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Change management and organizational performance: current key trends

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ABSTRACT

This paper provides a comprehensive review of the literature on the relationship between change management and organizational performance through bibliometric and thematic analysis. Using the Web of Science database, 304 publications were analyzed with VOS viewer and biblioshiny in R-studio. The study examines author engagement, keyword trends, co-authorship networks, and conceptual structures. Findings reveal a growing research interest in this field across various geographical regions. The United States and China are the most influential countries, while Appelbaum from Concordia University in Canada is the most productive researcher. The research's conceptual structure focuses on four key aspects: human, organizational, technological, and leadership. Co-word analysis categorizes topics based on their intensity, specialization, and level of development, distinguishing well-researched areas from emerging and underexplored themes. This approach provides a clearer understanding of thematic and temporal developments in the field. By mapping the conceptual landscape, this study highlights key research areas and identifies future directions for exploration. The findings contribute to a deeper understanding of how change management impacts organizational performance and offer insights for scholars and practitioners interested in advancing the field.

MAD STATEMENT

This study is the first to investigate the historical progression of concepts associated with change management and its impact on organizational performance across the four aspects of change management. It highlights the current and contemporary trends in these aspects, serving as a reference point for future researchers interested in exploring the intersection of change management with artificial intelligence, emotional intelligence, data science, and other relevant fields.

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1. Introduction

The business environment is experiencing rapid developments in science and technology, alongside the intensification of global competition and globalization (Gölgeci et al., 2020). These factors, coupled with the ongoing changes in political, economic, and social fields, have had a significant impact on how organizations operate (Ashta et al., 2018). As a result, organizations that fail to adapt themselves to these changes risk falling behind, which could threaten their survival and even lead to their eventual disappearance (Naseer et al., 2023). Therefore, change has become a vital and inevitable issue for all organizations to ensure their continued growth and success in achieving their goals (Harahsheh et al., 2021).

Change management is the process of moving from an existing situation to a desired situation to achieve specific goals that are shared by the leadership and the workers (Nelson & Aaron, 2005). In recent years, there has been a growing interest in change management, with research focusing on successful and unsuccessful change management as a key element of an organization's performance (Bateh et al., 2013). This is because change management is a crucial administrative task that helps develop work

and ensure continued success (Mondal et al., 2020). Furthermore, interest in change management has increased due to the Fourth Industrial Revolution and the significant digital technological transformation brought about by the post-COVID-19 crisis (Okwata et al., 2022).

On the other hand, organizational performance is fundamental to the survival of any organization. According to Conțu (2020), the extent to which an organization positions itself effectively in the business market with the help of its informational, financial, and human resources is what defines organizational performance (Nuhu et al., 2016). Since organizational change is linked to employee performance and the organization's overall performance managing change is crucial to achieving successful results (Sarwar et al., 2022).

The organization's performance is not only about achieving goals and maintaining sustainability but also about saving time and effort and being prepared to face all changes while maintaining results. Therefore, linking change management to the organization's performance and understanding the elements of change management that affect performance will enable organizations to prepare in advance for emergency events. This includes saving time and effort, reducing the risk of sudden changes, and ensuring high competitiveness through continuous change processes as part of the organization's culture.

Therefore, change management is considered a means to improve the organization's performance and raise the capabilities of its employees (Buick et al., 2015). This requires active participation from leaders and managers across the organization to set direction, engage and motivate employees, and introduce new ways of working (Shoukat et al., 2023). Effective change management in organizations also increases employee productivity, improves decision-making by sub-managers, reduces conflicts, reduces defects and errors, improves organization performance, and enhances employee motivation (Chatterjee et al., 2023; Latifah et al., 2024).

Previous research has investigated several facets of change management, including the challenges and issues that it entails (Pryor et al., 2008). It has also examined the readiness for change and its connection to business systems through analysis of strategic methods of change management. Additionally, the literature has delved into human resources (Narbariya et al., 2022) different types of leadership and leader characteristics, and how they affect employees' reactions to change initiatives (Junnaid et al., 2020).

Numerous studies have shown that organizational cultures significantly impact employees' willingness to adapt to change across various sectors (Haffar et al., 2014). Effective communication between senior management and those affected by change has also been found to be crucial for successful organizational change (Endrejat et al., 2021). Additionally, modern technology and digital transformation play a vital role in enabling organizational change and development (Alichleh Al-Ali et al., 2022).

Although prior research on change management and its impact on organizational performance has made significant contributions, there is still a critical gap in the literature that needs to be explored further. The existing literature has focused on four key dimensions: human, organizational, technical, and leadership. However, there is a noticeable lack of integration of these dimensions into a cohesive framework that can effectively guide organizations through change management practices. This approach also lacks a comprehensive view and neglects fundamental issues such as the interaction between change management and artificial intelligence, emotional intelligence, data science, and related topics.

The purpose of this study is to bridge the gaps in previous research, specifically in terms of limited coverage across various disciplines, to provide a significant contribution to the ongoing discourse on change management and organizational performance. We conducted a comprehensive bibliometric analysis as there is currently a lack of such an analysis linking change management to organizational performance. Our analysis aims to demonstrate the conceptual framework of change management and its impact on organizational performance by answering the following questions:

1. What is the volume and distribution of publications and citations all over the years from 2012 to 2023?
2. What are the authors, countries, and institutions contributing to the research in the context of change management and organizational performance?
3. What is the conceptual structure of change management and organizational performance?
4. What are the basic, dominant, niche, and emerging research topics in this area?

By addressing the previous inquiries, this study will help us comprehend the relationship between change management and organizational performance, as well as the most significant recent research published in this field. This study differs from the research conducted by Diaz-Iglesias et al. (2019), which only included publications related to business and management topics published between 1967 and 2017. Their study period preceded the significant technological advancements and changes that the world has witnessed after 2017.

It also differs from the bibliometric analysis that was issued in 2021 and presented by Moosa et al. (2022), and included the period between 1995 and 2019. They provided an overview of the topic of change management and identified the four aspects of managing human, organizational, leadership, and technological change, while our study has clarified the concepts related to each aspect of these aspects and their relationship to organizational performance, it showed recent trends and the chronological development of these concepts and future visions for each aspect.

Through this analysis, we identified the densest concepts that are well-researched, concepts of marginal interest that are highly specialized and need in-depth study, concepts that are not well-developed and need to be developed, and key themes that are closely related to understanding the relationship between change management and Organizational performance. These concepts were linked to the four organizational, human, leadership, and technological aspects of change management, and we explained how these concepts developed over the past decade.

Also, our research aimed to determine the most influential authors, countries, collaborations, and institutions in the field of change management. We did this by analyzing bibliometric indicators based on the number of publications over the past ten years. We also conducted a thematic content analysis to explore the evolution of themes in the domain using keywords. Finally, we used the results of the content analysis to identify potential future research areas in the field. Our findings have significant implications for scholars and researchers with expertise in change management, and the insights derived from our thematic analysis will guide future research directions in the field.

This paper is divided into various sections to make it easy for readers to navigate through the content. The first section focuses on the research design, highlighting the selection of keywords and the process used to conduct the bibliometric analysis. In the second section, we present the results of the bibliometric analysis. The third section discusses the findings and recommendations based on the analysis. Finally, in conclusion, we discuss the limitations of the research.

2. Methods

2.1. Bibliometric analysis

Bibliometric analysis is becoming increasingly popular in business research due to its ability to handle large amounts of scientific data and produce high research impact (Donthu et al., 2021). This technique's benefits come from the quantitative and statistical measures and technologies employed (Mukherjee et al., 2022). To achieve our objective, we utilized two bibliometric approaches: performance analysis and scientific mapping analysis (Farooq, 2023).

The performance analysis is a way to measure research productivity and its influence (Mukherjee et al., 2022). The analysis involves evaluating scientific production, annual total citations, the most productive authors, the most cited documents, the most cited countries and institutes, and the most relevant keywords (Farooq, 2023).

We utilized VOS-viewer version 1.6.19 to create an overlay visualization of co-authorship. Subsequently, we conducted a science mapping analysis using Rstudio (version 4.3.2). Rstudio is a software for the R programming language, which we employed to analyze scientific maps and identify keyword co-occurrence (Dwekat et al., 2020). By utilizing bibliometric indicators, we presented the latest developments in change management over a recent period. To identify the main themes in the field, we analyzed the thematic map using the co-word network, which facilitated the description of the conceptual structure. To delve deeper into the analysis of the field, we employed time-sliced evolution maps by selecting two time periods between 2012 and 2023.

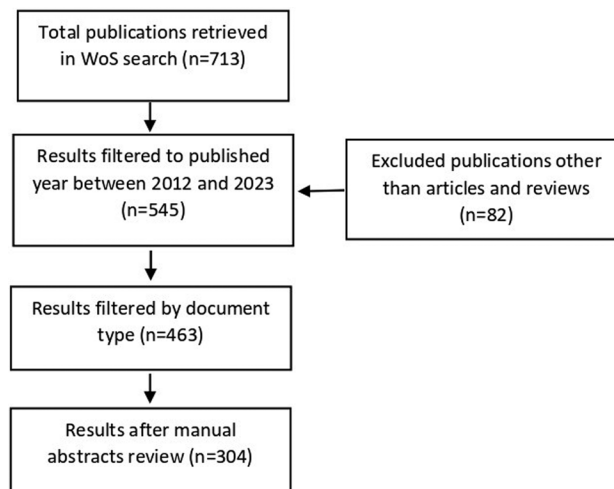


Figure 1. Selection of publications for final list.

For this bibliometric analysis, we followed the recommended workflow of Zupic and Čater (2015). Firstly, we identified the research questions and selected the relevant bibliometric methods for each question. Secondly, we searched the core collection of the Web of Science (WoS) database for publications indexed between 2012 and 2023. To achieve consistency and reliability in data collection, we chose a single database, Web of Science (WoS). Using a single source simplifies data management, reduces errors, and avoids the complexity of merging results from multiple databases. WoS and Scopus are the two traditionally preferred databases for bibliometric research, although there are other scientifically accepted databases (Visser et al., 2021), but given the overlap of most publications, choosing one was sufficient. The WoS was chosen because it is considered the most widely used and reliable research and citation database in the scientific world, with over 34,000 journals (Birkle et al., 2020). In addition, the SSCI (WoS) database is widely used for bibliometric studies in management and organization due to its broad disciplinary coverage, and inclusion in most university subscriptions, making it accessible to researchers (Zupic & Čater, 2015). However, relying solely on the WoS is a limitation of this study.

2.2. Data collection

To ensure comprehensive research, we conducted a search on the Web of Science database using the following topics: 'change management', 'organiz*', and 'performance'. We limited the search period to publications and reviews from 2012 to 2023 and filtered our results to show only publications and reviews. Our search query was: ('change management' and organiz* (Topic) and performance (Topic) and 2012 or 2013 or 2014 or 2015 or 2016 or 2017 or 2018 or 2019 or 2020 or 2021 or 2022 or 2023 (Publication Years) and Article or Review Article (Document Types)).

After conducting an initial search, we found 713 records. After applying the query, the number of records decreased to 463. We manually reviewed these records, read abstracts to identify the most relevant documents, and ended up with a final list of 304 records. We used this final list for bibliometric analysis, as shown in Figure 1. Following the Zupic and Čater workflow, the next step was to export the final list in the EndNote Desktop format. We then analyzed the bibliographic data using RStudio and R packages.

3. Findings

3.1. Performance analysis

3.1.1. Distribution of publications and citations per year

Figure 2 illustrates the yearly scientific output on change management and performance between 2012 and 2023. The graph displays a noticeable surge in publications related to change management and

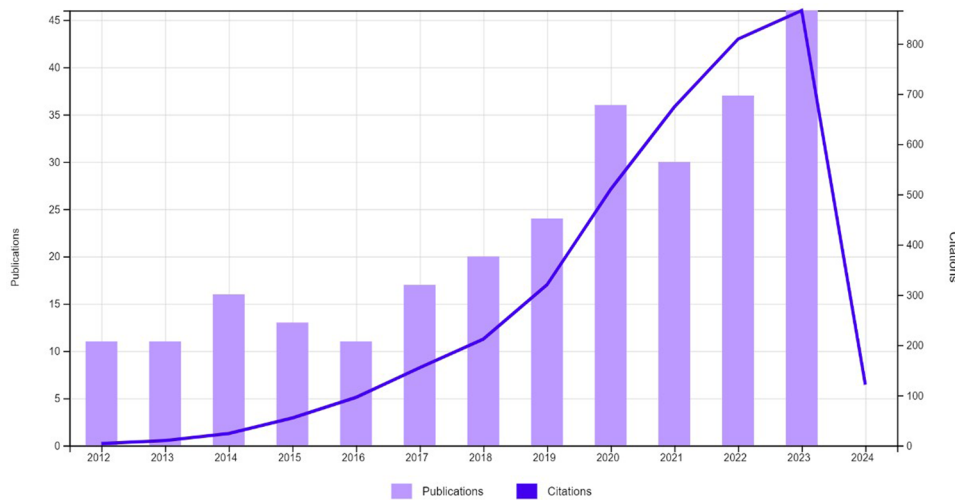


Figure 2. The annual scientific production and citation.

organizational performance, starting with only 11 publications in 2012 and peaking at 46 publications in 2023.

Between 2020 and 2023, there was a significant increase in the number of published publications with a total of 149 papers which make up almost 49% of all publications. On average, 37 publications were published each year during this period. This rise in publications coincided with the emergence of the Covid-19 pandemic. These findings are consistent with Al-Haddad and Kotnour's (2015) research, which highlights that successful change management becomes a crucial issue for all organizations during times of economic crises. The interest in achieving successful organizational change also increases during such times.

The line graph depicted in Figure 2 shows that the number of annual citations for the publications has increased significantly. While there were only four citations in 2012, the year 2023 recorded the highest number with 866 citations, followed by 809 and 674 citations in 2022 and 2021, respectively. As much as 61% of all citations appeared in the years 2021–2023, indicating a growing interest in the topic of change management. However, this interest has only started to become evident since 2021, suggesting that the topic is still relatively new and novel.

3.1.2. The most productive countries

To address the second research question, we analyzed our dataset on change management and organizational performance to assess the scientific contributions from various countries. As illustrated in Figure 3, the United States emerges as the most prolific contributor, with 95 publications, followed by Canada 45, China 44, and Australia 42. This trend highlights the dominance of developed nations such as the United States, Canada, China, and Australia in producing research on change management and organizational performance, reflecting their robust government policies, institutional frameworks, and societal support for change initiatives.

Notably, other regions also contributed to the scientific discourse, with India and the United Kingdom publishing 39 and 34 studies, respectively, followed by Italy 32 and Germany 24. Among Asian countries, the total number of publications reached 75, accounting for approximately 25% of all outputs on the topic. However, contributions from Africa remain sparse, with only 10 publications, indicating a significant gap in scientific engagement from this region.

This uneven distribution aligns with the findings of Moosa et al. (2022), who conducted a bibliometric analysis to map global knowledge on change management. Their study underscored the need for greater geographical diversity and a more inclusive global perspective in the field. The limited contributions from regions like the Middle East and Africa underscore the importance of fostering research capacity and encouraging broader participation to advance the field worldwide.

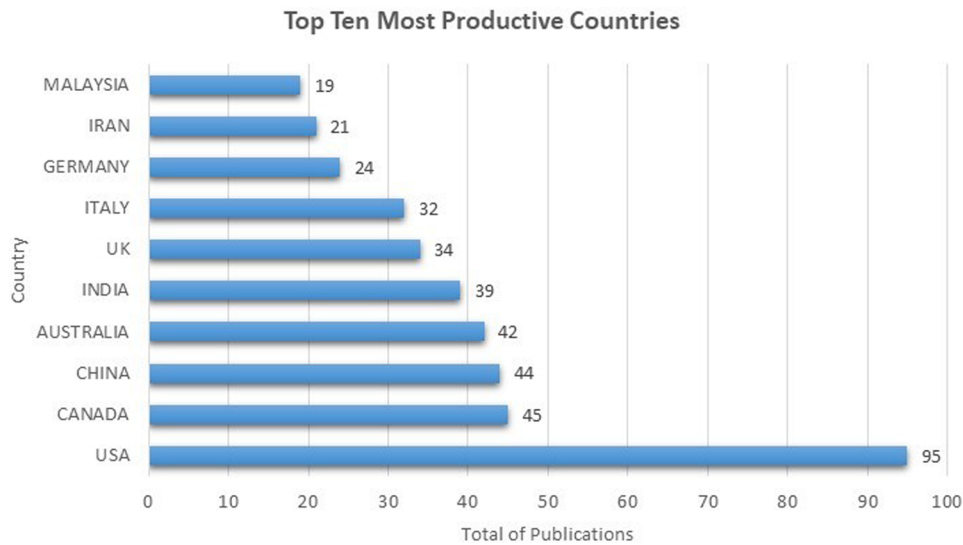


Figure 3. Country scientific production.

3.1.3. Authors contributions

A total of 812 authors from 510 institutions have contributed to 304 publications on change management and organizational performance. [Table 1](#) highlights the top 20 authors who have published at least two publications, along with their affiliations and countries.

[Table 1](#) highlights the top 20 authors who have published at least two publications, along with their affiliations and countries. Analysis of the data presented in [Table 1](#) reveals a geographical imbalance in research output and influence within this field. Notably, only five out of the top 20 most productive researchers in change management and organizational performance are affiliated with Asian institutions. In contrast, the majority – more than 50% – are based in American, Canadian, and European institutions, with a smaller representation from Australian institutions.

These trends suggest that regions such as Africa, the Middle East, and parts of Asia remain underrepresented in the academic discourse on change management. To develop a more comprehensive and globally representative understanding of the subject, increased support for researchers in these underrepresented regions is essential.

In terms of individual contributions, Appelbaum from Concordia University, Canada, leads with seven publications, focusing on resistance to change and leadership's role in overcoming it (Appelbaum et al., 2017). His work provides practical strategies for organizations, highlighting that effective leadership is crucial for successful change implementation. This aligns with organizational performance, as overcoming resistance leads to smoother transitions and improved outcomes (Appelbaum et al., 2003, 2018).

Following closely, Aida Idris from the University of Malaya ranks second with four publications, examining the link between employee empowerment and job satisfaction (Idris et al., 2018). Her research emphasizes the importance of leadership strategies and employee engagement, which contribute to successful change initiatives and enhanced organizational performance during transitions.

Meanwhile, Joris Van der Voet from Leiden University is the most-cited author among the top 20, with an average of 140 citations per publication. His research primarily focuses on organizational change in the public sector, addressing the unique challenges that public organizations face and providing valuable insights into the complexities of change management in this context (Van der Voet et al., 2016).

Other notable contributors include Islam, whose investigates the role of emotional intelligence in leaders during organizational change, highlighting how emotionally intelligent leaders improve team collaboration and reduce resistance (Islam et al., 2020). This research has implications for employee engagement and organizational performance, suggesting that leadership's emotional competence plays a key role in successful change management.

For emerging scholars exploring the intersection of change management and organizational performance, recognizing key influential authors in this domain is crucial. Engaging with their work not only

Table 1. The top 20 authors published in change management and organizational performance.

No.	author	Affiliation	Country	TP	TC	TC/TP
1	Van der voet, joris	Leiden University	Netherlands	2	140	70
2	Vohra, veena	Indian Institute of Technology	India	2	87	43.5
3	Idris, aida	University Malaya	Malaysia	4	54	13.5
4	Choi, jin nam	Seoul National University (SNU)	South Korea	2	47	23.5
5	Malik, ashish	University of Newcastle	Italy	2	37	18.5
6	Blackman, deborah ann	University of Canberra	Australia	2	33	16.5
7	Buick, fiona	University of New South Wales Sydney	Australia	2	33	16.5
8	O'donnell, michael edward	Rockefeller University	USA	2	33	16.5
9	Furuoka, fumitaka	University Malaya	Malaysia	3	34	11.3
10	Islam, m. nazmul	BRAC University	Bangladesh	3	34	11.3
11	Endrejat, paul c.	Braunschweig University of Technology	Germany	3	29	9.7
12	Kauffeld, simone	Braunschweig University of Technology	Germany	3	29	9.7
13	Appelbaum, steven h.	Concordia University – Canada	Canada	7	26	3.7
14	Del giudice, manlio	University of Rome	Italy	3	25	12.5
15	Calcagno, regina	Concordia University – Canada	Canada	3	16	5.3
16	Magarelli, sean michael	Concordia University – Canada	Canada	3	16	5.3
17	Saliba, milad	Concordia University – Canada	Canada	3	16	5.3
18	Karelis, catherine	Concordia University – Canada	Canada	3	3	1
19	Le henaff, anne	Massachusetts Institute of Technology (MIT)	USA	3	3	1
20	Mclaughlin, beverly	Belfast Health & Social Care Trust	Ireland	3	3	1

Note: TP, total number of publications; TC, number of citations.

enhances understanding of existing research but also helps scholars position themselves to make substantial contributions to the evolving body of knowledge in this field.

3.1.4. Co-authorship

The graphical map displayed in [Figure 4](#) presents a visualization of co-authorship among authors who have published at least 2 papers and received zero citations. The color gradient ranging from dark blue to yellow represents the average years of publication between 2016 and 2020. The lead author, Appelbaum, has collaborated with three other authors.

In the first group, which was published in 2016, there were three authors – Appelbaum, Calcagno, Magarelli, and Saliba – all from the same institution, Concordia University. This institution is the most productive in their field. The authors examine the link between corporate sustainability and organizational change. They argued that sustainability should be viewed as a transformational initiative that impacts a company's culture and its relationships with society. They highlighted the importance of understanding organizational goals and the cultural and psychological barriers that may hinder the implementation of sustainability efforts (Appelbaum et al., 2016). The second collaboration was between Appelbaum, Karelis, Le Henaff, and Mclaughlin. They came from Canada, USA, and Ireland and published three publications in 2017. They published three publications that thoroughly examined the dynamics of change management within the context of mergers and acquisitions. Their work offers practical insights for practitioners looking to navigate the complexities of organizational change (Appelbaum et al., 2017).

Lastly, the third collaboration was between five authors from different institutions in Iran. They published two publications around 2017, and their publications provide valuable insights into the role of change management in enhancing organizational resilience, especially in complex industrial environments (Nodoushan et al., 2017).

The information presented in [Figure 4](#) is quite interesting as it sheds light on the collaborative efforts between the yellow and light green groups, which have emerged since 2020. For instance, in mid-2020, Idris, a productive author from Malaysia, collaborated with Furuoka and Islam, who belong to institutions in different geographical regions in Asia, they explored how transformational leadership and trust in leadership affect employee behaviors that facilitate change during organizational transitions (Islam et al., 2021). Their findings highlighted the crucial role of trust in promoting employee engagement during these change initiatives (Islam et al., 2021).

This marks the start of research on change management and its impact on organizational performance in regions beyond the USA, Canada, and Europe. Moreover, it signifies the growing interest in this research field in Asian countries, where partnerships have led to the University of Malaya becoming the second most productive university in this domain.

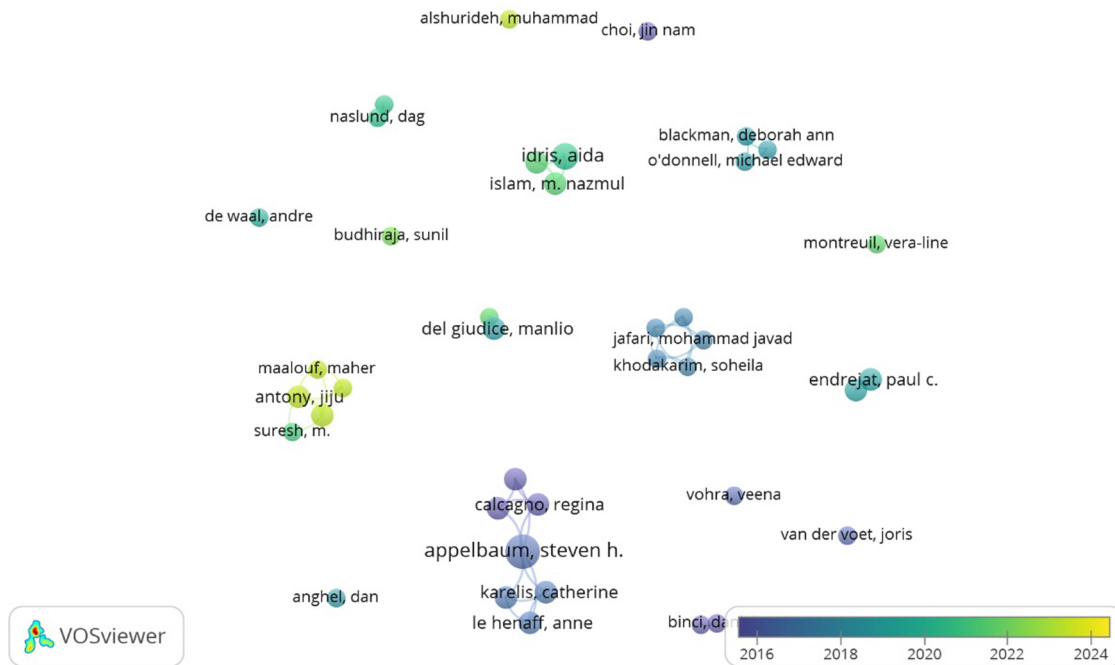


Figure 4. Overlay visualization of co-authorship.

3.2. Conceptual structure analyses in science mapping

3.2.1. Co-word analysis

In [Figure 5](#), we can see a thematic map that has been generated using the Louvain algorithm and 60 keywords. Thematic maps are useful for identifying important sections of data, which can then be summarized into keywords or key phrases. An iterative process is then used to extract the underlying themes from these keywords or key phrases (Braun & Clarke, 2006).

The themes are represented as nodes, where the size of each node indicates its importance (for example, based on frequency or the number of citations). The color of the node denotes its group or category, and the position of the node illustrates the relationship among the topics (such as centrality and density).

These themes are characterized by two properties: density and centrality. Centrality is represented on the horizontal axis, while density is represented on the vertical axis. Density Reflects how well-developed or specialized the theme is within the cluster, while centrality indicates the importance of the theme in the broader research field (Esfahani et al., 2019).

The map shows four quadrants distributed according to density and degree of development.

The upper right quadrant features key motor topics like digital transformation and organizational change management, which are vital for understanding how organizations adapt to external pressures. Concepts such as 'competitive advantage' and 'implementation' highlight the importance of managing change not only to maintain performance but also to foster growth. This was particularly evident during the COVID-19 pandemic when higher education institutions rapidly shifted to distance learning, leading to a surge in related research (Aasen & Klakegg, 2023; Al-shamali et al., 2022).

The lower right quadrant features essential topics represented by the green node, which are crucial for defining the research field. Change management cannot be studied without considering key factors like organizational culture, leadership, creativity, employee motivation, and job satisfaction. Although organizations may adapt their tools over time, these foundational elements remain indispensable.

The lower left quadrant features low-density and low-centrality topics, indicating either emerging interest or declining research focus. The blue node represents variables like resilience, intellectual capital, and sustainability, which are gaining attention in change management (Vlasenko et al., 2019). Conversely, interest in SMEs, digitalization, and operations management is waning. This quadrant is dynamic, with new themes emerging and others fading based on evolving trends.

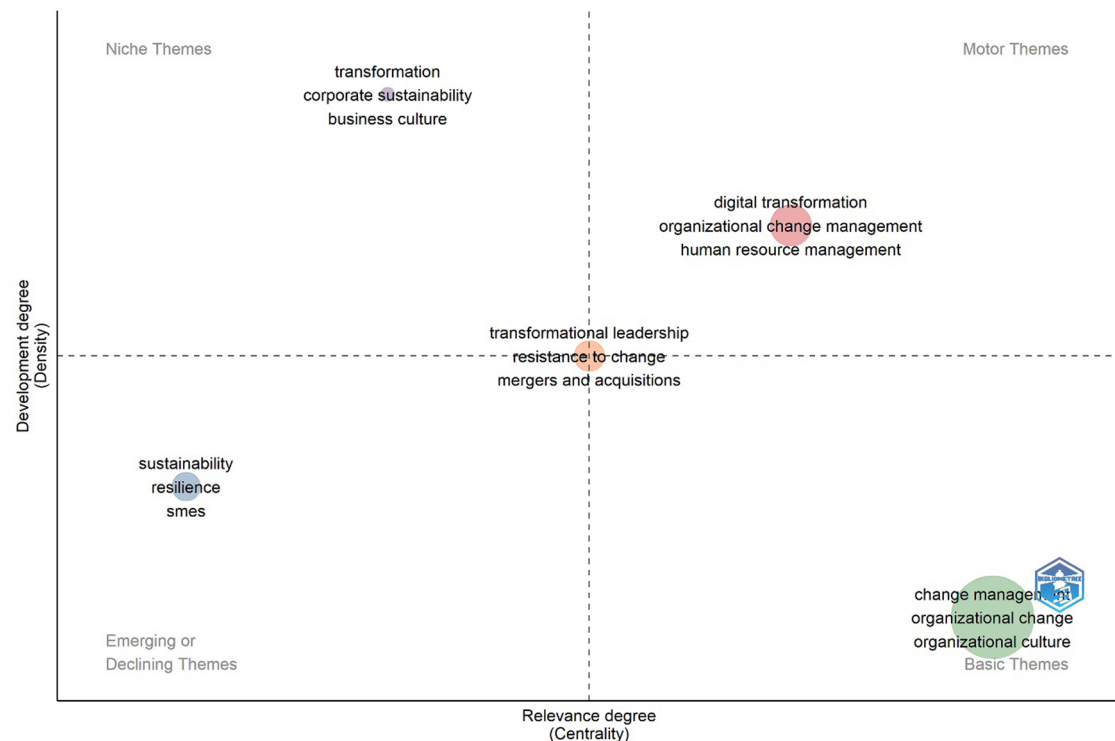


Figure 5. Thematic map. Source Bibliometrix 2023.

Quadrant four includes niche topics with strong internal connections but weak external links, indicating their marginal importance in the field. Examples are transformation, corporate sustainability, corporate social responsibility, and business culture. Their broader relevance is unclear, requiring further research to better understand their significance.

The central orange node has moderate density and centrality, featuring terms like transformational leadership, organizational culture, resistance to change, mergers and acquisitions, and strategy. These concepts are moderately developed and have balanced interrelationships.

Figure 6, which visualizes the thematic map of research in change management and organizational performance, reveals five distinct clusters of related topics based on co-occurrence patterns, with colors, node sizes, and edge thickness reflecting additional metrics such as keyword frequency, citation impact, and the strength of relationships between themes.

3.2.1.1. The green cluster: research on the organizational and human aspects of change management. The research conducted by this group focuses on the organizational and human aspects of change management. Researchers explored the relationship between the type of leadership and change management (Van der Voet et al., 2016), the behaviors of individuals, their functional affiliations, expectations for change, and their relationship to change (Neves et al., 2018; Van der Voet & Vermeeren, 2017). Some studies showed how to implement change through training, development, and creativity (Sartori et al., 2018), while others considered creativity and flexibility during crises (Al-Shamali et al., 2022), and internal communications as a strategy for creativity and their relationship to change management and organizational happiness (Castro-Martínez & Díaz-Morilla, 2021). Additionally, they investigated the role of social networks in organizational learning (Jami Pour & Hosseinzadeh, 2021), and the employees' readiness for change by determining an appropriate scale to measure employees' response to change (Beasley et al., 2021; Endrejat et al., 2021).

3.2.1.2. The red cluster: research on the technological aspect of change management. Digital transformation has become a prominent topic in recent times. Researchers have studied the challenges faced by organizations and how they can be used as a starting point for digital transformation (Hwang et al., 2022). They have also analyzed factors that contribute to the success of digital transformation, including employees' positive attitudes towards it and their support for the change process (Meske &

Cluster Label	Cluster Number	Top Keywords	Total occurrences
Change management	1	Change management, Lean, Cultural change, Organizational performance, Organizational learning, organizational communication, organizational change, organizational culture, leadership, Innovation, Performance management, Organizational Development, Public Sector, Human resource management, Change readiness, Job satisfaction, Knowledge management, Performance, motivation, Organizational climate, work engagement, Employee involvement.	293
Digital Transformation	4	Digital transformation, COVID-19, Implementation, organizational behavior, strategic management, analytical models, challenges, organizations, managing change, competitive advantage, Human resource management.	30
Sustainability	5	Sustainability, resilience, Digitalization, SMEs, Intellectual capital, Operations management, organizational change management.	25
Transformation	3	Change, transformation, Business culture, Corporate sustainability.	33
Transformational Leadership	2	Transformational leadership, resistance to change, motivation, strategy, organization.	39

Figure 7. Variables associated with clusters.

them. Finally, Appelbaum et al. (2017) looked at the ways to tackle employees' resistance to change. Figure 7 shows the dependent variables for each cluster.

After conducting a cluster analysis, we identified an opportunity to explore the interaction between different concepts and their impact on change management effectiveness. The human factor is critical in change management as it involves engaging employees and managing intellectual resources. However, there is a lack of empirical research in the existing literature to determine the direct impact of these aspects on organizational performance during transformation periods.

Similarly, the focus on the organizational aspect emphasizes the need for adaptability and intelligence. Further studies may investigate how companies successfully align these attributes with stability and predictability, which are equally essential for achieving optimal performance. The technological element mainly refers to digital transformation, but there are few studies on how companies can integrate contemporary technology into their change management strategies without disrupting existing processes.

The focus of leadership is mainly on the advantages of transformational leadership. However, there is limited understanding of how different leadership styles can be adapted or combined to suit varying stages of the change management process. To address these gaps, future research can concentrate on developing a comprehensive change management model that encompasses the four elements and offers a clear plan for firms to navigate through periods of transformation.

3.2.2. Thematic evolution through chronological time mapping

This section presents a timeline that explores key topics' evolution and contributions to the field over time, based on the top 40 keywords from the thematic map. The timeline is divided into three periods, with significant turning points identified in 2018 and 2020, as illustrated in Figure 8. Discussions surrounding the Fourth Industrial Revolution began in the early 2000s. They intensified by 2018, as global efforts focused on addressing the challenges posed by rapid technological advancements, including artificial intelligence, automation, and the Internet of Things. The emergence of the COVID-19 pandemic in late 2019 and its global impact in 2020 also catalyzed profound changes in business and digital transformation, highlighting the importance of these years as pivotal moments. These transformations are further analyzed through three two-dimensional thematic maps, which illustrate the progress, transformation, and consolidation of the thematic clusters across the selected periods.

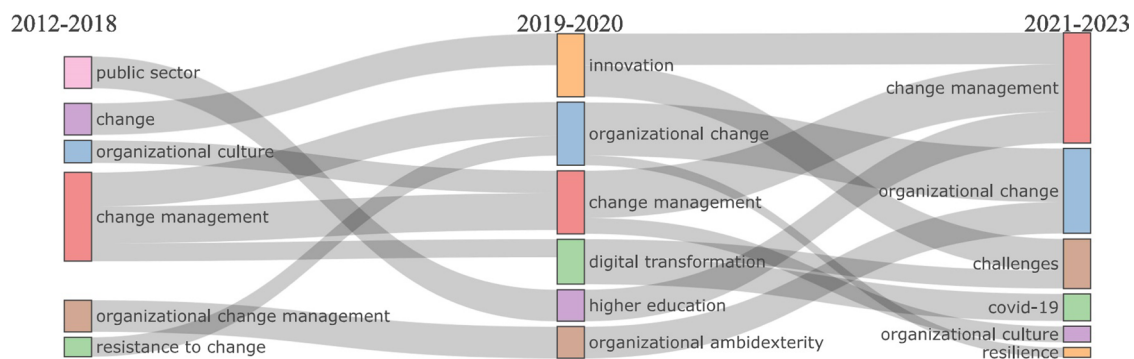


Figure 8. Thematic evolution. Source Bibliometrix 2023.

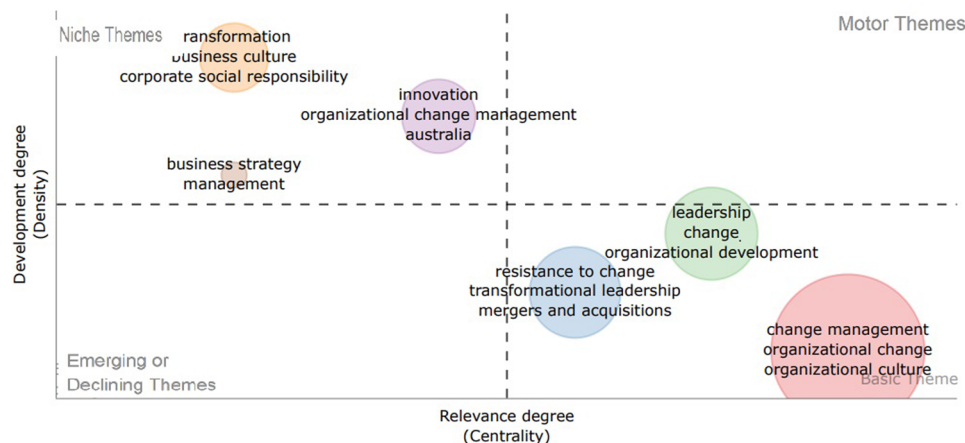


Figure 9. Thematic Evolution Time Slice 1. Source Bibliometrix 2023.

Between 2012 and 2018, there was a notable interest in the topic of organizational culture and resistance to change. This suggests that there was a focus on leadership and its relation to change management, particularly in overcoming resistance to change. Figure 9 shows evidence of this trend. During this period, the most advanced concepts were innovation, transformation, and business culture, but their significance was somewhat restricted.

During the period from 2019 to 2020, there was a significant development in the fields of digital transformation and higher education. The focus shifted from resistance to change to change readiness, with a greater emphasis on transformational leadership. Effective communication and employee involvement in change management were also recognized as critical factors. Islam, one of the top authors, investigated how trust in leadership during this period – including transformational leadership – affected organizational transformation and employee engagement (Islam et al., 2020). Figure 10 provides a clear visual representation of these advancements.

During the period between 2021 and 2023, change readiness became a vital concept in the field of change management, Paul Endrejat, one of the top authors, highlighted the importance of effective communication strategies in transforming resistance to change into readiness for change (Endrejat et al., 2021). As depicted in Figure 11.

There was extensive research on COVID-19 and its link to digital transformation, as well as the importance of gaining a competitive edge during crises. However, organizational culture received less attention during this period. Specialized topics such as intellectual capital, knowledge sharing, analytical models, and automation were studied to understand better the relationship between human and technological aspects of change management. Finally, resilience emerged as a metric to measure an organization's preparedness and ability to anticipate change (Gutiérrez-Iñiguez et al., 2003). Transformational leadership and implementation have become the basic themes of the field at that period. They involve identifying

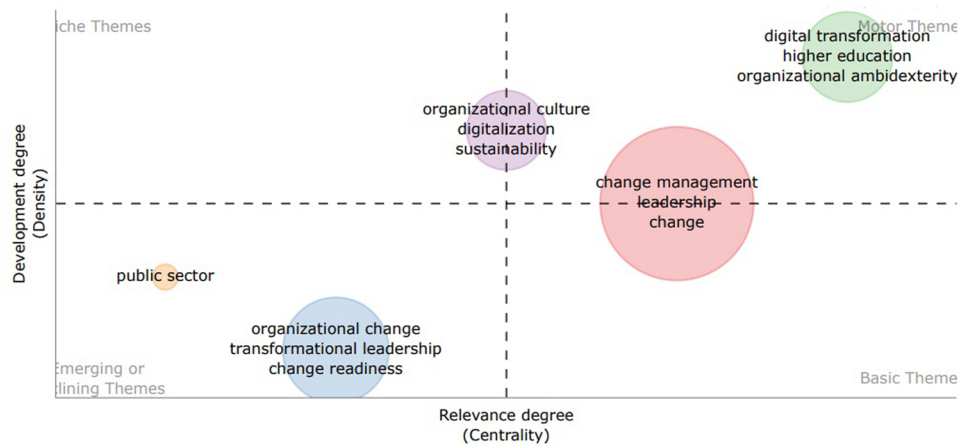


Figure 10. Thematic Evolution Time Slice 2. Source Bibliometrix 2023.

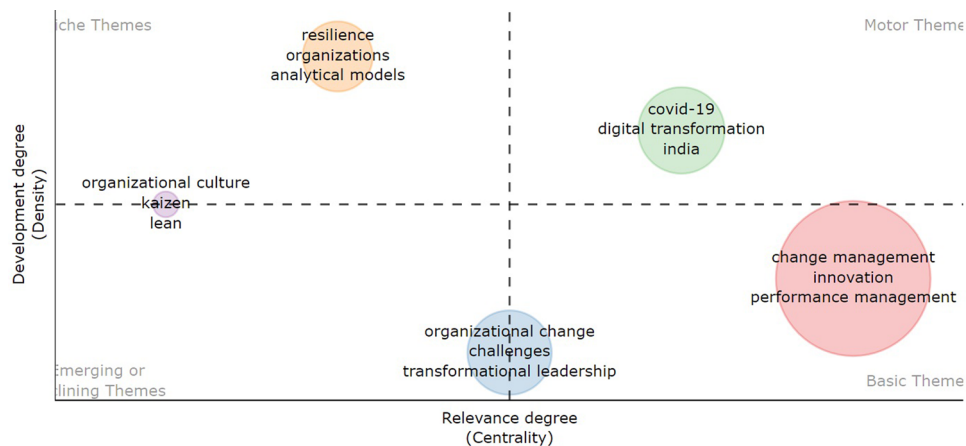


Figure 11. Thematic Evolution Time Slice 3. Source Bibliometrix 2023.

the challenges that determine the type of change required, figuring out how to implement this change, and maintaining the sustainability of the organization; which has become an essential element of change management, and helps to create long-lasting positive environmental and social impacts (Gutiérrez-Iñiguez et al., 2003).

4. Discussion and future directions

We conducted a bibliometric analysis of 304 publications related to change management and its impact on organizational performance. The analysis revealed four key aspects of change management, namely the organizational aspect, human aspect, leadership aspect, and technological aspect. These findings are consistent with the research conducted by Moosa et al. (2022) on bibliometric analysis of change management. However, their analysis was limited to the identification of these aspects only, without delving into their dimensions and their relationship with change management. Let's examine each of these aspects in detail.

1. The human aspect of change: Organizations are focusing on change management by addressing employees' expectations and behaviors, rather than just resistance to change. They enhance readiness through continuous training and improved communication, with external knowledge sharing and teamwork also helping to reduce resistance (Narbariya et al., 2022). Involving employees in decision-making and participation is essential for organizational performance (Sahoo, 2021). Managing intellectual capital – knowledge, skills, and experience – is a key trend and competitive advantage for organizations, highlighting the importance of effective human resource development in modern

management (Rooney et al., 2023; Shoukat et al., 2023). Change implementers should frame change as an opportunity for growth. Employees need new skills for hybrid or remote work, which should be part of the culture. Supportive environments that prioritize mental and physical health like flexible work schedules can boost productivity, reduce absenteeism, and improve retention, enhancing overall organizational performance (Chaudhary et al., 2022).

2. The organizational aspect of change: Organizational change varies from simple modernization to major transformations, driven by goals like remedial, unplanned, personal, or transformational change (Harden et al., 2021). These change types carry risks (de Waal, 2018), highlighting the need for change management. Organizations must be resilient and responsive in a fast-paced environment, as flexible companies can adapt their plans and develop strategies to address challenges, especially unplanned changes (Shi et al., 2021). Accordingly, organizations should replace traditional linear change management with flexible, iterative methods to foster resilience. This means the organization must think proactively towards possible changes by empowering teams, promoting collaboration, and encouraging continuous improvement, self-organization, servant leadership, and innovation to enhance flexibility. Future research aims to connect agile concepts – characterized by rapid adaptability – with change management frameworks at all stages. It is also possible to benefit from the 'Kaizen' model, which emphasizes continuous incremental improvements, which lead to significant outcomes when executed collectively (Bader et al., 2024). It helps in maintaining and enhancing the performance and value of the change initiative, in addition to identifying and eliminating any waste or inefficiency.
3. The technological aspect of change: Digital transformation has emerged as a key technological trend in change management, accelerated by the COVID-19 pandemic (Červinka & Novák, 2022). The rapid pace of digital transformation necessitates its integration with change initiatives, indicating a shift in change management practices (Behrens et al., 2023), so Organizations prioritize change aligned with modern technologies to ensure sustainability. This includes integrating artificial intelligence, data analysis, and automation into the change process, which enhances efficiency, fosters innovation, and simplifies communication (Petersson et al., 2022). Data-driven decisions are more effective than those based on intuition and experience. Data analysis helps identify strategies, measure change impact, and improve methods (Kiu & Chan, 2024). Advanced analytics enable organizations to forecast trends, anticipate customer needs, and identify potential challenges in implementing change (Mittra et al., 2019). Additionally, organizations leverage artificial intelligence and automation to analyze employee sentiment, predict potential points of resistance, recommend communication strategies, and foresee obstacles in the change process (Kumar et al., 2023). This enhances decision-making during change initiatives. Automation alleviates repetitive tasks, allowing human resources to focus on complex aspects, thereby accelerating transformation and minimizing disruptions (Fonseca & Domingues, 2017). A recent trend in change management is the integration of Augmented Reality (AR) and Virtual Reality (VR) for employee training. This approach improves practical skills without the risks of on-the-job training and allows employees to visualize and interact with proposed changes before implementation. Virtual meeting rooms also enhance communication and connection within hybrid teams.
4. The Leadership aspect of change: Leadership is key to successful change management. Managers and team leaders are crucial in driving and guiding their teams through the change process (Pianese et al., 2023). They need to know how to deal with changes and adapt to new situations (Junnaid et al., 2020). Leadership is crucial to all factors that ensure successful change. Transformational leadership focuses on innovation, understanding employee needs, and adapting through training and development opportunities (Islam et al., 2020). A transformational leader has a clear vision, motivates employees, and fosters pride, helping the organization remain stable while adapting to change and innovation (Lo et al., 2020). The future of leadership in change initiatives requires training leaders in communication skills and emotional intelligence to effectively lead diverse teams, build trust, and view the challenges as solvable problems (Vito et al., 2023). Additionally, organizational learning plays a vital role in the change process, enabling leaders to foster a culture of continuous improvement, adaptability, and shared knowledge across the organization. Finally, Organizations must recognize that effective leadership is key to successful change. Leaders with a clear vision and drive can motivate employees, align them with common goals, and boost overall performance.

The bibliometric analysis of 304 publications provides a solid foundation. Still, it highlights the need for further exploration into how factors like employee engagement, intellectual resource management, and leadership styles impact change management effectiveness. While the human aspect of change emphasizes engagement, more empirical research is needed on its direct impact on organizational performance during transformation.

The analysis recognizes the emergence of transformative technologies such as artificial intelligence (AI), emotional intelligence (EI), and virtual/augmented reality (VR/AR) in training. However, it does not explore how these innovations interact with and impact existing change management frameworks. This oversight raises several important issues. Although technologies like AI, VR/AR, and EI are acknowledged as advancements, there is a lack of discussion on how they can be integrated into traditional change management strategies.

Change management frameworks typically focus on people, processes, and communication, yet they often lack clarity on how these new tools affect these key elements. For instance, how can AI be effectively utilized in personalized training and decision-making? How might VR/AR enhance experiential learning without disrupting existing processes? Traditional models like ADKAR and Kotter's 8-Step Process tend to prioritize human interaction and follow linear processes, but they often overlook the dynamic capabilities offered by AI-based decision support and virtual simulation technologies. There is a significant gap in understanding how these frameworks can evolve to include technologies like AI predictive analytics and immersive VR/AR coaching to align with current change management practices.

Moreover, emotional intelligence, which is crucial for leadership during times of change (Issah, 2018), has not been fully examined in the context of these technologies. While AI can analyze employee emotions and process language, facilitating more personalized communication (Budhwar et al., 2022), the literature lacks insight into how these technologies can enhance emotional connections, empathy, and trust throughout the change process. Additionally, although AI and VR/AR have the potential to identify and address resistance to change by providing valuable insights and personalized experiences, there remains a gap in understanding how these tools can effectively bridge emotional and psychological resistance during change initiatives.

5. Conclusion

In conclusion, ongoing research in change management has expanded across various fields, including business, engineering, health, and education. Notably, there has been a surge in publications since the COVID-19 outbreak in 2020, which underscored the urgent need for economic institutions to adapt and maintain a competitive advantage. While past research was primarily concentrated in Europe, Canada, and the U.S., efforts are now expanding into emerging partnerships in Asia, offering a broader global perspective on change management. Key aspects identified – technological, human, organizational, and leadership – highlight the complex nature of effective change management. Additionally, ensuring readiness for change and promoting ongoing training are crucial for shaping an organization's culture and ensuring long-term success. The future of change management is moving towards a proactive leadership model that harnesses the power of AI to predict employee reactions, facilitate data-driven decision-making, and optimize organizational processes. AI tools can help identify potential challenges, prevent attrition, and personalize career development paths. With emerging technologies like Augmented Reality (AR) and Virtual Reality (VR), organizations can simulate change scenarios, thus minimizing risks and preparing employees for potential disruptions. AI-driven chatbots can collect real-time feedback, analyze sentiments, and provide actionable insights, further assisting leadership in fostering a flexible and adaptable organizational culture. As organizations seek to navigate change, focusing on employee well-being – both physical and mental – is essential for enhancing productivity and overall organizational performance. By leveraging AI to improve wellness programs and monitor employee engagement, companies can create a healthier work environment that supports long-term success. It is also crucial to develop strong leadership communication skills, as these are key to motivating teams, reducing resistance to change, and encouraging participation in decision-making, ultimately driving organizational goals. To put these insights into practice, organizations can adopt well-established change management models, such as Kotter's 8-Step Change Model or Lewin's Change Theory, and enhance these frameworks with AI-driven insights to refine strategies and improve

decision-making. Practical steps include utilizing AI tools to foresee potential employee resistance, optimize task distribution, and tailor career development paths. Furthermore, leadership training programs that emphasize emotional intelligence and digital fluency are essential in preparing leaders to manage change in increasingly technology-driven environments. Looking ahead, this research establishes a foundation for creating a comprehensive change management model that links the four key elements – technological, human, organizational, and leadership – to overall organizational performance.

Ultimately, as change management research expands globally, organizations in emerging markets can better adapt to disruption and remain competitive. Integrating AI, AR, and VR will redefine how companies approach change, making operations more efficient, data-driven, and personalized. With workforce well-being and productivity in mind, AI-driven insights can enhance employee well-being, leading to a healthier and more engaged workforce.

From a policy and leadership perspective, policymakers and business leaders can leverage these insights to develop strategies for sustainable growth in a rapidly evolving technology landscape.

6. Limitation of study

This bibliometric analysis on change management and organization performance has several limitations, including:

- Using the WoS database in bibliometric analysis. Although the WoS database is one of the largest publication databases in the world and a trusted publications, it may not contain all research related to change management. Researchers can also check other global databases such as Scopus and Google Scholar.
- Additional keywords can be added to keyword searches to include more publications related to that topic.

Future research on change management and organizational performance could explore using AI to assess employee training needs and predict behavior toward change. Another area is the impact of social media on communication between leaders and subordinates, helping to understand employee trends and job satisfaction. Additionally, data analysis could be studied for its effect on decision-making and problem-solving. Finally, integrating virtual reality with real reality to study its impact on resistance to change is a promising area.

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Author contributions

CRedit: **Maha Mahamoud Hasan**: Writing – original draft; **Sofia Aparisi-Torrijo**: Writing – review & editing; **Fernando González-Ladrón-de-Guevara**: Writing – review & editing.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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Data is available at the request of the corresponding author.

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