

The Evolution of Talent Development Programs in Academic Literature: A Bibliometric Review

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Article Info

Article history:

Received Sep, 2024

Revised Sep, 2024

Accepted Sep, 2024

Keywords:

Bibliometric Analysis

Development Programs

Talent Development

Talent Management

ABSTRACT

This study conducts a comprehensive bibliometric analysis of the evolution of talent development research, mapping its key themes, influential authors, and geographic collaborations from 1952 to 2024. Using data from Google Scholar and VOSviewer, the analysis identifies central themes such as "development programs," "talent management," and "training," highlighting their sustained importance in both corporate and educational contexts. The study also reveals the increasing interdisciplinary nature of the field, with growing interest in youth sports and gifted education. Collaboration networks show the United States and United Kingdom as central hubs in global research, while countries like India and China are emerging contributors. However, geographic imbalances remain, particularly in regions like South America and Africa. The findings suggest future research opportunities in interdisciplinary approaches, the integration of emerging technologies, and expanding global collaboration. This study provides a roadmap for researchers and practitioners looking to understand and contribute to the future of talent development.

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1. INTRODUCTION

Over the years, the idea of talent development has changed dramatically and grown to be a major topic of conversation in both industry and academia. Programs for developing talent are essential for strengthening organizational capacity and preserving a competitive advantage in marketplaces that are changing quickly [1]. Scholars have not only reacted to but also

predicted shifts in talent management approaches, resulting in a vibrant and vast corpus of work that examines various facets of talent development from both theoretical and applied perspectives [2].

Historically, talent development literature initially focused on identifying and nurturing leadership within organizations. However, as the global business environment has become more complex and

interconnected, the scope of talent development has broadened to include diverse employee groups across various levels [3]. This inclusivity reflects a strategic shift towards building deep-seated organizational competencies and a more resilient workforce [4]. The literature now encompasses a range of themes from succession planning to career development and organizational learning, reflecting broader socio-economic trends and changes in workforce demographics [5].

The methodological approaches to studying talent development have also undergone significant transformation. Early research predominantly employed case studies and theoretical frameworks to explore and define talent management practices. In contrast, recent studies increasingly utilize empirical data, quantitative analyses, and sophisticated modeling techniques to provide deeper insights and predictive outcomes concerning talent development strategies [6]. This shift not only enhances the rigor and relevance of research findings but also bridges the gap between academic theories and practical applications.

Moreover, the geographic expansion of research on talent development reflects globalization's impact on academic inquiry. Initial studies were heavily centered in Western contexts, particularly in North America and Europe. Over time, there has been a noticeable increase in studies emerging from Asia, Africa, and Latin America, offering new perspectives and understanding of talent development in different cultural and economic settings [7]. This global perspective is crucial, as it enriches the academic discourse by introducing diverse methodologies and heterogeneous contexts, which challenge and refine existing theories and practices.

Despite the extensive body of literature on talent development, several gaps remain that warrant further exploration through a bibliometric review. Firstly, there is a need to systematically map out the evolution of talent development literature to identify prevailing trends, major contributors, and fundamental shifts in thematic focus over

time. Additionally, while methodological diversity enriches the field, it also presents challenges in terms of comparability and generalizability of findings across different studies and geographies [8]. Furthermore, the integration of emerging technologies and digital platforms in talent development strategies is underexplored, particularly in how they are transforming traditional approaches to talent management in academia and industry alike. Addressing these gaps will not only contribute to the theoretical advancement of the field but also offer practical insights for policymakers and organizational leaders.

The primary objective of this research is to conduct a comprehensive bibliometric analysis of the literature on talent development from its inception to the present. This study aims to map the intellectual structure of the field, track its evolution, and identify the most impactful studies, authors, and institutions involved in talent development research. By doing so, the research will provide a consolidated view of the academic landscape of talent development, highlighting influential theories, methodologies, and future directions for research and practice. This bibliometric review will serve as a valuable resource for scholars, practitioners, and students interested in the current state and future prospects of talent development programs.

2. LITERATURE REVIEW

The foundational theories in talent development have their roots deeply embedded in traditional human resource management (HRM) paradigms, which have gradually evolved to address the complexities of talent as a critical and distinct domain within organizations. Early theoretical contributions, notably by scholars like Becker in 1964, introduced human capital theory, emphasizing the treatment of employees as capital investments. This theory posits that investments in employee development yield substantial returns in terms of enhanced productivity and superior organizational performance, a concept that has profoundly

influenced subsequent HRM strategies [9]. This perspective served as the bedrock for the conceptual evolution of talent management, framing talent not merely as a workforce element but as a pivotal strategic resource that is integral to organizational success and competitiveness.

As the discourse around talent development matured, the resource-based view (RBV) of the firm emerged as a significant theoretical framework that further enriched our understanding of talent management. Proposed by Barney in 1991, the RBV argues that firms can achieve and sustain competitive advantages through the identification, development, and management of unique organizational capabilities, particularly those related to human talent [1]. This view shifted the focus from generic HR practices to more strategic talent management approaches that emphasize the nurturing and retention of top talent as essential to building core competencies. The RBV framework has not only broadened the scope of talent management research but has also encouraged organizations to view their talent pools as key drivers of innovation and strategic growth, thus integrating talent development more closely with their overarching strategic objectives.

2.1 Evolution and Expansion of Talent Development Themes

The landscape of talent development research has witnessed significant expansion and diversification over the past decades. Initially, the focus was predominantly on leadership development within the corporate sector, reflecting early business needs and the prevailing managerial philosophies of the time. However, as the complexities of workforce management and organizational dynamics grew, the research themes similarly broadened. Studies began to explore deeper aspects of organizational behavior, including succession planning, which ensures leadership continuity, and employee engagement, which is crucial for maintaining a motivated workforce. This

shift marked a departure from viewing talent development merely as a means to cultivate leadership to recognizing its broader impact on overall organizational health and effectiveness [2].

Further evolution in the field was marked by a significant shift highlighted in Tansley's 2011 study, which advocated for a more inclusive approach to talent management. This approach recognized talent at all levels of an organization, not just at the executive or leadership tier. This perspective opened new avenues for research and application across various sectors beyond the traditional corporate setting, such as healthcare, education, and non-profits. Such sectors presented unique challenges and opportunities for talent management, underscoring its universal relevance and adaptability. The inclusive view also encouraged a more holistic understanding of talent as a fundamental resource that could drive success in diverse organizational contexts. Recent studies continue to explore this expanded scope, indicating a trend towards more integrated and strategic approaches to talent development that consider a variety of factors, from individual capabilities to organizational culture, in nurturing and leveraging talent across the board [6].

2.2 Global Perspectives on Talent Development

The globalization of talent development research has notably broadened the scope of this field, introducing a rich tapestry of cultural and economic perspectives that enhance the academic and practical understanding of talent management. Historically concentrated within Western economies, the narrative began to shift as scholars and practitioners from Asia, Africa, and Latin America brought forward their insights and experiences. This influx of diverse perspectives has been crucial in challenging and refining the predominantly Western-centric theoretical frameworks that once

dominated the discourse. For example, contributions from scholars in Asian contexts, such as India and China, have provided a deeper understanding of how local cultural norms and values can significantly shape talent management strategies. Studies have shown that in these regions, familial ties and societal expectations can play a critical role in defining corporate practices and policies [7].

Moreover, these global contributions emphasize the necessity for talent management practices that are not only culturally aware but also adaptable to varying economic conditions. The integration of such cultural and economic dimensions into talent development research has led to more robust and applicable strategies that consider the unique challenges and advantages present in different parts of the world. Research reflecting these varied contexts has highlighted the importance of developing culturally nuanced approaches that respect and leverage local traditions and business practices. By doing so, organizations are better equipped to foster an inclusive environment where diverse talent can thrive. This global perspective not only enriches the field but also ensures that talent development strategies are more universally relevant and effective, aligning with the global nature of modern business [10].

2.3 Technological Advancements and Their Impact on Talent Development

The rapid advancement of technology has had a transformative impact on talent development, reshaping traditional strategies and introducing innovative methods for managing and enhancing human capital. Digital platforms and artificial intelligence, in particular, have been instrumental in this shift, allowing for the creation of more personalized and adaptive learning experiences. These technologies facilitate a level of customization and responsiveness that was previously

unattainable, enabling organizations to tailor training and development programs to individual needs and preferences. This personalized approach not only improves engagement and learning outcomes but also supports the strategic alignment of talent development with organizational goals (Stone et al., 2015). E-learning platforms exemplify this evolution; they have expanded the reach of educational programs beyond traditional boundaries, providing flexible, accessible, and cost-effective training solutions that accommodate diverse learning styles and schedules [11].

Moreover, the application of predictive analytics and AI in talent management has revolutionized how organizations forecast and prepare for future skill requirements. By analyzing data on employee performance and development activities, these technologies can identify potential talent gaps and training opportunities before they become critical issues, allowing for proactive talent planning. This predictive capability not only ensures that the workforce remains competitive and prepared for future challenges but also optimizes resource allocation by targeting training where it is most needed. As a result, organizations can achieve greater efficiencies and more impactful outcomes from their talent development initiatives, ultimately leading to a more agile and skilled workforce [12]. This technological integration marks a significant step forward in the strategic management of talent, with potential to drive growth and innovation across all sectors of an economy.

3. METHOD

To execute a bibliometric review of the talent development literature spanning from 1952 to 2024, this study primarily utilized Google Scholar as the database. We commenced with a comprehensive search using a combination of keywords including "talent development," "human capital," and

"strategic human resource management." Publish or Perish software was used to collect all the literature in this field. Each article retrieved was filtered by publication date to ensure the timeline was strictly adhered to. After compiling an initial list, the dataset was cleansed to eliminate duplicates and any irrelevant entries, focusing only on peer-reviewed articles and scholarly books. The refined dataset then underwent bibliometric analysis through VOSviewer, which facilitated the examination of co-citation networks, keyword occurrences, and trends

across the extensive timeline. This method allowed for the delineation of the evolving themes and key contributions within the talent development field. Visual representations of data linkages and trend trajectories were created using the tool's mapping functionalities, providing a clear and digestible overview of the field's development and current state.

4. RESULT AND DISCUSSION

4.1 Result

a. Bibliometric Overview

Table 1. Research Data Metrics

Metrics Data	Information
Publication years	1952-2024
Citation years	72
Papers	980
Citations	81717
Cites/year	1134.96
Cites/paper	83.38
Cites/author	48978.70
Papers/author	561.90
Authors/paper	2.31
h-index	129
g-index	265
hI,norm	96
hI,annual	1.33
hA, index	36
Paper with ACC > =	1,2,5,10,20:760,620,378,202,96

Source: Output Publish or Perish, 2024

Table 1 provides a thorough bibliometric analysis of talent development research spanning from 1952 to 2024. During the span of 72 years, a grand total of 980 papers were published, resulting in a cumulative count of 81,717 citations. This equates to an average of 1,134.96 citations per year and 83.38 citations per publication. The substantial number of citations suggests a notable influence and involvement in the academic discipline. The data also indicates that, on average, each manuscript comprises around 2.31 authors, indicating a moderate amount of collaboration among researchers. The h-index, a metric that measures both production and

citation impact, is 129, indicating that a significant number of papers have received a high number of citations. The g-index is further elevated to 265, indicating that the most impactful papers in the sample have received a substantial number of citations. The normalised h-index (hI,norm) is 96, while the annual h-index (hI,annual) is 1.33. These values indicate a constant impact across time, taking into account the number of years covered. The hA index, a metric that accounts for several authors in publications, is 36, suggesting that individual contributions to highly-cited works are also significant. In addition, a significant proportion of papers have garnered noteworthy

citation counts. Specifically, 760 papers have received a minimum of 1 citation, 620 have received at least 2 citations, 378 have received at least 5 citations, 202 have received at least 10 citations, and 96 papers have received

20 or more citations. This demonstrates the widespread dissemination and practical utilisation of the research in the field.

b. Literature Distribution

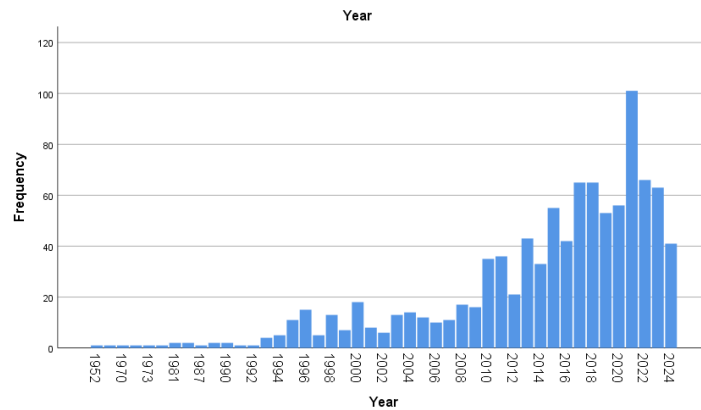


Figure 1. Yearly Publication
Source: Data Analysis, 2024

The graph illustrates the frequency of publications on this field. over the years from 1952 to 2024. The data shows a slow and steady growth in publications from 1952 through the 1990s, with relatively few papers published annually. Around the mid-2000s, a noticeable increase in publication frequency is observed, reflecting growing academic interest in the field. This upward trend continues into the 2010s, with a significant spike in publications starting in 2018, peaking in 2022,

where over 100 publications are recorded. The slight decline in 2023 and 2024 suggests either the stabilization of research output or incomplete data for these years. The dramatic increase from the mid-2000s onward highlights the expanding relevance and importance of this field in recent years, possibly due to technological advancements, globalization, or evolving industry needs that necessitate more research and innovation.

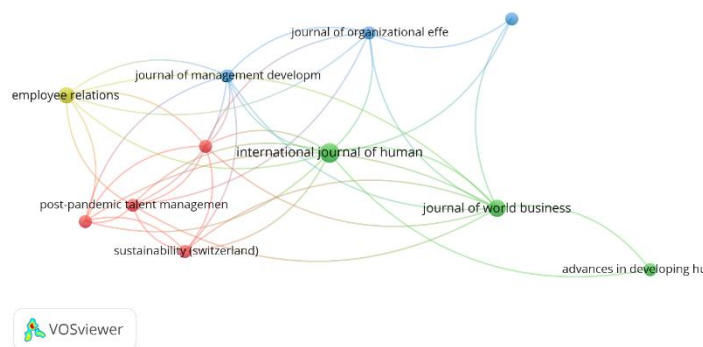


Figure 2. Top Journal
Source: Data Analysis, 2024

The network illustrates a bibliometric network study of journals that are connected by co-citation or thematic importance in the field of talent management, human resource development, and related fields. Every node in the network represents a journal, and the size of each node corresponds to its significance or influence. This significance is likely determined by factors such as the amount of citations or its relation to the major issue. The lines connecting the nodes show either citations or thematic linkages between the journals.

The network displays many clusters, each colour-coded to categorise journals with comparable areas of interest. As an illustration, the red cluster encompasses publications such as Sustainability (Switzerland) and Post-Pandemic Talent Management, indicating a thematic emphasis on sustainability and talent management within the framework of post-pandemic difficulties. The green cluster, which includes the International Journal of Human Resource Management and the Journal of World Business, appears to have a specific emphasis

on global human resource management and business strategy. Concurrently, the group of publications known as the blue cluster, which comprises the Journal of Organisational Effectiveness and Journal of Management Development, appears to focus primarily on the topics of organisational performance and leadership development.

The prominent position of journals such as the International Journal of Human Resource Management indicates that it serves as a crucial hub, connecting various theme clusters and playing a vital role in the discussion on human resource and talent management. The interconnectivity of the journals exemplifies the interdisciplinary character of the area, with significant cross-references among subjects such as sustainability, post-pandemic management, and business growth. This visualisation showcases the prominent figures in scholarly research and their connections within the dynamic domain of talent and human resource development.

c. Network Visualization of Key Terms

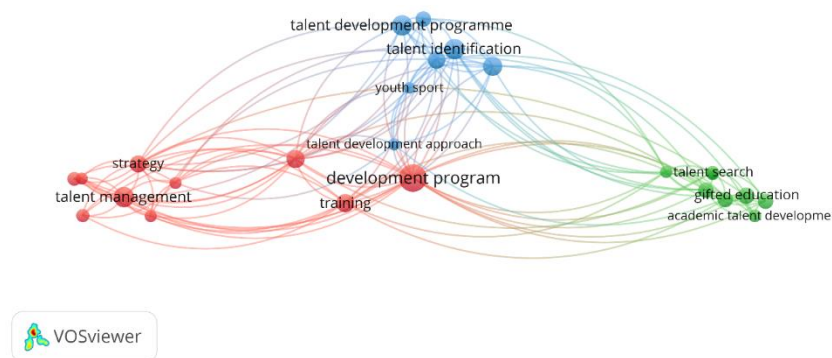


Figure 3. Network Visualization

Source: Data Analysis, 2024

The figure presents a bibliometric network visualization of key themes and concepts related to talent development, generated using VOSviewer. Each node in the

network represents a specific keyword or concept, with the size of the nodes indicating the frequency with which these terms appear in the literature. The lines between the

nodes represent co-occurrence relationships, where two terms frequently appear together in research articles. The different colors in the visualization correspond to different clusters, indicating thematic groupings based on the relationships between the terms.

The red cluster in the left section of the network centers around concepts such as "strategy," "talent management," and "development program." This suggests a research focus on the strategic dimensions of talent development, where organizations design and implement structured programs to nurture and manage talent effectively. This cluster likely reflects studies that examine how talent management strategies are formulated to align with organizational goals, focusing on identifying and developing talent through various training and development initiatives. The prominence of terms like "training" and "management" in this cluster suggests that this area of research is concerned with practical, organizational-level interventions aimed at enhancing talent capacities.

In the blue cluster at the top center of the network, terms like "talent development programme," "talent identification," and "youth sport" indicate a thematic focus on the identification and nurturing of talent, particularly in youth and sports contexts. This cluster suggests an emphasis on early identification of talent in specific fields like sports and developing structured programs to support the growth of identified individuals. The terms "talent identification" and "youth sport" point to studies that explore methods of assessing potential in young

athletes and structuring development programs tailored to their needs. This research area appears to focus on objective assessments, training regimens, and developmental pathways to nurture young talent effectively.

On the right side of the network, the green cluster focuses on themes such as "talent search," "gifted education," and "academic talent development." This cluster reflects research that is more focused on the academic or educational side of talent development, particularly in gifted education programs. Here, the emphasis is on identifying and developing intellectual and academic talents, often in school or educational settings. Studies within this cluster likely explore methods for identifying academically gifted students and designing educational programs that cater to their unique developmental needs. The inclusion of "gifted education" suggests that this area of research is primarily concerned with the early identification and nurturing of intellectual potential.

The interconnectedness of the clusters highlights the multidisciplinary nature of talent development research. The central position of "development program" as a prominent node connecting the clusters suggests that the concept of development programs is crucial across multiple contexts, whether in strategic talent management, youth sports, or academic talent. The overlapping lines between clusters indicate that while each thematic area has its specific focus, there is significant cross-referencing between them, particularly in how talent is identified, nurtured, and managed.

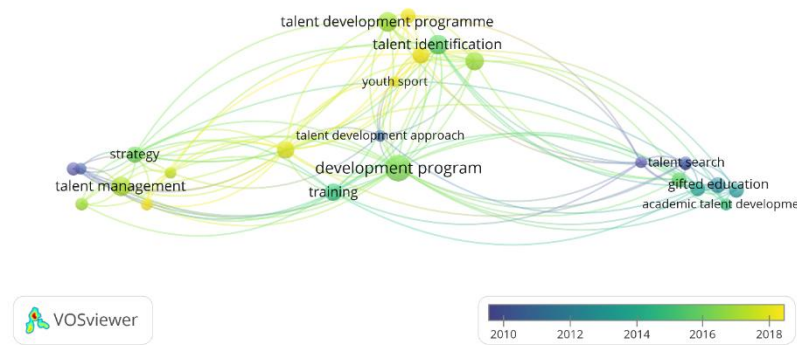


Figure 4. Overlay Visualization

Source: Data Analysis, 2024

This VOSviewer graphic displays a temporal overlay visualisation of keywords in the domain of talent development research. The colour gradient ranging from blue to yellow corresponds to the mean publication year of studies linked to each keyword. Blue represents earlier research, about around 2010, while yellow indicates more current study, closer to 2018. This temporal dimension offers valuable understanding of the progression of particular themes and subjects within the realm of talent development.

In the left section, keywords such as "talent management" and "strategy" are colored in blue, suggesting that these themes were more prominent in earlier studies (around 2010-2012). This indicates that the initial focus of talent development research was largely on the strategic and management aspects of talent, with organizations exploring how to structure talent management systems and align them with their overall business strategies. The focus on "talent management" during this period likely reflects the

growing awareness of the importance of structured talent programs to gain competitive advantages in the global business environment.

As we move toward the center and right side of the figure, keywords like "talent identification," "youth sport," "talent development program," and "gifted education" appear in shades of green and yellow, indicating that research on these topics has gained more attention in recent years (2014-2018). The shift in focus suggests an increasing interest in more specialized areas of talent development, such as identifying and nurturing talent in sports and education. These more recent studies reflect a broadening of the field, incorporating not only corporate talent management but also approaches to talent identification and development in diverse contexts such as academic settings and youth sports. The prominence of "development program" in a central position also underscores the ongoing importance of structured programs in talent development across different sectors.

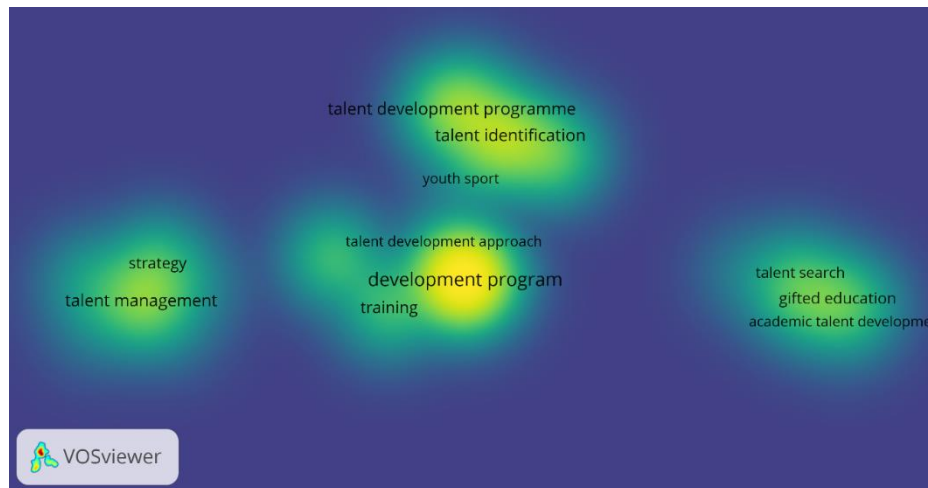


Figure 5. Density Visualization

Source: Data Analysis, 2024

This VOSviewer heatmap visualization highlights the intensity of keyword occurrences within the talent development literature. The brighter (yellow) areas indicate higher concentrations of research activity, while the darker (green and blue) areas show lesser activity. The central and brightest node, labeled "development program," suggests that this term has been the most frequently studied or referenced topic in the field. It appears to be a key focal point in talent development literature, particularly when paired with terms like "training" and "talent development approach," emphasizing the importance of structured talent development programs across different sectors.

On the left side of the heatmap, terms such as "strategy" and "talent management" form another

cluster, though with slightly less intensity. This indicates a significant but slightly lower frequency of research focusing on strategic approaches to managing talent within organizations. On the right, keywords like "gifted education," "academic talent development," and "talent search" appear in another concentrated cluster, signifying substantial research activity in the academic and educational domains of talent identification and development. The clustering of these terms indicates thematic groupings in the literature, suggesting that researchers in different areas, such as corporate talent management, sports, and education, may be focusing on distinct but related aspects of talent development.

d. Author Collaboration

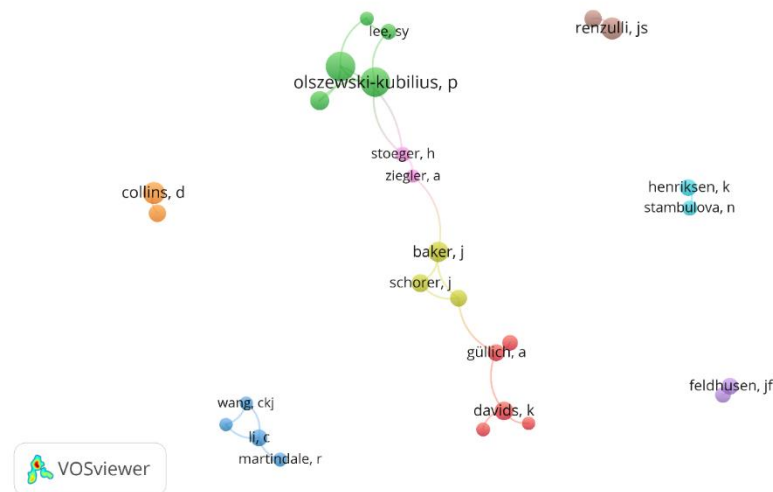


Figure 6. Author Collaboration

Source: Data Analysis, 2024

The VOSviewer graphic depicts the network of collaboration among different authors in the domain of talent development or a closely connected study subject. Each node in the graph symbolises an author, and the size of the node corresponds to the author's prominence or the number of publications they have. The lines that connect the nodes symbolise co-authorships, which signify collaboration among authors. The clusters that are colour-coded represent distinct collaboration groups or research networks. The green cluster, with its focal point on "Olszewski-Kubilius, P," indicates a robust and firmly established network of collaborators, which includes "Lee, SY" and other writers. This suggests that these experts often engage in research collaboration, perhaps resulting in a substantial

collective output. Similarly, the presence of a yellow cluster centred around researchers "Baker, J" and "Schorer, J" indicates a closely connected group of researchers. This group has significant connections to the red cluster, which includes "Güllich, A" and "Davids, K." These connections suggest that there is cross-collaboration between distinct author networks. Authors such as "Renzulli, JS" and "Collins, D" exhibit a higher degree of isolation, with fewer connections. This implies that they either operate independently or collaborate within smaller, less interconnected networks. In general, this visualisation emphasises important partnerships within the discipline and indicates prominent individuals and research centres that greatly contribute to the research output.

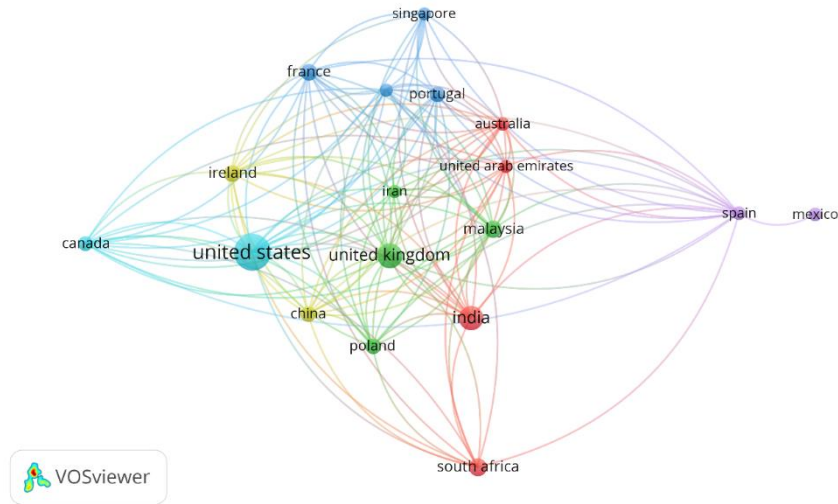


Figure 7. Country Collaboration
Source: Data Analysis, 2024

The United States and the United Kingdom are the largest nodes, suggesting that these two countries are dominant contributors to the research field and have extensive collaboration networks. The United States is particularly well-connected to a wide range of countries, including Canada, China, France, and India, indicating strong international research partnerships. The United Kingdom similarly collaborates heavily with countries like Ireland, Iran, and India, as well as other European nations. India and Australia also appear as key players, with India collaborating frequently

with countries like South Africa, Malaysia, and the United Arab Emirates. The figure illustrates a highly interconnected global research network, with the United States and the United Kingdom serving as central hubs. Other countries, such as Spain, Mexico, and Singapore, appear to have more limited connections, suggesting that they may collaborate less frequently or within more specific regional networks. Overall, the visualization highlights the global nature of the research landscape and the importance of international collaboration in advancing the field.

e. Citation Analysis

Table 2. Most Cited Article

Citations	Author and Year	Title	Methods	Findings	Limitation
4326	[13]	Assessment for excellence: The philosophy and practice of assessment and evaluation in higher education	Qualitative analysis of assessment practices and their impacts on educational institutions.	Astin's study emphasizes the importance of assessment as a tool for improving educational quality and student outcomes.	The study mainly focuses on qualitative assessment and lacks a broader quantitative analysis.
2251	[14]	Transforming gifts into talents: The	Theoretical framework development	Gagné's DMGT model elucidates how innate abilities (gifts)	Limited empirical testing of the

Citations	Author and Year	Title	Methods	Findings	Limitation
		DMGT as a developmental theory	with conceptual analysis of the transformation process from gifts to talents.	are systematically developed into demonstrable skills (talents), emphasizing the role of environmental catalysts and intrapersonal characteristics.	model and its components in diverse settings.
2037	[15]	Effective succession planning: Ensuring leadership continuity and building talent from within	Case studies and best practices review in succession planning within large organizations.	Rothwell provides a systematic approach to succession planning that enhances leadership continuity and nurtures internal talent.	Focuses primarily on large organizations and may not directly apply to smaller or non-corporate entities.
1800	[16]	A multidisciplinary approach to talent identification in soccer	Multidisciplinary methods combining data from various assessments to identify soccer talent.	This study integrates physiological, psychological, and skill assessment to identify soccer talent, highlighting the complexity and multidimensionality of the talent identification process.	The study's model may not be directly applicable to other sports or levels of play without adjustments.
1777	[17]	Talent identification and development in soccer	Longitudinal study following the development pathways of identified soccer talents.	The research outlines critical factors and stages in the talent identification and development process specifically in soccer, providing a structured pathway for nurturing young talent.	Limited consideration of cultural and environmental factors that might influence talent development in different regions.
1578	[18]	Great ideas revisited	Descriptive analysis of historical application and impact of the Kirkpatrick model, with updates.	Kirkpatrick revisits and refines his four-level model of training evaluation, clarifying and expanding on its application and utility in assessing training effectiveness.	The model's applicative focus is on post-training evaluation, with less emphasis on ongoing assessment during

Citations	Author and Year	Title	Methods	Findings	Limitation
					training programs.
1471	[19]	The global “war for talent”	Review of global talent management practices across various industries and comparative analysis.	The study discusses strategies for global talent management and the competitive challenges companies face in attracting and retaining top talent.	Primarily based on corporate perspectives, which may not encompass non-profit or unconventional sectors.
1447	[20]	Talent identification and development programmes in sport: current models and future directions	Evaluation of existing talent programs, with proposals for methodological enhancements.	Highlights the effectiveness and future potential of structured talent identification and development programs in sports, suggesting improvements based on current outcomes.	The findings are specific to certain sports, which may limit the generalizability of the results to all athletic disciplines.
1413	[21]	Talent management for the twenty-first century	Analysis of contemporary talent management challenges and strategic responses.	Cappelli argues for a new approach to talent management that addresses the rapid changes in employment landscapes and technological advancements.	The discussion is somewhat speculative, relying more on predicted trends than on solid empirical evidence.
1197	[22]	Giftedness and talent: Reexamining a reexamination of the definitions	Conceptual analysis focusing on the terminological clarity and theoretical implications of definitions.	Gagné further refines the distinctions between giftedness and talent, aiming to clarify conceptual overlaps and streamline identification and development practices.	The theoretical distinctions may not always align with practical educational or organizational settings.

Source: Output Publish or Perish, 2024

4.2 Discussion

The analysis of the bibliometric network for talent development research reveals significant trends, clusters, and

collaborations that underscore the evolving nature of the field. By examining these findings, we can better understand how research in talent development has

transformed over time, the key contributors to the field, the role of interdisciplinary collaboration, and the geographic spread of research efforts. These insights not only reflect past developments but also provide a roadmap for future research directions.

a. Key Thematic Areas in Talent Development

The heatmap and co-citation analysis highlight several dominant themes in talent development research. The most significant of these is the concept of "development programs," which appears as a central node in both the heatmap and the network visualizations. Development programs, along with related keywords like "training" and "talent development approach," indicate that structured approaches to nurturing talent have remained a consistent focus of research over the years [2]. This focus reflects the practical need within organizations to create frameworks that systematically identify, develop, and retain talent. Additionally, the thematic clusters reveal that early research in talent development was heavily centered on strategic management and talent management frameworks. As seen in the earlier blue and green nodes, terms like "strategy" and "talent management" indicate that initial discussions in the field were largely driven by corporate concerns around aligning talent with business objectives [9]. This strategic focus is important because it highlights the role of talent as a competitive resource within organizations, a theme that aligns with the resource-based view of the firm, which posits that unique capabilities, such as talent, can be sources of sustainable competitive advantage [1]. In more recent years, the field has expanded to include other areas, such as "talent identification," "youth sports," and "gifted education," as demonstrated

by the green and yellow clusters in the temporal heatmap. This shift suggests that the scope of talent development research has broadened beyond corporate settings to include other domains such as sports and education. Research in these areas is often focused on identifying and nurturing talent at an earlier stage, such as in youth or educational contexts, which contrasts with earlier corporate-focused research that tended to emphasize leadership development and succession planning [3].

b. Interdisciplinary and Cross-Sectoral Research

One of the key takeaways from the analysis is the interdisciplinary nature of talent development research. The visualization clearly shows that talent development is not confined to a single sector or discipline. Instead, it spans multiple domains, from corporate strategy to youth sports to education. This breadth is indicative of a growing recognition that talent development is a universal concern, applicable in different contexts and with diverse methodologies. The interconnectedness of terms such as "gifted education," "academic talent development," and "talent management" underscores the cross-sectoral relevance of the research [6]. In academic settings, for example, talent development programs are increasingly being designed to identify and nurture intellectually gifted individuals. This is evident from the cluster of terms related to "gifted education" and "academic talent development," which represent a body of research that focuses on the identification and support of academically talented students. Similarly, in the context of sports, talent development programs aim to identify and foster the growth of young athletes, as shown by terms

like "youth sports" and "talent identification" (Baker et al., 2015). The intersection of corporate, educational, and sports-focused talent development research points to the possibility of interdisciplinary approaches that can enrich the field. For instance, methodologies used in talent identification in sports, such as performance assessments and psychological profiling, could be adapted for corporate or educational talent development. This cross-pollination of ideas is likely to generate new insights and foster innovation in how talent is identified, developed, and managed across different sectors.

c. Global Collaboration and Geographic Spread

The author and country collaboration networks provide a clear picture of the global nature of talent development research. As seen in the country collaboration map, the United States and the United Kingdom dominate the field, acting as central hubs with extensive collaborations across various regions, including Europe, Asia, and Africa. The United States, in particular, is highly connected to countries such as Canada, China, and India, reflecting its leadership role in global research efforts (Björkman et al., 2013). This network of collaboration highlights the importance of international partnerships in advancing research in talent development.

The presence of countries like India, China, and South Africa in the collaboration network is noteworthy. These countries are emerging as important contributors to the global research landscape, bringing new perspectives to the field. The rise of research from non-Western countries challenges the traditionally Western-centric focus of talent development studies and introduces new cultural and economic contexts into the

discourse (Zhao & Björkman, 2013). For example, research from India and China often emphasizes the role of familial and societal values in talent management, adding a unique dimension to the understanding of talent development in those regions. However, despite the growth in international collaboration, there remain significant gaps in global research coverage. For instance, regions such as South America and Africa are still underrepresented in the research landscape, as indicated by the relatively fewer connections for countries in those regions. This imbalance suggests the need for more inclusive research efforts that involve scholars from diverse geographic and cultural backgrounds. Expanding research collaborations to include more countries from these underrepresented regions could provide a more holistic and comprehensive understanding of talent development across different contexts.

4.3 Future Directions for Research

The analysis points to several areas where future research in talent development could be directed. First, there is a need for more research that integrates the various sectors where talent development is critical, such as corporate organizations, education, and sports. Interdisciplinary studies that explore how strategies from one sector can be adapted to another could offer valuable insights and contribute to a more nuanced understanding of talent development. For instance, lessons from educational talent development programs might inform corporate strategies for nurturing leadership potential, while techniques used in sports for talent identification could be adapted for other industries [11].

Second, the growing prominence of emerging technologies, such as artificial intelligence and predictive analytics, suggests a potential avenue for future research. These technologies have

the potential to revolutionize how talent is identified, developed, and managed by enabling more personalized and data-driven approaches (Stone et al., 2015). Exploring the role of technology in talent development could provide new strategies for organizations looking to optimize their talent management processes in an increasingly digital world.

Lastly, there is a need to address the geographic imbalances in talent development research by fostering more international collaboration with underrepresented regions. Encouraging research partnerships between scholars in Western countries and those in developing regions could generate new insights into how cultural and economic factors influence talent development. Such research would not only fill gaps in the current literature but also contribute to a more inclusive and globally relevant understanding of talent development.

5. CONCLUSION

The bibliometric examination of talent development research emphasises the transformation of the field from a corporate-centered science to a broader and more diverse interdisciplinary and worldwide pursuit. The core focus areas of talent management, development programs, and talent identification continue to be significant, with the emergence of new domains including youth sports and gifted education. Global collaboration is essential for defining the scientific landscape, yet there are still gaps in geographic representation. Future research should prioritise multidisciplinary methodologies, the seamless incorporation of technology, and the expansion of international collaborations to enhance the comprehensiveness of talent development studies.

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