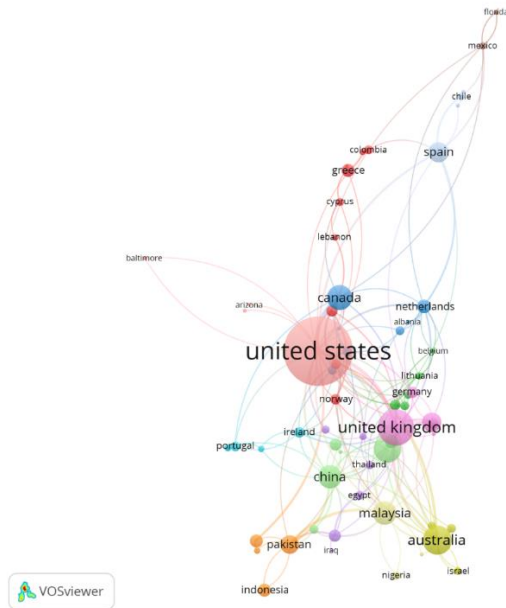
<b>Rank</b>	<b>Institution</b>	<b>Country</b>	<b>No. of Publications</b>
1	Case Western Reserve University	United States	17
2	The University of Queensland	Australia	10
3	Henley Business School	United Kingdom	9
4	Harvard Medical School	United States	8
5	University of Toronto	Canada	8
6	Monash University	Australia	8
7	Vellore Institute of Technology	India	7
8	Cleveland Clinic Foundation	United States	7
9	Universidad de Granada	Spain	7
10	Ming Chuan University	Taiwan	7
11	University of Bahrain	The Kingdom of Bahrain	6
12	Universiti Kebangsaan Malaysia	Malaysia	6
13	University of South Africa	South Africa	6
14	Virginia Commonwealth University	United States	6
15	Duke University School of Medicine	United States	6
16	Handelshøyskolen BI	Norway	6
17	Universidad de Almería	Spain	6
18	Universiti Teknologi Malaysia	Malaysia	6
19	University College London	United Kingdom	6

20	Lancaster University	United Kingdom	6
21	University of North Texas	United States	6
22	Universiti Malaya	Malaysia	6
23	University of Miami	United States	6
24	University of Alberta	Canada	6
25	Rutgers University–New Brunswick	United States	6
26	The University of Queensland Business School	Australia	6
27	VIT Business School	India	6
28	University of Illinois Urbana-Champaign	United States	5
29	Universiti Utara Malaysia	Malaysia	5
30	Chinese University of Hong Kong	Hong Kong	5

Source: Scopus database

The authors employ VOSviewer, a prominent information visualization software, to depict the connections among the nations at the forefront of research on EI and leadership (see Figure 3). The visualization illustrates that stronger linkages between nations are represented by thicker connecting lines and closer positions. Concerning studies on EI and leadership, the United States has the highest publication rate, closely followed by the United Kingdom.

**Figure 3:** The Bibliometric Map of Co-Authorship



The co-authorship analysis indicates that the United States maintains the highest number of affiliations (34 links) and co-authorships (98), making it the most active country in this field. The United Kingdom follows closely, with 24 links and 61 co-authorships, followed by China, with 17 links and 33 co-authorships, and Malaysia, with 17 links and 31 co-authorships. Other countries also contribute to the research, albeit to a lesser extent.

The analysis further reveals that, interestingly, 16 nations, including Iran, Austria, Sri Lanka, and others, have no affiliations with other countries in publishing on EI and leadership.

Promoting research collaboration between countries is important to strengthen scientific and technological innovation and drive mutual development. Here are some common methods and measures to foster international research collaboration: 1. Providing financial support is a crucial approach to promoting research collaboration. 2. Organizing academic exchange and training activities for scientists, researchers, and students to foster research collaboration. 3. Facilitating research collaboration between countries can be achieved by sharing research facilities and resources. 4. Countries can jointly develop collaboration plans and projects, focusing on mutually beneficial research areas and issues. 5. Countries can provide policy support for research collaboration, such as tax incentives and streamlined visa procedures; additionally, establishing online platforms or databases for research collaboration can facilitate researchers in finding partners and information resources. 6. Encouraging the exchange and mobility of researchers contributes to promoting research collaboration between countries.

#### 5.4. *Most productive and highly cited authors*

Table 5 presents a ranking of the top 15 authors in the field of EI and leadership based on the

number of publications. These authors are affiliated with seven different nations, namely Ghana (1 author), Norway (1 author), Australia (1 author), the United Kingdom (4 authors), the United States (6 authors), Malaysia (1 author), and Pakistan (1 author). Among them, ten authors served as first authors, four as second authors, and the remaining authors were third authors or above in their respective publications.

Humphrey, R.H., the top contributor in the Scopus database, has made significant contributions with a total of 11 publications, accumulating 1221 citations and achieving an h-index of 9. Following closely is Boytzis, R.E., who holds the second-highest position with nine publications and a total citation count of 684, also maintaining an h-index of 9. The next two authors are Dulewicz, V., and Stoller, J.K., representing the United Kingdom and the United States, respectively. Collectively, the two authors have the same number of publications - six. They received 227 and 232 citations, respectively.

All authors ranked 5th, 6th, and 7th have five publications. Dartey-Baah and Müller are first authors. Dartey-Baah from Ghana ranked 5th, with a total citation count of 84. The rest of the authors above the 10th have four publications. Ashkanasy, N.M. (ranked 8th), Dasborough M.T (ranked 9th), and Ellis, P. (ranked 10th) are from Australia, the United States, and the United Kingdom. They all have a record of four publications.

Goleman, D. from the United States is ranked 11th among the most productive authors. He has four publications where they served as the first author, and his h-index is 4. Moving on to authors ranked 12th to 15th, each has four publications. Among the five authors, Goleman has the highest number of citations, totaling 958.

Based on their publication records on Scopus and the high number of citations, it can be concluded that the authors mentioned above hold significant influence in the field of EI and leadership.

**Table 5: The Top 15 Leading Scholars in EI And Leadership**

Rank	Author	ID of author in Scopus	First publication year*	TP	h-index	TC	Current affiliation	Country
1	Humphrey, R.H.	7101730829	2002a	11	9	1221	Lancaster University	United Kingdom
2	Boyatzis, R.E.	6602513215	2006a	9	9	684	Case Western Reserve University	United States
3	Dulewicz, V.	8985838800	1999a	6	5	227	Henley Business School	United Kingdom
4	Stoller, J.K.	7103351384	2008c	6	6	232	Cleveland Clinic Lerner	United States

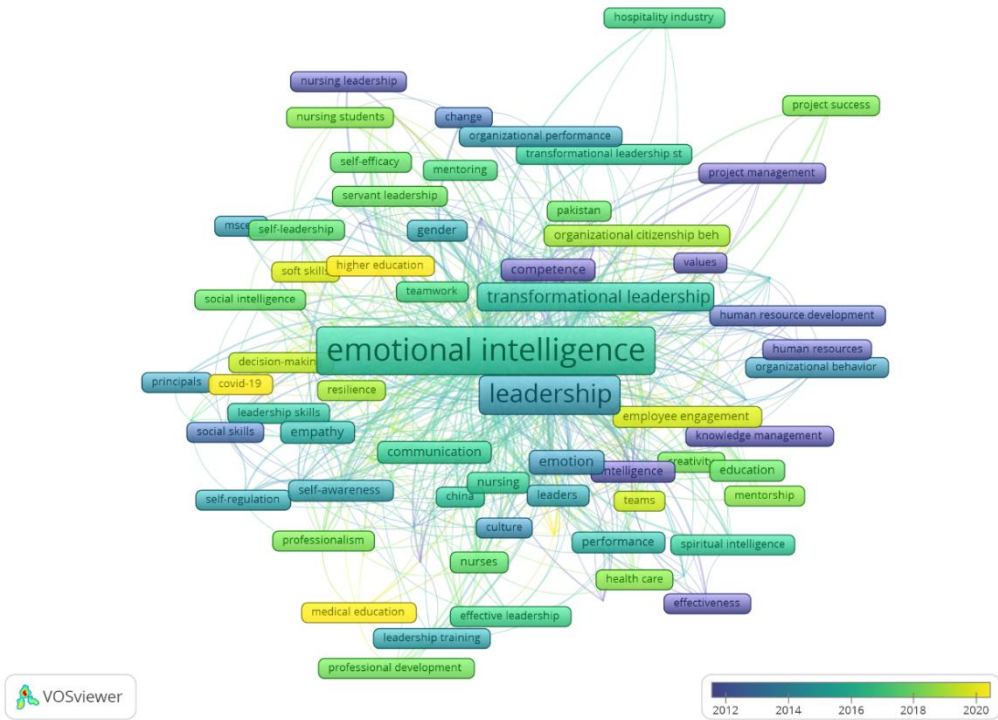
							College of Medicine	States
5	Dartey-Baah, K.	36496357900	2015a	5	4	84	University of Ghana Business School	Ghana
6	Müller, R.	56030912000	2007a	5	5	970	Handelshøysk olen BI	Norway
7	Taylor, D.C.	7406863961	2016c	5	3	72	Duke University Medical Center	United States
8	Ashkanasy, N.M.	35613977200	2003a	4	4	558	The University of Queensland Business School	Australia
9	Dasborough, M.T.	12779535700	2003b	4	4	594	University of Miami	United States
10	Ellis, P.	7202637605	2017a	4	2	9	Independent Nursing and Health Care Consultant	United Kingdom
11	Goleman, D.	6701667903	1998a	4	4	958	Hay Group	United States
12	Higgs, M.	33067785800	1999b	4	4	306	Hull University Business School	United Kingdom
13	Hopkins, M.M.	22134741900	2007a	4	3	124	The University of Toledo	United States
14	Ishak, N.M.	36617168600	2009b	4	2	8	Universiti Kebangsaan Malaysia	Malaysia

Note\*=[year]a: First author; [year]b: Second author; [year]c: Third author or above;  
 TP=Total publications; TC=Total citations

**5.5. Author keyword analysis**

Before the creation of the thesaurus file, there were 118 author keywords listed. Among these, 25% (30 author keywords) appeared five times, 18% (21 author keywords) appeared six times, 10% (12 author keywords) appeared seven times, 9% (11 author keywords) appeared eight times, 6% (7 author keywords) appeared nine times, and 4% (5 author keywords) appeared ten times or more. A re-labeling process was conducted in the thesaurus file to avoid redundant analysis of similar author keywords. As a result, the number of author keywords with a minimum of five occurrences was reduced to 105. Figure 4 displays the bibliometric map of these author keywords, which will be discussed in the following section.

**Figure 4:** The Bibliometric Map of Author Keywords (Minimum Number of Occurrences: 5)



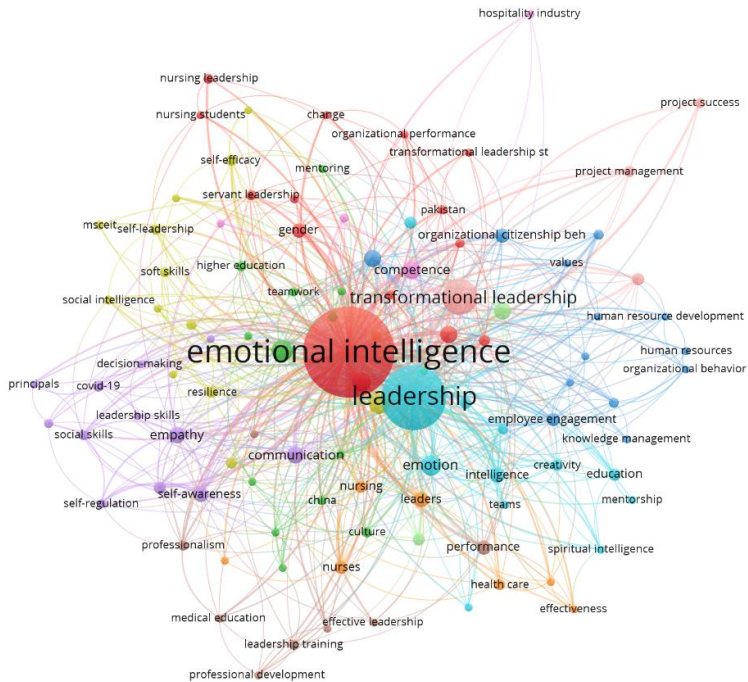
## 6. DISCUSSION

### 6.1. Bibliometric analysis: thematic clusters

The results presented in Figure 5 illustrate the network visualization depicting the interconnections between various concepts derived from the systematic literature review and bibliometric screening. Notably, it was observed that the concept of EI exhibits a particular association with themes related to leadership style and organizational performance within the context of the hospital industry, as denoted by the red network. Furthermore, within the same figure, the distance of EI to topics concerning teamwork and job satisfaction (represented by the green network) and its linkage to organizational behavior (depicted by the blue network) indicates a meaningful connection.

There is a strong relationship between EI and leadership (link strength 228). As shown in Figure 5, the selected papers were categorized into 11 clusters, and, as mentioned earlier, bibliometric analysis was used to generate themes based on the selected papers. The most important themes are selected below to develop the analysis.

**Figure 5:** Relationship of Co-Occurrence of Keywords





Cluster 1. Change management, EI, and leadership (keywords: EI, leadership styles, leadership effectiveness, leadership behavior, organizational commitment, change management).

The primary keyword, “emotional intelligence,” appeared the most frequently, with 642 occurrences, and was linked with 103 other keywords. Leadership style ranked 2nd with 31 occurrences and was linked with 23 other keywords; the link strength is 65. This was followed by leadership effectiveness (25 occurrences, 17 links), leadership behavior (7 occurrences, 6 links), organizational commitment (10 occurrences, 11 links), and change management (7 occurrences, 14 links).

The EI of a leader has a direct positive impact on leadership behavior and leadership effectiveness (Shen et al., 2019). When examining the elements influencing job performance, it becomes crucial to consider not only trust and organizational commitment but also the impact of a leader’s EI (Lee et al., 2022). The finding of Mukhtar and Fook (2020) showed in the early stages of organizational change, these two independent variables play crucial roles in generating momentum, a process that entails altering attitudes toward organizational change. If change is to be successful, attention must be paid to developing programs to improve the EI of employees and the leadership styles of leaders. In this way, employees will feel safe, emotionally stable, and supported by their leaders during the change process (Mukhtar & Fook, 2020).

Cluster 2. Leadership development and context vision cluster (keywords: leadership development, culture, higher education, China, teamwork, well-being).

In this cluster, focus on the context of research, such as culture context (9 occurrences, 12 links), higher education (8 occurrences, 9 links), country context as China (7 occurrences, 11 links), teamwork (7 occurrences, 7 links), and leadership development (36 occurrences, 23 links) was found, all which influence the well-being of employees (5 occurrences, 12 links).

Various studies indicate that leadership development is a pressing requirement within higher education institutions (Butler, 2020; Hiasat, 2020; Komives & Sowcik, 2020). Research shows a prevalent challenge where leaders in higher education institutions are often elevated from academic roles yet possess limited managerial or leadership training (Abdulla et al., 2023). EI emerged as a central theme throughout leadership development, consistently heightened by participants as a critical component of this development (Abdulla et al., 2023). Three fundamental competencies of leaders were identified as impacting employee well-being during the COVID-19 pandemic. Employees’ teamwork competencies were primarily related to EI leadership (Furukawa & Kashiwagi, 2021). Several research investigates EI and leadership in different school and organizational cultures (Ahmad et al., 2023; Duan et al., 2023; Majeed & Jamshed, 2021; Paramartha et al., 2022). Current research highlights the need for in-depth exploration of variations in human resource management (7 occurrences, 13 links) practices across different cultures and countries (Nabih et al., 2023).

Cluster 3. Management and organizational citizenship behavior (keywords: management, organizational citizenship behavior, employee engagement).

In this cluster, focus on the consequence of EI, such as organizational citizenship behavior (16 occurrences, 13 links), employee engagement (15 occurrences, 19 links), and management (24

occurrences, 27 links) account for the most frequent occurrence in this cluster.

EI is becoming a significant concept in management study programs. The challenges of achieving EI are even more pressing in the management fields (Fernandez-Perez & Martin-Rojas, 2022). Mishra, Singh, and Upadhyay's (2023) research has investigated the nature and mechanism of the impact of leadership and EI that leads to employees displaying organizational citizenship behavior (Mishra et al., 2023). Many researchers have found in recent studies that leadership styles are beneficially linked to employee engagement; leadership style significantly affects employee engagement mediated by EI (Milhem et al., 2019).

Cluster 4. Training and EI characteristics (keywords: training, resilience, self-efficacy, burnout).

As for this cluster, the word 'training' has the highest number of occurrences, 33, and has a total link strength of 80, followed by resilience (11 occurrences, 16 links), self-efficacy (11 occurrences, 11 links), and burnout (10 occurrences, 14 links).

The current study emphasizes the critical role that human resource development and training will play in improving the EI skills of leaders (Nabih et al., 2023). This is consistent with the most cited articles in Table 2: Online Mindfulness Training Increases Well-Being, Trait Emotional Intelligence, and Workplace Competency Ratings: A Randomized Waitlist-Controlled Trial (Nadler et al., 2020). Increased EI is positively correlated with leadership self-efficacy, and self-efficacy plays a vital role in predicting job performance (Halliwell et al., 2021). Like EI, employee engagement in organizations also increases; more importantly, the effect of EI on work engagement in situations increases as staff resilience increases. Training programs aimed at equipping staff with EI and resilience can improve work engagement and may improve performance (Danquah, 2022). Virtual leadership and EI significantly influence employees' job stress, burnout, and performance (Alam et al., 2023).

Cluster 5. COVID-19 and personal emotions (keywords: communication, empathy, self-awareness, motivation, COVID-19)

Communication accounts for the highest number of occurrences, 23, and the total link strength is 61. Research on COVID-19 was identified ten times, and the total link strength is 23; others like empathy, self-awareness, and motivation account for 22, 19, and 12 occurrences, and links with other keywords are 20, 22, and 16, respectively.

Meaningful internal communication is vital for employees to develop strategic behaviors to understand their organizational goals, EI, and leadership behaviors that are mediated through employee engagement (Arif et al., 2023). Much research sets the background for investigating leadership or EI during the COVID-19 pandemic (Fernandes et al., 2023; Hayes & Derrington, 2023; Jackson, 2023). EI significantly mediated the relationship between humanistic caring competence and empathy. Empathy leadership also creates an environment of trust and understanding, which increases employee engagement and productivity (Linville & Onosu, 2023). Self-awareness is one dimension of EI, and self-awareness is the ability to recognize and understand one's own emotions and their effects on others. Many studies showed that leadership styles and EI influence work motivation and performance (Paramartha et al., 2022).

Cluster 6. Leadership, emotion, intelligence, factors (keywords: leadership, emotion, intelligence, education, personality, trait EI, creativity).

Leadership is the second most frequent keyword, with an occurrence of 328 and a total link strength of 606, followed by emotion (33 occurrences, 29 links), intelligence (19 occurrences, 22 links), and creativity (10 occurrences, 15 links). Education, personality, and trait EI have the same number of occurrences with 12, and the links are 11, 11, and 9, respectively.

To develop academic leaders, it is essential to focus on their EI to ensure their transformational leadership and effective decision-making in the institution (Baba et al., 2021). Clarence's (2021) finding suggests that both individual differences (proactive personality and EI) and situational factors (perceived organizational support, servant leadership, and meaningful work) are positively correlated with psychological capital (Clarence et al., 2021). Over the past several decades, transformational leadership theory and research have contributed considerably to addressing the factors associated with leader effectiveness. Trait EI has been significantly associated with transformational leadership (Schreyer et al., 2021). Both empowering leadership and EI have a significant positive relationship with creativity, and it is pragmatic and rational for leaders to build a culture that promotes self-esteem and fosters employee creativity (Ahmad et al., 2023).

Cluster 7. Leaders and healthcare industry background (keywords: leaders, nurses, nursing, healthcare).

This cluster involves the study of leaders and EI as it relates to the healthcare industry. Leaders in this cluster appeared 18 times and had a total link strength of 33; nurses, nursing, and healthcare had 14, 12, and 10 occurrences and 14, 9, and 10 links, respectively.

Researchers empirically investigated the mechanisms by which variables such as leadership and EI influence nurses' demonstration of organizational citizenship behaviors (Mishra et al., 2023). Nurses' leadership behaviors and levels of EI play an important role in delivering quality care; therefore, nursing education institutions should develop nurses with high EI and effective leadership characteristics (Yildirim et al., 2022).

## **6.2. *Implications of thematic clusters***

Research on change management, emotional intelligence (EI), and leadership is crucial for understanding and improving organizational behavior. Future studies should explore these factors in different cultural contexts, focusing on how EI impacts leadership and organizational change. Higher education plays a vital role in shaping leaders, and integrating keywords like "leadership development," "culture," and "teamwork" enhances understanding and informs policy. The impact of remote working, digital tools, and social media on organizational citizenship behavior (OCB) and employee engagement should also be examined. Developing innovative EI training programs and mental health interventions, particularly in response to crises like COVID-19, is essential. Comprehensive leadership models considering EI, personality traits, and creativity can improve leadership development. In healthcare, effective leadership is key to improving care quality, teamwork, and employee satisfaction. Advanced tools and interdisciplinary collaboration are recommended for accurate literature retrieval and bibliometric analyses, ensuring a holistic and integrated approach to leadership and management studies.

### **6.3. Future directions**

In recent years, the author keywords that have attracted the greatest attention in 2020-2021 have been COVID-19 (10 occurrences, 12 links), higher education (8 occurrences, 9 links), medical education (6 occurrences, 8 links), job performance (12 occurrences, 12 links), while in 2019 they included leader development (5 occurrences, 5 links), soft skill (8 occurrences, 9 links), employee engagement (15 occurrences, 19 links), teams (6 occurrences, 8 links), burnout (10 occurrences, 14 links), conflict management (6 occurrences, 10 links), and decision making (5 occurrences, 9 links). These topics have been mentioned in recent years, but they do not appear as frequently anymore, meaning that future research can focus on more coverage related to these aspects.

Research has shown that leadership and emotional intelligence (EI) significantly impact management in schools and healthcare during COVID-19. While the pandemic is nearly over, its long-term psychological and physical effects remain uncertain. Healthcare leaders should promote EI to protect their teams and prepare for future emergencies (Rossetini et al., 2021).

In higher education, future research should generalize results to elementary and secondary schools and universities, including nonacademic staff (Baba et al., 2021). For medical education, studies should expand to first-year residents and explore leadership training in various settings (Lyons et al., 2022).

Future research should explore EI and leadership in other industries, such as factories, and examine their impact on job performance and satisfaction (Alwali & Alwali, 2022). Leadership development programs need longitudinal studies to assess long-term soft skill development and to address selection bias (Almeida & Buzady, 2022; Buckley et al., 2020; Pfeiffer et al., 2019).

Studies on EI and leadership should consider participants' educational and cultural backgrounds and individual differences (Mysirlaki & Paraskeva, 2020). Research on EI and burnout, particularly during COVID-19, should include various occupations and industries (Alam et al., 2023; Jooste & Coetzee, 2022; Tian & Guo, 2024).

### **6.4. Study limitations**

Although bibliometric analysis can provide statistics on a large number of publications, such as the number of publications and citation frequency, it does not address the assessment of the quality of the literature. High citation counts do not necessarily imply high quality or impact and may simply be a reflection of the heat of the research topic. The lack of quality assessment mechanisms can misrepresent research impact, leading to improper funding allocations, and suggests using comprehensive evaluation metrics and combining bibliometric with qualitative analyses for balanced study evaluations.

Effect of time lag: There is a time lag in the publication and citation of research results. Emerging areas or recent findings may be less critical in bibliometric analyses because they are not yet widely cited. The time lag in citations can cause newly published research to be overlooked, leading to misinterpretations, thus suggesting additional metrics like social media attention and regular follow-up assessments to better evaluate emerging research.

Challenges of keywords and subject classification: Subjectivity in determining keywords and subject classification may affect the accuracy of the bibliometric analysis. The keywords and classifications chosen by the researcher may limit the perspective of the analysis and the interpretation of the results. Researchers' varied backgrounds may lead to biased keyword choices and categorization, suggesting a standardized keyword selection process with expert collaboration and advanced tools, along with pre-tests to optimize bibliometric analyses.

## CONCLUSION

Bibliometric analysis based on 1136 related journal articles retrieved from the Scopus database illustrates the research trend of EI and leadership. The results of the analysis show that the United States and the United Kingdom are the leading countries studying EI and leadership. According to the co-authorship analysis, the United States also shows the greatest cooperation. On the other hand, it is suggested that other countries such as Iran, Austria, Sri Lanka, and others should cooperate more to expand their research track in EI and leadership. This research topic was found to be active in the social sciences. In addition, "COVID-19", "higher education," "medical education," "job performance," "leader development," "soft skills," "employee engagement," and others are potential research topics in the future to better understand the background and cause and effect of EI and leadership. These new variables may be the research subject, and researchers can study them in a higher education environment. EI and leadership's relationship with job performance and employee engagement in the post-pandemic era can also be assessed, along with how leaders can develop their soft skills to manage team conflict and avoid employee burnout. The science behind the EI of employees shows that it can be trained, and literature shows that it profoundly impacts other variables. Enterprises and society can consider this when looking for or training employees.

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