

Article

# Optimizing transformational leadership and knowledge management as keys to innovation

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**Abstract:** This report intends to enhance the reviews on leadership literature by conducting a bibliometric study on 198 publications focused on transformational leadership research. These papers were published in the Scopus database between 1997 and 2023. Employing quantitative bibliometric analysis, the study aims to identify both current and prospective research trajectories pertaining to transformational leadership issues. To the best of our current understanding, there exists no scholarly investigation that examines the bibliographic data pertaining to transformational leadership domains. Therefore, this work represents a distinctive and original contribution to the existing body of literature. This study additionally offers a comprehensive examination of the patterns and paths inside a visual and schematic framework for the investigation of this subject matter. This may facilitate researchers in comprehending the prevailing patterns and prospective avenues for research, so empowering future authors to carry out their investigations with greater efficacy. There exists a number of underexplored themes or subjects pertaining to transformational leadership matters, such as knowledge sharing, leadership styles, digital transformation, innovative work behavior, competitive advantage and digital transformation. This discovery offers useful insights into the heterogeneous nature of this area across multiple disciplines.

**Keywords:** transformational leadership; leadership; innovation; knowledge

## 1. Introduction

Leadership is an essential component of every organization, serving as the foundation of organizational operations and the primary catalyst for change (Deng et al., 2023). Identifying the most effective leadership model for cultivating leaders and attaining an organization's intended outcomes is a multifaceted undertaking (Knezović and Drkić, 2020). Leadership styles, as identified by Nguyen et al. (2021), had a direct impact on innovation within the organization. Innovation is widely recognized as a crucial factor for companies to gain a competitive edge and has garnered significant attention from academia in recent years due to the rapid shifts in market demands, technology, and growing competitive pressure (Le and Le, 2023). In literature, innovation is described as the ability of an organisation to introduce and implement new ideas, products, services, procedures, technology, organisational structures, plans, and programmes in order to enhance organisational performance and attain a sustainable competitive advantage (Islam et al., 2021; Lei et al., 2020).

Among the several elements that might impact innovation capabilities, transformational leadership is considered to be a significant driver in promoting innovation capability (Afsar and Umrani, 2019; Al-Husseini et al., 2021; Bak et al., 2022). Transformational leadership enhances a firm's ability to innovate by

stimulating intellectual thinking and fostering openness among individuals (Sheehan et al., 2020). It also inspires and motivates employees to engage in innovative behaviour within an organisation (Alrowwad et al., 2020). Rashwan and Ghaly (2022) found that transformational leadership promotes a secure environment that stimulates innovation among employees. Furthermore transformational leadership refers to a style of leadership characterized by charismatic, visionary, and inspirational behaviors that influence employees to exceed their goals and perform beyond the established expectations in the workplace (Zheng et al., 2019). This type of leadership encompasses four dimensions: idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration (Gui et al., 2022).

Given the increasing importance of transformational leadership, it is crucial to comprehend the complexities of this type of leadership and its connection to many aspects. The objective of this study is to analyze the Scopus database, examine the framework of transformational leadership research, and identify the prominent authors, journals, countries, and organizations that have made significant contributions to this topic. Furthermore, the study proposes potential research recommendations that could lead to further advancements in the field of transformative leadership. This understanding can aid researchers, educators, and legislators in developing evidence-based programs that highlight the benefits of transformational leadership (Kartawinata et al., 2021). This research has the potential to significantly enhance the development of effective transformational leadership practices and programs.

## **2. Methodology**

Bibliometric analysis is a method of quantitatively assessing and tracking the present state of research in a specific scholarly topic (Shekhar et al., 2023; Sreenivasan and Suresh, 2023). Bibliometric analysis examines the connections between articles by analyzing how they are cited and co-cited by other works (Vogel et al., 2021). The resulting review is both replicable, methodical, and clear. This paper utilizes a bibliometric analysis method, which includes a bibliometric review and network analysis, to depict the evolving research landscape of transformational leadership over a certain time frame. Implementing this strategy is considered optimal since it enables the extraction of valuable knowledge from a wide range of academic sources (Marques, 2021). Furthermore, the bibliometric approach utilizes an objective methodology to extract qualitative insights, making it superior to traditional methods of analysis for obtaining key insights on the development and advancement of research, emerging research areas, and the influential factors in a specific research field (Zhao et al., 2023).

### **2.1. Data collection**

The first step of the bibliometric analysis involves determining the most relevant databases for the investigation (Vogel et al., 2021). The data for this research was obtained from the Scopus database. The resource provides an extensive array of research resources across multiple disciplines, while maintaining strict adherence to high-quality criteria (Pan et al., 2023). In order to limit the results to the field of religious tourism, we utilised a document tracking method by conducting searches using the specific terms listed in **Table 1**. This specific variant offers the benefit of

enhancing accessibility to categorised journals across several thematic domains, hence becoming it more complete (Marques, 2021). This selection is based on the papers' ability to serve as a dependable and inclusive sample of worldwide scientific pursuits (Sreenivasan and Suresh, 2023).

A bibliometric review of transformational leadership can have several global impacts, including identification of trends. By analyzing publication patterns, a bibliometric review can identify emerging trends and research priorities in transformational leadership across different countries and regions. Bibliometric analysis can also highlight collaboration networks among researchers and institutions globally, facilitating international research collaborations and knowledge exchange. It can provide a benchmark for evaluating the research output and impact of different countries or regions in the field of transformational leadership, helping policymakers and funding agencies make informed decisions.

Insights from bibliometric reviews can inform policy development related to leadership development and training, organizational change, and management practices globally. Bibliometric reviews can influence the design of educational programs and curricula by highlighting key topics and research findings in transformational leadership that are globally relevant. Overall, a bibliometric review of transformational leadership can have a significant impact on research, practice, and policy globally by providing insights into the current state and future directions of research in this field.

**Table 1.** Search strategy in Scopus database.

<b>Search Word</b>	“knowledge” AND “leader*” AND “organization*” AND “transform*” AND “innovat*”
<b>Category</b>	Article title, Abstract, Keywords
<b>Subject area</b>	Limited to Business, Management and Accounting
<b>Document type</b>	Article
<b>Search Date</b>	December 2023

## 2.2. Analytical tools

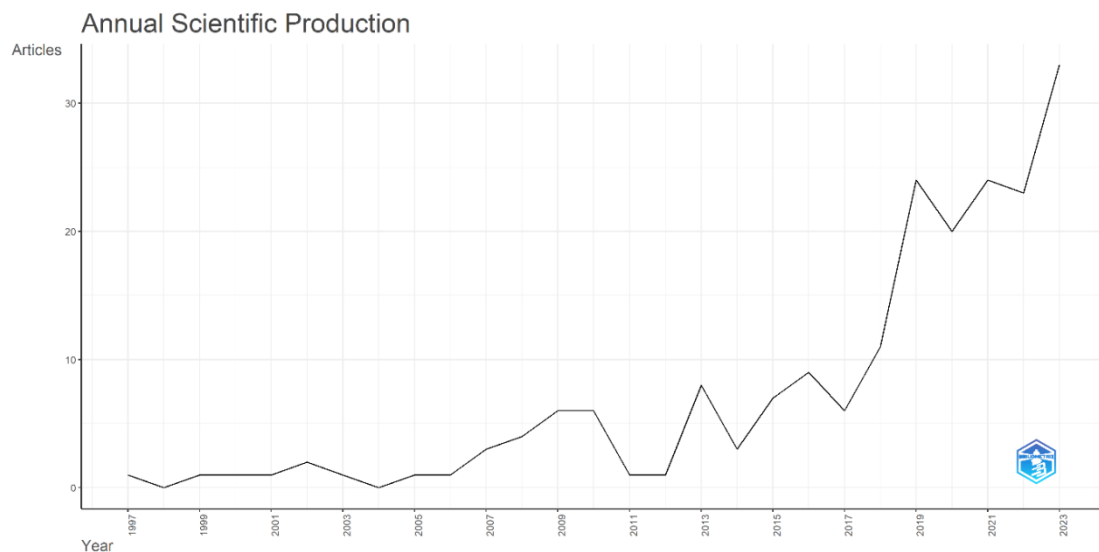
VOSviewer is a software tool that enables the creation of visual representations of bibliometric data and the analysis of networks. The dimensions of nodes and merging visually indicate the intensity of connections in the network depiction generated by VOSviewer (Zhao et al., 2023). A bibliometric analysis was conducted using the R package, focusing on various factors such as publication, journal, authorship, contributing authors, keywords, and the assessment of network collaboration levels among authors and nations (Mouazen and Hernández, 2023). The methodology can be applied to gain a thorough understanding of the subject matter, uncover gaps in knowledge, and guide future research endeavors (Scheffler and Brunzel, 2020). The software application Microsoft Excel was employed to generate figures and tables that could be modified, as well as to verify other tests such as citation analysis, assessment of journal productivity, and evaluation of collaboration. This analysis seeks to identify the journals that predominantly publish articles pertaining to halal supply chain, as well as the distribution of articles over the years. The

comprehensive facts can be observed in **Table 2**.

**Table 2.** Main information.

Description	Results
Main Information about Data	
Timespan	1997:2023
Sources (Journals, Books, etc.)	135
Documents	198
Annual Growth Rate %	14.39
Document Average Age	5.2
Average citations per doc	36,95
References	12266
Document Contents	
Keywords Plus (ID)	377
Author's Keywords (DE)	690
Authors	
Authors	543
Authors of single-authored docs	28
Authors Collaboration	
Single-authored docs	31
Co-Authors per Doc	2.88
International co-authorships %	22.22
Document Types	
Article	198

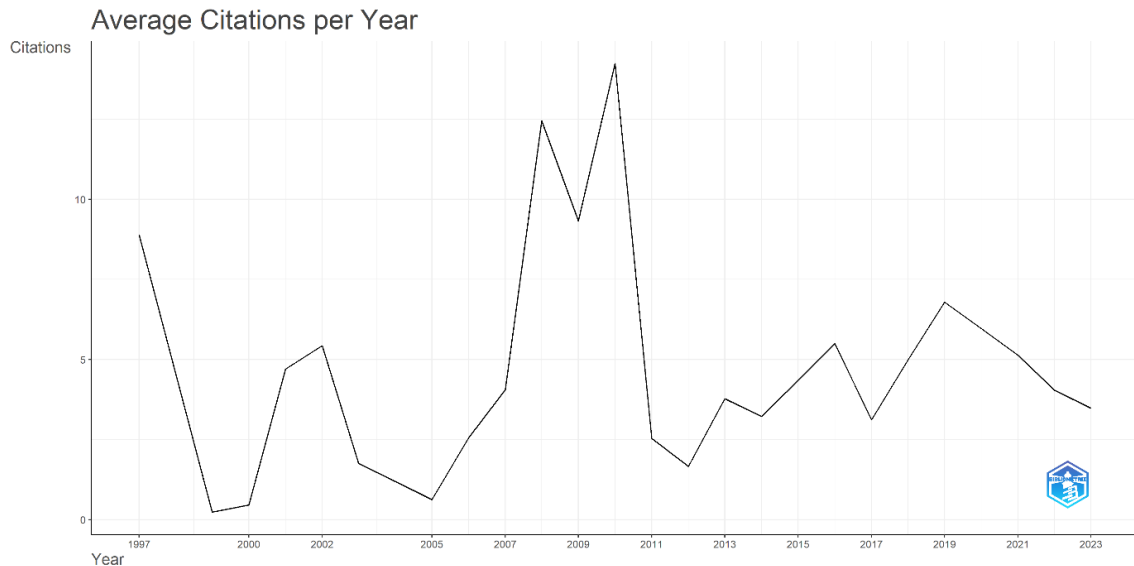
Using the search methods, we obtained a total of 198 published publications from 135 journals. These articles were authored by 543 individuals, as indicated in **Table 1**.



**Figure 1.** Annual scientific production.

As seen in **Figure 1**. From 1997 to 2017, there was a growing interest in the

concept of transformational leadership, and research on this topic was in its early stages. The number of articles had a significant surge starting from 2018, possibly due to the rising adoption of transformational leadership by firms and the growing attention towards research on this leadership style. Subsequently, there has been a progressive rise in the number of publications compared to the previous year. The year 2023 has recorded the largest number of publications to yet.



**Figure 2.** Average citations per year.

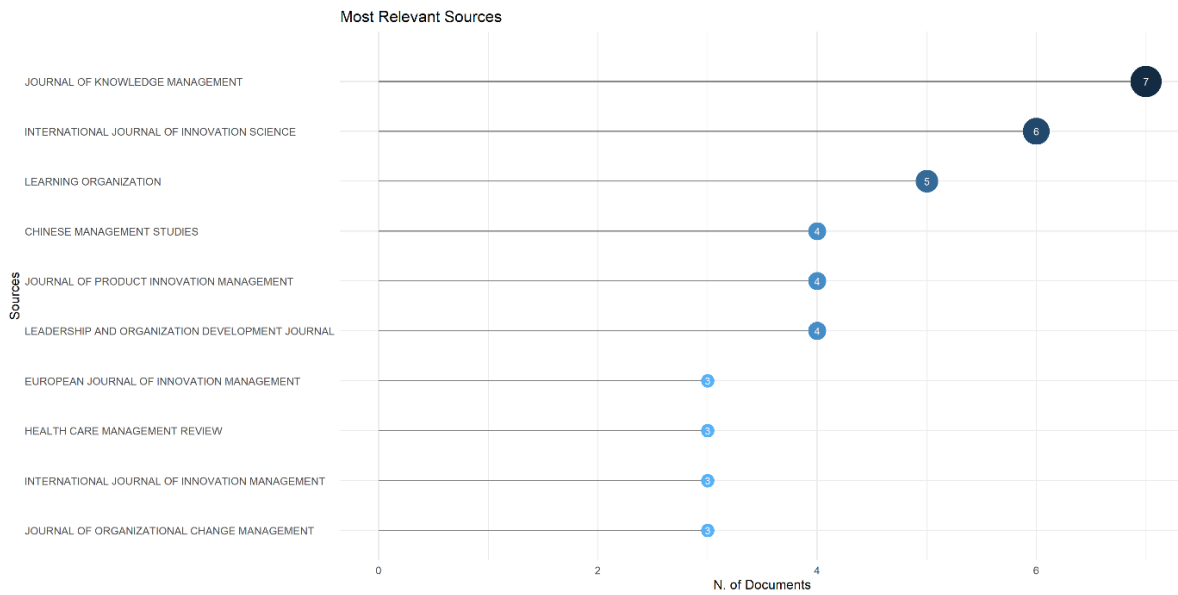
The **Figure 2** depicts the performance of citations from documents pertaining to transformational leadership research. There is an inverse correlation between the increase in citations of document publishing and the amount of documents. The highest number of citations was recorded in 2010, with an average of 14.2 citations per year.

### 2.3. Source analysis

The present study conducted an inquiry into the primary sources frequently referenced in the realm of transformational leadership. The dataset includes a compilation of titles from well-known scientific publications, along with the corresponding number of documents associated with each title. The data is visually shown through the utilization of a bar chart, in which the bars are presented in the hue of blue. The saturation level of the blue hue serves as an indicator of the significance and magnitude of the research topic, while the spectrum of scholarly articles published in different academic journals spans from 0 to 7.

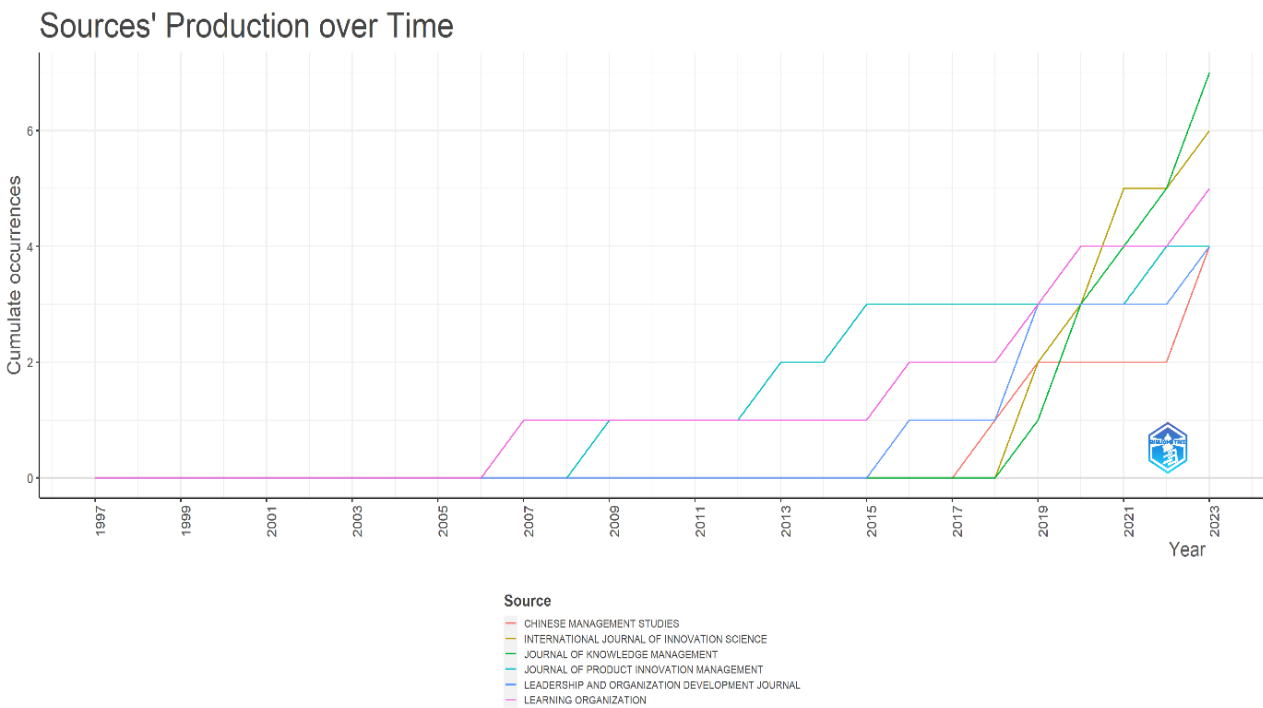
**Figure 3** presents a list of the top 10 publications that made significant contributions to the field of ‘transformational leadership’ from 1997 to 2023. The journal known as Journal of Knowledge Management has published a cumulative count of 7 articles, whilst the International Journal of Innovation Science has published a total of 6 articles publications. **Figure 3** illustrates the inclusion of very productive and pertinent sources, such as the Learning Organization (5), Chinese Management Studies (4), Journal of Product Innovation Management (4), and Leadership and Organization Development Journal (4). These sources offer valuable insights in the

field.



**Figure 3.** Most relevant sources.

This study aims to examine the evolution and significance of academic journals as the primary medium for the dissemination of research pertaining to the field of transformational leadership. The graph presented illustrates the temporal evolution of the yearly frequency of occurrence for each journal from 1997 to 2023.



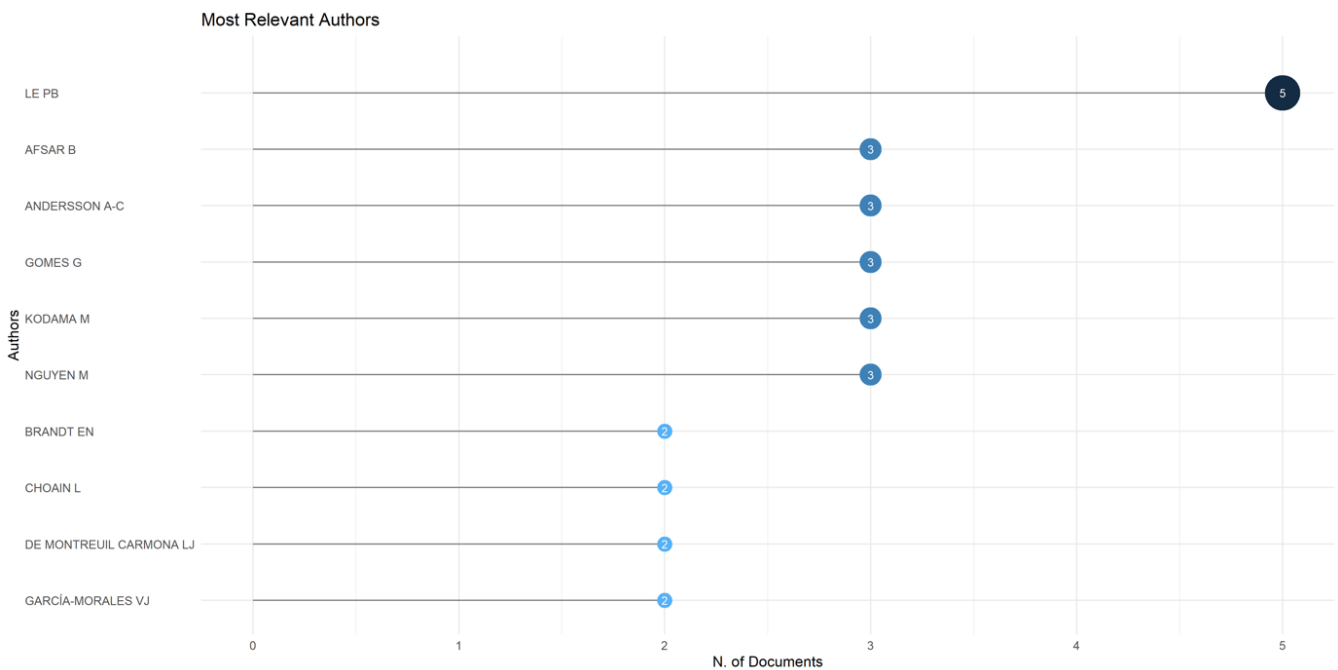
**Figure 4.** Sources production over time.

Source dynamics refers to the frequency with which the term “transformational leadership” appears in scholarly papers on an annual basis. The examination of source

dynamics indicates that the Journal of Knowledge Management exhibits the most significant cumulative instances from 2022 to 2023, succeeded by International Journal of Innovation Science and Learning Organization. **Figure 4** illustrates further noteworthy journals.

### 3. Result and discussion

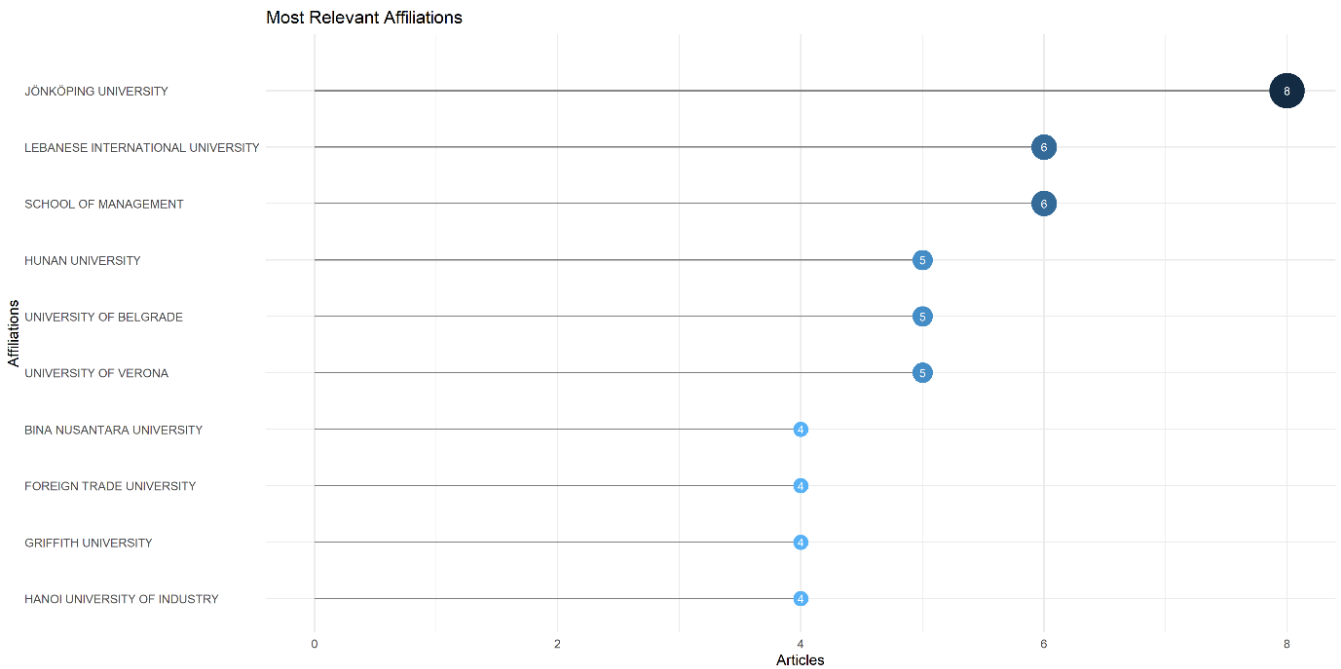
A comprehensive analysis of 198 articles centered on transformational leadership unveiled the active involvement of numerous authors. The majority of authors have made a contribution to a single publication, showcasing the wide range of individuals that contribute to the area. **Figure 5** offers a comprehensive overview of persons who have shown notable research achievements in the area of transformational leadership, allowing for a more profound understanding of their research output.



**Figure 5.** Most relevant authors.

This diagram showcases influential authors who have made substantial contributions to the literature, offering valuable insights on the extent of their research productivity and its impact in the field. Le Phong Ba is the most productive author in the field of transformational leadership, having published five works on the subject. Afshar B. holds the second position with three publications, and Andersson A.C. is ranked third with three contributions.

**Figure 6** displays the present status of the top 10 institutions that publish in this topic. The figure presents a concise summary of the institute’s contribution. According to **Figure 4**, Jonkoping is the leading contributor, followed by the Lebanese International University, School of Management, and Hunan University. The rise in university-authored papers serves as further evidence of the institutions’ increasing significance on the global platform.



**Figure 6.** Most relevant affiliations.

The field of study on transformational leadership has received contributions from numerous countries, with a total of 61 countries contributing to the existing literature. **Table 3** presents a summary of the top countries based on their publication production from 1997 to 2023.

**Table 3.** Countries with the most published articles.

Country	Documents
United States	26
China	18
India	14
Pakistan	13
United Kingdom	13
Vietnam	10
Malaysia	10
Australia	9
Canada	9
Indonesia	8

Information on research productivity in the subject of transformational leadership provides insight into top countries. According to the data provided in **Table 3**, the United States holds a prominent position in terms of the number of publications. Similarly, China and India have made noteworthy contributions to research on transformational leadership. It can offer a standard for comparing the results of research and the influence of various nations or areas in the field of transformational leadership, assisting funding organizations and politicians in making defensible choices. Global management practices, organizational transformation, and policy



creation pertaining to leadership development and training may all benefit from the insights gained from bibliometric evaluations. The design of educational programs and curriculum can be influenced by bibliometric reviews, which emphasize internationally significant core subjects and research findings in transformational leadership.

### 3.1. Document analysis

The term “citation” pertains to the practise of referencing a particular work or research that has been referenced within a scholarly investigation (Zhao et al., 2023). Citation analysis is a research methodology that can be utilised to get valuable insights into the quality, influence, and significance of scholarly works through the examination of their citations (Marques, 2021). **Table 4** provides a comprehensive overview of the 10 most frequently cited articles pertaining to transformational leadership.

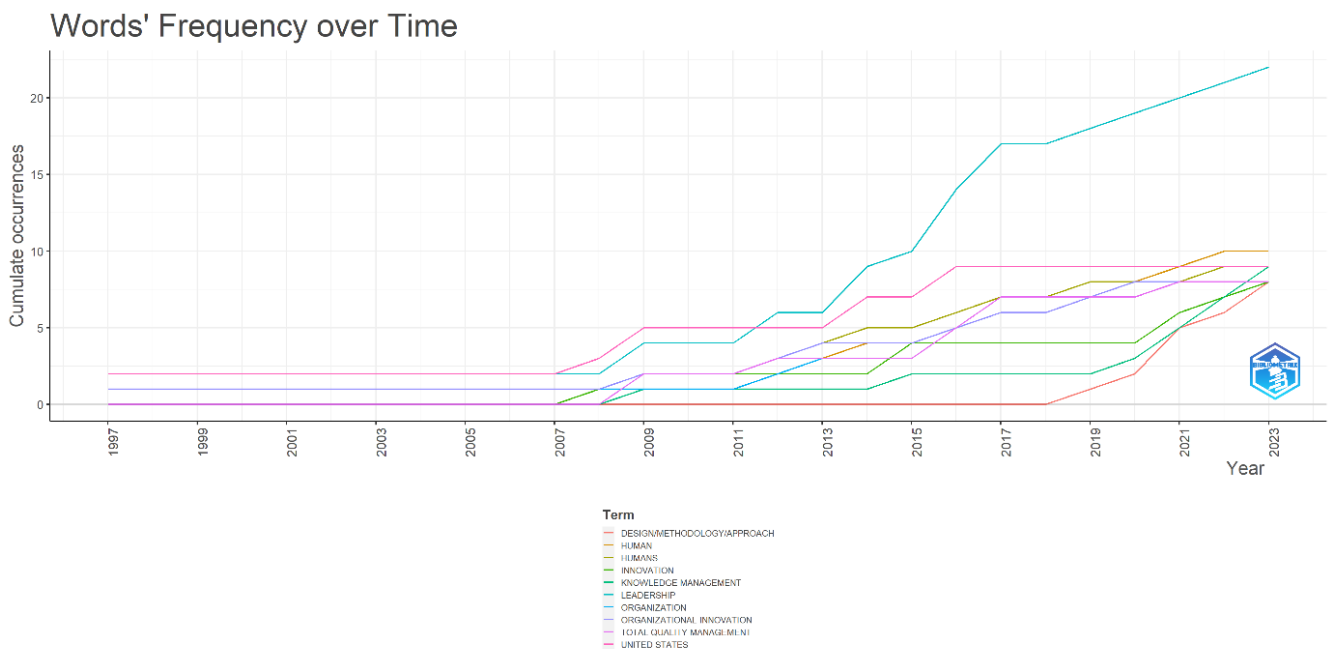
**Table 4.** Top 10 most global cited documents.

Ranking	Citation	First author	Title	Year	Journal
1	1086	Ostrom A.L.	Moving forward and making a difference: Research priorities for the science of service	2010	Journal of Service Research
2	543	Jansen J.J.P.	Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism	2009	Leadership Quarterly
3	351	Youtie J.	Building an innovation hub: A case study of the transformation of university roles in regional technological and economic development	2008	Research Policy
4	276	García-Morales V.J.	The effects of transformational leadership on organizational performance through knowledge and innovation	2008	British Journal of Management
5	252	Khin S.	Digital technology, digital capability and organizational performance: A mediating role of digital innovation	2019	International Journal of Innovation Science
6	243	Le P.B.	Determinants of innovation capability: the roles of transformational leadership, knowledge sharing and perceived organizational support	2019	Journal of Knowledge Management
7	242	Gumusluđlu L.	Transformational leadership and organizational innovation: The roles of internal and external support for innovation	2009	Journal of Product Innovation Management
8	240	Kim W.C.	Fair process: managing in the knowledge economy.	1997	Harvard business review
9	222	Massey A.P.	Knowledge management in pursuit of performance: Insights from nortel networks	2002	MIS Quarterly: Management Information Systems
10	210	Hoch J.E.	Shared Leadership and Innovation: The Role of Vertical Leadership and Employee Integrity	2013	Journal of Business and Psychology

A bibliometric analysis conducted on the subject of transformational leadership, revealed that the scientific articles written by Ostrom et al. (2010) “Moving forward and making a difference: Research priorities for the science of service” it had attracted significant interest, as evidenced by a substantial number of citations of 1086. The second position in the list features an essay titled “Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism” authored by Jansen et al. (2009), which has garnered a total of 543 citations. This study builds upon

previous theoretical research by establishing a connection between the transformational and transactional behaviors of strategic leaders and two important outcomes of organizational learning: exploratory and exploitative innovation. In the subsequent position, there exists an article authored by Youtie and Shapira(2008), which has been referenced in the quantity of 351 citation. This paper explores the transformation of the university’s role from traditional research and education to becoming an information hub that promotes innovation, using the case study of Georgia Institute of Technology (Georgia Tech).

Based on the data depicted in **Figure 7**, the analysis of keywords in research related to the transformational leadership demonstrates the recurrent presence of particular terms. The words are graphically shown as a developmental curve, illustrating their yearly frequency values. The results reported in this study demonstrate the average frequency of the specified keywords in the dataset analyzed in the research related to the domain of the transformational leadership, for each year.



**Figure 7.** Word dynamic.

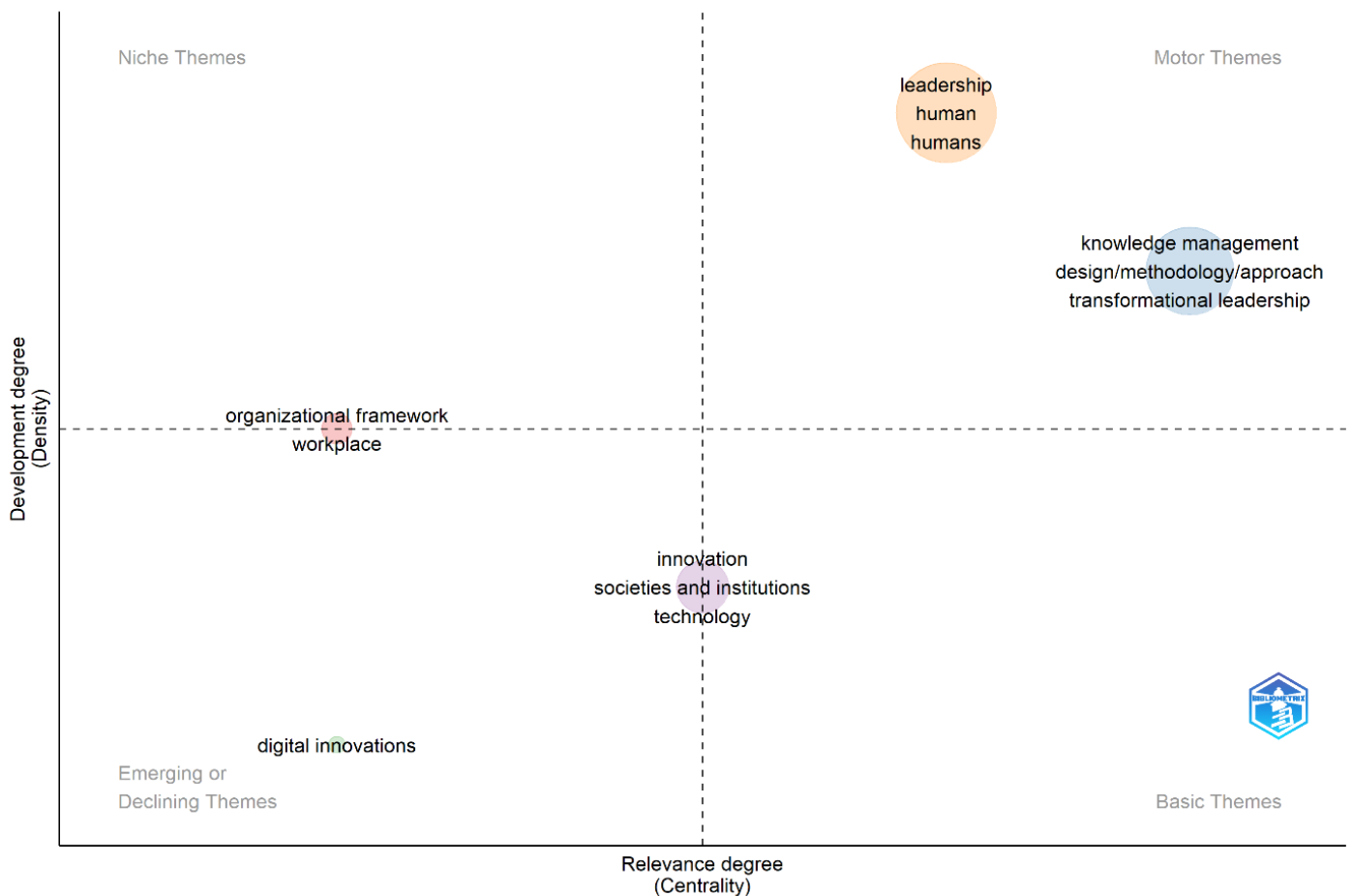
Based on the data depicted in **Figure 7**, there is empirical evidence supporting the emergence and subsequent widespread usage of frequently encountered words, which commenced in 1997 and continued to steadily increase until 2023. The data indicates a notable rise in the frequency of research pertaining to terms such as “leadership” and “human” which suggests excellent prospects for future expansion.

We utilised R software to perform thematic mapping of the articles (as depicted in **Figure 8**). The division consists of four distinct themes: motor theme, specialised theme, emerging or declining topic, and basic theme. Leadership, knowledge management, and transformational leadership were the motor themes, indicating that these were well developed in this field. Organizational framework and work place were niche themes which were well developed but isolated themes. Digital innovations for low density but highly relevant emerging/declining themes. Innovation, societies

and institutions, and technology were basic themes, which were not fully developed internally but important to the field (Scheffler and Brunzel, 2020).

Co-occurrence analysis reveals that the frequent usage of different keywords in a specific subject indicates the importance of those phrases in that field (Sreenivasan and Suresh, 2023). The term ‘co-word’ refers to a cluster of interconnected keywords that commonly occur in works pertaining to a particular topic (Vogel et al., 2021). The study approach themes are identified by examining the co-occurrence of phrases, as well as analyzing the links and trends within related subfields (Marques, 2021).

A network model depicting the co-occurrence of keywords was constructed using VOSviewer. The analysis of the terms below considered the ‘Author’s Keywords’. In order for the phrase to be eligible for network analysis, it was necessary to have at least four instances of its occurrence. A total of 41 keywords were generated from the Scopus database. **Figure 8** exhibits network visualization maps that represent the co-occurrence of terms derived from the Scopus database. **Figure 9** shows that the word “transformational leadership” has the highest number of co-occurrences. The thickness of the interconnecting lines between the keywords signifies the strength of the connectivity.



**Figure 8.** Thematic map.

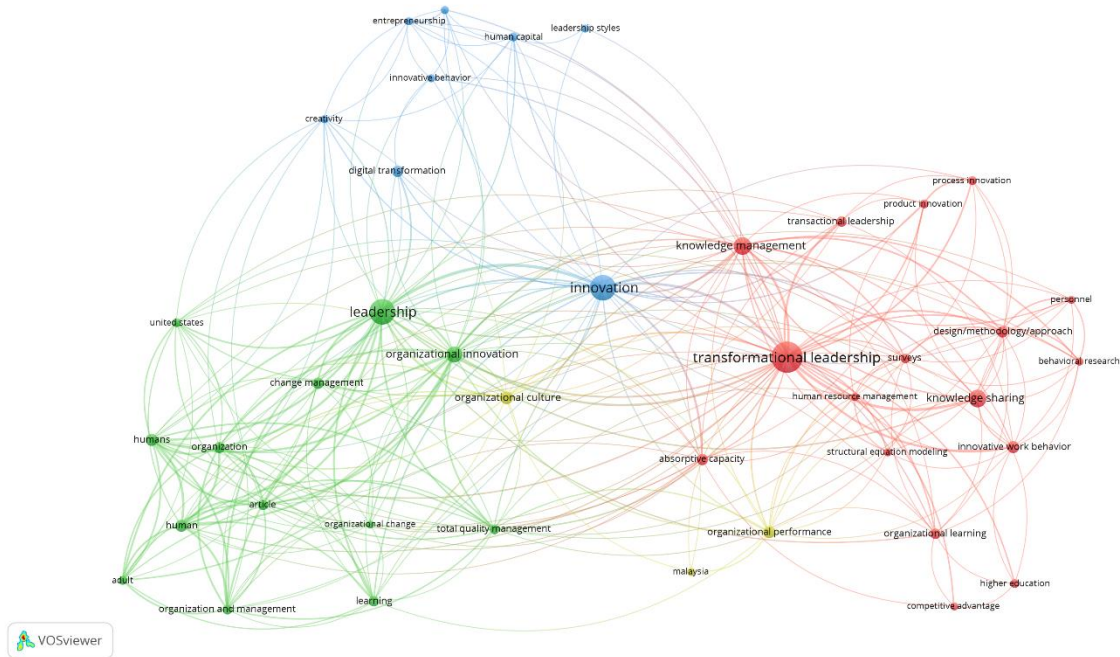


Figure 9. Network visualization.

Table 5. Co-occurrence network tabular form.

Cluster	Keywords
Cluster 1 (red)	Transformational leadership, knowledge management, knowledge sharing, innovative work behavior, human resource management, transactional leadership, organizational learning, competitive advantage.
Cluster 2 (green)	Leadership, organizational innovation, change management, organizational change, organization, leader, organization and management.
Cluster 3 (blue)	Innovation, digital transformation, human capital, innovative behavior, creativity, leadership style, performance.
Cluster 4 (yellow)	Organizational culture, organizational performance, Malaysia.

Figure 9 displays the co-occurrence network, which is partitioned into 5 clusters. Table 5 displays the intricate particulars of the cluster. The initial cluster, specifically the red cluster, primarily focuses on topics such as transformational leadership, knowledge management, knowledge sharing, innovative work behavior, etc. Transformational leadership ideas place a strong emphasis on emotions, beliefs, and values. According to Nabi et al. (2022), transformational leadership is the process by which managers and employees foster righteousness, encouragement, inspiration, and drive in their pursuit, acquisition, and sharing of knowledge. The transformational leader must create a knowledge-centric system and devise innovative transformational approaches by gathering both explicit and implicit data from within the firm (Kılıç and Uludağ, 2021). Innovative work behavior encompasses an individual’s aptitude for generating novel and potentially valuable ideas, as well as the capacity to effectively implement those ideas into practice (Afsar et al., 2019). The second cluster, referred to as the green cluster, primarily focuses on topics such as leadership, organizational innovation, change management, and other related factors. Leadership is a multifaceted endeavor that involves the act of exerting influence over those who

follow (Bagga et al., 2023). Leaders play a crucial role in driving organizational innovation as they are typically the ones that initiate the innovation process by making the decision to offer new and unique ideas (Alblooshi et al., 2020). Organizational innovation in business practices refers to the implementation of new methods to efficiently organize procedures and routines within a company (Taques et al., 2021). This may include practices such as establishing databases, improving employee retention, and introducing management systems (Nguyen et al., 2021). The third cluster pertains to Innovation, digital transformation, human capital, etc. and is characterized by its blue colour. Digital transformation may integrate several innovative aspects and enhance the efficiency of resource management (Nadkarni and Prügl, 2021). Digital transformation has the capacity to surpass the constraints of time and geography and integrate diverse components of innovation (Zomer et al., 2020). At the same time, various new information is rapidly assimilated and applied, broadening the scope and depth of knowledge, enhancing the effectiveness of resource management, and fostering the enhancement of innovation quality (Zhao et al., 2023). The fourth cluster, referred to as the yellow cluster, primarily focuses on topics such as organizational culture. Organizational culture can be defined as a collection of fundamental values that are shared by the members of an organization (Zheng et al., 2019). Rashwan and Ghaly (2022) provide a fundamental explanation of organizational culture as the underlying framework of organizations, which is grounded in the values, beliefs, and assumptions upheld by members of the organization.

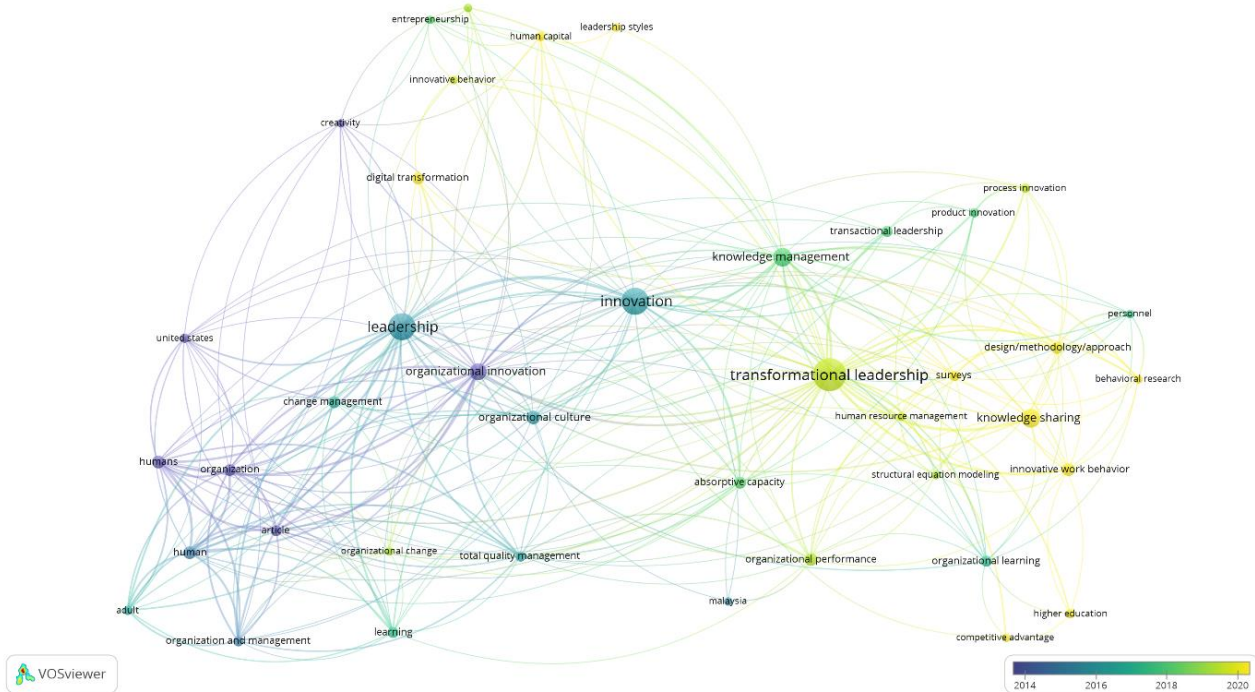


Figure 10. Overlay visualization.

Furthermore, the diverse hues of the keywords in Figure 10 enable us to determine the mean publication year of all publications that encompass these phrases. The correlation between lighter colour and more recent average publication year is

observed. Accordingly, the keywords knowledge sharing, leadership styles, digital transformation, innovative work behavior, competitive advantage and digital transformation, have become the emerging and worthwhile research interests in this field.

#### **4. Conclusion**

The present study investigated the essential components of transformational leadership and its associated factors in the existing body of literature. The identification of significant patterns and emerging subjects in the literature on transformational leadership was achieved by an analysis of factors such as scientific output, average yearly citations, highly cited sources, influential sources, source dynamics, and other related features. The research identified terms and topics that were predominantly used, based on their varied density and centrality of usage. The study has also illuminated the words and phrases that are strongly associated in different research articles on transformational leadership.

This study demonstrates the utility of bibliometric analyses in academic literature, as they serve as a tool for identifying and categorizing a diverse range of documents within a particular field of study. Additionally, these analyses enable the examination of existing information to identify trends through the synthesis of data. This study conducted a comprehensive review of the scholarly articles on transformational leadership that were retrieved from the Scopus database. This bibliometric analysis examined a total of 198 scholarly documents from the previous two decades pertaining to the field of transformational leadership, taking into account the constraints of subject area and document type. Research in this field has progressively garnered recognition since 2018, encompassing both the academic and professional spheres. The scholarly work titled “Moving forward and making a difference: Research priorities for the science of service” authored by Ostrom et al. (2010) has garnered the highest citation count within its own academic domain, amounting to a total of 1086 citations. There are a number of underexplored themes or subjects pertaining to transformational leadership matters, such as knowledge sharing, leadership styles, digital transformation, innovative work behavior, competitive advantage and digital transformation.

Drawing from an examination of the documents contained within the primary Scopus database, some key insights can be inferred, which may be beneficial for forthcoming scholars engaged in the study of transformational leadership. Bibliometric analysis of transformational leadership can have both theoretical and practical implications:

##### **4.1. Theoretical implications**

This research acts as knowledge mapping in where bibliometric analysis can help map the intellectual structure of the field of transformational leadership. It can identify key concepts, influential authors, and intellectual networks within the field. Next is identification of trends, or the analysis of publication trends can reveal the evolution of research in transformational leadership, highlighting emerging topics and areas of increasing or decreasing interest.

Last, it is essential for theory development. By identifying gaps in the literature, bibliometric analysis can guide future research and contribute to the development of new theoretical frameworks in transformational leadership.

#### **4.2. Practical implications**

Insights from bibliometric analysis can inform policy-making and organizational practices related to leadership development. Organizations can use this information to design more effective leadership training programs. It also can help identifying key contributors: By identifying the most influential authors and publications, bibliometric analysis can help practitioners identify sources of reliable information and expertise in transformational leadership. Bibliometric analysis can be used to benchmark the research output of individuals, institutions, or countries in the field of transformational leadership, providing insights into their research impact and productivity. Overall, bibliometric analysis of transformational leadership can provide valuable insights for both researchers and practitioners, enhancing our understanding of this important area of study and its practical applications.

#### **4.3. Limitations**

This research has various constraints. While Scopus is often regarded as a highly inclusive database for social scientific research (Mongeon et al., 2021), it cannot ensure that our search method encompassed all qualifying articles, as certain publications may not be incorporated in Scopus. Furthermore, it is possible that the information reported in this study has undergone modifications as time has passed. Subsequent investigations should aim to acquire more extensive bibliometric data by merging several databases, such as WoS, Google Scholar, and Science Direct.

#### **4.4. Future research directions**

To give a more thorough knowledge of the topic, future research should investigate the integration of other bibliometric indicators, such as citation counts, co-citation analysis, and bibliographic coupling. Future research on transformational leadership should examine temporal trends in the subject, such as changes in the emphasis of the study, changes in the publications and key writers throughout time, and the influence of historical events.

Future study should examine cross-disciplinary impacts on transformational leadership research, including the impact of ideas and methodologies from adjacent domains like psychology, sociology, and organizational behavior, given the multidisciplinary character of leadership studies. Comparative bibliometric studies could be conducted to compare research trends, patterns, and impact in transformational leadership across different regions, countries, or cultural contexts.

Although bibliometric analysis is essentially quantitative, in order to give a more nuanced picture of transformational leadership research, future studies should investigate ways to add qualitative insights, such as content analysis of publications. Predictive algorithms based on bibliometric data might be developed in the future to foresee future trends in transformational leadership research, identify emerging subjects, and predict the influence of new publications and authors.

Future studies could explore the application of open science practices, such as

open access publishing, data sharing, and transparent research practices, in the field of transformational leadership research, and their impact on research dissemination and impact. Overall, these future research directions could enhance our understanding of the evolution, impact, and future directions of research in transformational leadership through bibliometric analysis.

**Author contributions:** Conceptualization, ABPW and MP; methodology, FSN; software, AS; validation, AS; formal analysis, MP; investigation, ABPW; resources, FSN; data curation, NR; writing—original draft preparation, PNM; writing—review and editing, PNM; supervision, MP and PNM. All authors have read and agreed to the published version of the manuscript.

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