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## **Bibliometric Analysis on Academic Trend of Talent Development in Higher Education Institutions from 1999 – 2023**

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### **Abstract**

Talent development is an essential part of enhancing knowledge, engagement, and building a skilled employee that aligns with the organization's goals. Talent development in higher education institutions focuses on nurturing knowledge, skills, and personal growth for preparing graduates that not only knowledgeable but also adaptable. This study utilizes extensive bibliometric analysis to discover and analyse 725 papers published in SCOPUS-indexed journals between 1999 and 2023. The findings indicate that research on talent development has escalated since 2000. This study delineates the temporal trends in publications and elucidates the prevailing research interests, as well as potential opportunities for future research.

**Keywords:** Talent; Talent Development; Higher Education; Bibliometric Analysis; Scopus Database

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### **1.0 Introduction**

Talent development is the systematic approach of enhancing, identifying, and nurturing the abilities, knowledge, and skills of any individuals not only to maximize their potential as well as performance within an organization or context. Talent development is also a holistic process that includes recruiting, training, and development of individuals who can thrive and continuously improve performance and retain top talent (Bersin, 2017). Currently, talent development involves a focus and emphasis on lifelong learning and continuous skill enhancement to meet the evolving needs of the workforce (World Economic Forum, 2023).

Our analysis of Scopus-indexed documents published from 1999 to 2023 reveals a steady growth trend from 1999 to 2015 with 69 percent of the entries in our database published after 2016. These findings substantiate the notion that this subject constitutes a dynamic, essential topics that delineate the significance and extent of talent development. Hence, this study aims to synthesize research trends on talent development over the past 25 years. This paper is divided into several sections, beginning with the introduction, followed by the literature review as the primary concept material for conducting the study and concluding with the methodology applied with bibliometric analysis.

## 2.0 Literature Review

Talent development is a crucial investment that supports individual growth and aligns aspirations with organizational objectives and goals (James, Jennifer & Stephen, 2022). This becomes a strategic process that impacts and contributes to enhancing both individual and organizational effectiveness in today's rapidly changing environment. Effective talent development needs strategies that are essential for organizations to build capabilities, foster individual engagement, and enhance performance (Mckinsey & Company, 2022). As the world becomes more interconnected, developing global competencies in talent development will be essential. Higher education institutions will likely emphasize cross-cultural skills in their talent development programs.

Compared to talent development in higher education institutions, it focuses on creating pathways for graduate success through personalized learning and skills development initiatives (Center on Great Teachers & Leaders, 2020). Talent development in higher education institutions encompasses strategies to enhance graduate's capabilities and foster an environment that promotes adaptability for career growth (American Council on Education, 2022). By cultivating talent in higher education institutions, it drives innovation and advancements in various fields. The effectiveness of talent development in higher education institutions involves aligning programs with industry and workforce needs, ensuring that graduates are prepared for the demands of the job market (James et al., 2022).

Bibliometric analysis is one of the statistical methods and applications of mathematics to books and other media of communications that can be used for any field of research (Pritchard, 1969). Bibliometrics analysis is a method for analysing large volumes or trends of scientific data and is reflected in its utility for producing high research impact (Donthu et al., 2022). This study used bibliometric analysis to gather data on trends in talent development in higher education institutions from 1999 to 2023. The data from bibliometric analysis demonstrate that talent development has proliferated across various disciplines, including social sciences, business, management, accounting, psychology, and computer science.

## 3.0 Methodology

This study utilises bibliometric analysis to investigate the growth and production of research on talent development. To fulfil the aim of this study, data from the Scopus database was acquired as of September 2024. Empirical data comparisons indicate that, outside from the medical and physical sciences, Scopus offers a wider range of sources than Web of Science's (Hallinger & Kovačević, 2019). Moreover, Scopus provides approximately 20% greater coverage than Web of Science for citation analysis (Falagas, Pitsouni, Malietzis & Pappas, 2008). This indicates the necessity to analyse the publishing growth pattern of papers retrieved from Scopus database.

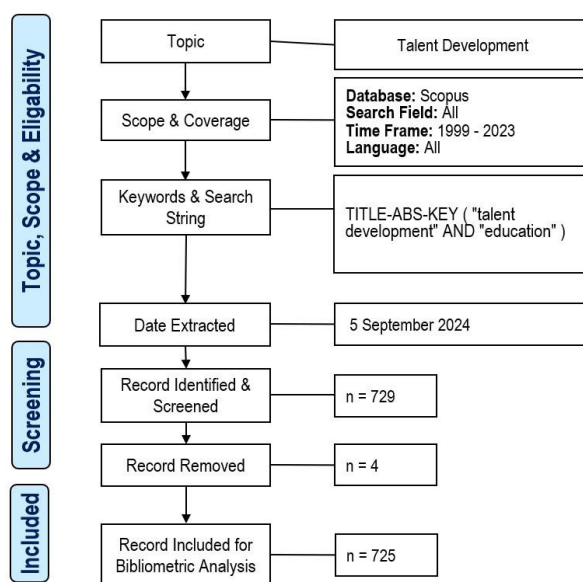


Fig. 1: PRISMA flow diagram  
Source: Adapted from Moher et al. (2009)

On 5th September 2024, the search query "talent development" was utilised to the article title within the Scopus database. The search produced 2,775 documents and after imposing a 25-year time range (1999-2023), 2,478 documents were retrieved. To address the necessity for researchers to examine talent development within higher education institutions, the following keywords have been employed to locate pertinent documents: "talent development" AND "education". The data sets have been exported in CSV and RIS formats. Microsoft Excel, VOSviewer, and Harzing's Publish and Perish software were employed to analyse the obtained documents. This study adapted PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines for executing systematic reviews of research from Moher, Leberati, Tetzlaff and Altman (2009). The search terms "talent development" and "education" were entered into the Scopus search engine. This initial search yielded 820 documents, which were subsequently reduced to 729 documents after applying the time frame (refer to Fig. 1). Additional documents were omitted based on the document type. For instance, retracted and erratum papers were excluded at this stage. Moreover, another two documents have been published in dual languages.

Upon the completion of document screening, the final database comprised 725 documents pertaining to talent development. The data analysed for this study comprised bibliographic descriptions of the 725 Scopus-indexed documents. Descriptive statistics were employed to conduct trend analyses on the growth and geography of talent development. Furthermore, this study employed VOSviewer software to analyse patterns of knowledge production in the literature on talent development.

## 4.0 Findings

To gain an overview of the research on talent development in higher education institutions, general statistics on the data sets are presented. All papers that matched the search query were assessed based on the following criteria: documents and source types, the evolution of published studies, document languages, subject areas, the most active source titles, keyword analysis, the most active publishing countries, and citation metrics.

### 4.1 Document and Source Types

Documents from the data sets were analysed based on their types and sources. Document types categorise documents according to their originality, including conference proceedings, journal articles, and book series. This study identified eight categories of materials published on talent development in higher education institutions: articles, book chapters, conference papers, reviews, conference reviews, books, notes, and editorials (refer to Table 1). Of the 725 documents, 62.62% are published as articles, 15.59% as book chapters, and 12.83% as conference papers.

Table 1. Document type

Document Type	Total Publications (TP)	Percentage (%)
Article	454	62.62
Book Chapter	113	15.59
Conference Paper	93	12.83
Review	34	4.69
Book	17	2.34
Note	6	0.83
Conference Review	5	0.69
Editorial	3	0.41
<b>Total</b>	<b>725</b>	<b>100.00</b>

Simultaneously, as illustrated in Table 2, the papers are categorised into five different source types. Journals constitute the predominant source type, with 490 documents, which accounts for 67.59% of all publications. Books account for 108 documents (14.9%), while conference proceedings for 78 documents (10.76% of the total publications).

Table 2. Source type

Source Type	Total Publications (TP)	Percentage (%)
Journal	490	67.59
Book	108	14.90
Conference Proceeding	78	10.76
Book Series	48	6.62
Trade Journal	1	0.14
<b>Total</b>	<b>725</b>	<b>100.00</b>

### 4.2 Evolution of Published Studies

The earliest publication on talent development occurred in 1911. Stern (1911) classified varieties of talent and proposed methods to prevent wasted talent. Following 1911, the overall number of publications on this subject appeared to be inconsistent until 1999, when Kirschenbaum, Armstrong and Landrum (1999) published their work. Following a six-year gap, despite the gradual increase in publications, academics began to actively produce articles related to higher education institutions until 2005. Table 3 illustrates the expansion of publication activities in this field from 1999 to 2023.

Additionally, bibliometric analysis employed research productivity as a quantitative indicator, while citation rates and the Hirsch index (h-index) served as qualitative indicators. Table 3 summarises the comprehensive facts of total publications on talent development since 1999. The peak number of publications in this field occurred in 2021, with the cumulative quantity of papers published from 1999 amounting to 725. Likewise, the graphical representation in Fig. 2 illustrates the growth in publication activities on this topic from 1999 to 2023. The increasing pattern of publications on talent development has garnered interest among researchers.

Table 3. Evolution of published studies

Year	TP	NCP	TC	C/P	C/CP	h	g
2023	91	115	115	1.26	1.00	6	7
2022	84	131	261	3.11	2.00	8	11
2021	105	166	497	4.73	3.00	10	17
2020	70	145	581	8.30	4.00	14	21
2019	35	148	738	21.09	5.00	10	27

2018	34	65	392	11.53	6.00	11	19
2017	34	38	263	7.74	7.00	9	15
2016	39	42	339	8.69	8.00	10	17
2015	30	95	858	28.60	9.00	12	25
2014	29	92	918	31.66	10.00	12	20
2013	39	33	368	9.44	11.00	10	18
2012	30	94	1132	37.73	12.00	14	26
2011	16	116	1508	94.25	13.00	11	13
2010	20	35	492	24.60	14.00	8	18
2009	13	18	275	21.15	15.00	6	12
2008	6	4	66	11.00	15.98	3	3
2007	6	17	297	49.50	17.00	5	6
2006	8	11	198	24.75	18.00	4	5
2005	14	28	536	38.29	19.00	7	13
2004	4	2	33	8.25	20.00	2	2
2003	4	4	85	21.25	20.99	2	3
2002	4	17	382	95.50	22.00	4	4
2001	1	1	12	12.00	23.08	1	1
2000	5	6	152	30.40	24.01	3	4
1999	4	2	45	11.25	25.00	3	3
<b>Total</b>	<b>725</b>	<b>1426</b>	<b>10543</b>	<b>14.54</b>	<b>7.39</b>	<b>185</b>	<b>310</b>

Notes: TP=total number of publications; NCP=number of cited publications; TC=total citations; C/P=average citations per publication; C/CP=average citations per cited publication; h=h-index; g=g-index.

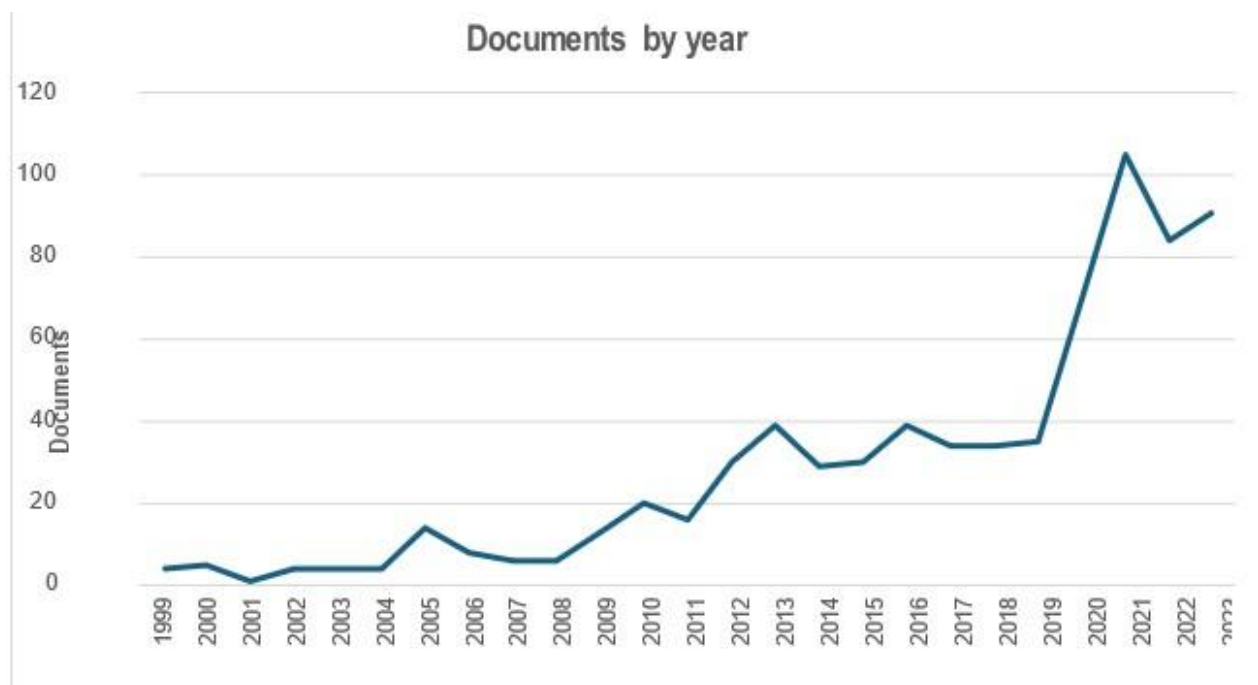


Fig. 2 Document by year

#### 4.3 Languages of Documents

Table 4 indicates that English is predominant in this study topic, accounting for 95.6% of the total publications. Notably, a limited number of languages are utilised for certain publications, namely Chinese, Russian, Hungarian, Spanish, German, and Portuguese. Czech, Danish, Dutch, French, and Serbian constituted the least utilised languages in the publications, accounting for 0.14%.

Table 4. Languages of documents

Language	Total Publications (TP)*	Percentage (%)
English	695	95.60
Chinese	13	1.79
Russian	4	0.55
Hungarian	3	0.41
Spanish	3	0.41

German	2	0.28
Portuguese	2	0.28
Czech	1	0.14
Danish	1	0.14
Dutch	1	0.14
French	1	0.14
Serbian	1	0.14
<b>Total</b>	<b>727</b>	<b>100.00</b>

\*Two documents have been published in dual languages

#### 4.4 Subject Area

This study subsequently classified the publications according to their subject area, as outlined in Table 5. Talent development is predominantly concentrated in business, management, and accounting studies, while also being present in social sciences, and psychology. The principal emphasis of talent development in social sciences is on the administration of human resources in providing training to employees. Other significant contributing disciplines encompass computer science, medicine, engineering, health professions, art and humanities, and decision sciences.

Table 5. Subject area

Subject Area	Total Publications (TP)	Percentage (%)
Social Sciences	459	37.65
Psychology	198	16.24
Computer Science	84	6.89
Business, Management and Accounting	74	6.07
Medicine	74	6.07
Engineering	70	5.74
Health Professions	64	5.25
Arts and Humanities	32	2.63
Decision Sciences	25	2.05
Mathematics	23	1.89
Economics, Econometrics and Finance	20	1.64
Biochemistry, Genetics and Molecular Biology	17	1.39
Environmental Science	14	1.15

#### 4.5 Most Active Source Titles

This study additionally identifies the most prolific source title with six or more publications on “talent development” (refer to Table 6). Scopus provides two citation indicators to assess a journal's impact: SNIP (Scopus Normalised Impact per Paper) and SJR (SCImago Journal Rank) (Huggett, 2013). The most active source title, publisher, cite score, SJR 2023, and SNIP 2023 are presented in Table 6 based on the information in this area. Furthermore, as indicated in Table 6, SAGE Publications and Taylor and Francis rank among the foremost publishers in talent development, with 97 and 57 publications, respectively.

Table 6. Most Active Source Titles

Source Title	TP	TC	Publisher	Cite Score	SJR 2023	SNIP 2023
Gifted Child Quarterly	24	1,070	SAGE Publications Inc.	6.3	0.841	1.765
Gifted Education International	23	148	SAGE Publications Ltd.	2.1	0.461	0.971
Gifted Child Today	22	201	SAGE Publications Ltd.	2.3	0.383	0.931
Roeper Review	18	232	Taylor and Francis Ltd.	4.3	0.758	1.501
Journal of Sports Sciences	17	1,441	Taylor and Francis Ltd.	6.3	1.115	1.256
Springer International Handbooks of Education	16	20	Springer Nature	0.8	0.000	0.000
Journal for The Education of The Gifted	14	186	SAGE Publications Inc.	3.0	0.410	0.814
Gifted and Talented International	12	19	Taylor and Francis Ltd.	1.3	0.212	0.695
Frontiers in Psychology	10	86	Frontiers Media S.A.	5.3	0.800	1.071
Talent Development as a Framework for Gifted Education	10	52	Taylor and Francis Ltd.	NA	NA	NA
Conceptions of Giftedness and Talent	9	45	Springer International Publishing	NA	NA	NA
Annals of The New York Academy of Sciences	8	14	John Wiley and Sons Inc.	11.0	1.416	1.635
Phi Delta Kappan	8	56	SAGE Publications Inc.	2.4	0.569	0.979
ACM International Conference Proceeding Series	7	2	Association for Computing Machinery (ACM)	1.5	0.253	0.233
Asia Pacific Education Review	6	65	Springer Netherlands	5.2	0.700	1.159
Australasian Journal of Gifted Education	6	19	Australian Association for the Education of the Gifted	2.9	0.393	1.282
Education Sciences	6	10	and Talented	4.8	0.669	1.323
European Journal of Training and Development	6	50	Multidisciplinary Digital Publishing Institute (MDPI)	5.1	0.628	1.222
Journal of Advanced Academics	6	41	Emerald Group Publishing Ltd.	4.3	0.570	0.799
			SAGE Publications Ltd.			

Notes: TP=total number of publications; TC=total citations

#### 4.6 Keyword Analysis

This study initially generates a word cloud for the author's keywords utilising WordSift for the keyword analysis. The word cloud, utilising a maximum of 100 words, and √n scale configuration, is illustrated in Fig. 3. The illustration displays the top 100 words (or segments of keywords) utilised in the published documents regarding talent development. The size of each word represents the total number of



Human Experiment	30	1.34
Male	30	1.34
Physical Education	29	1.30
Higher Education	26	1.16
Adolescent	25	1.12
Aptitude	25	1.12
Athlete	25	1.12
Female	25	1.12
Talent	25	1.12
Education Computing	24	1.07

#### 4.7 Most Active Countries

This study evaluates the number of publications by country, determined by the author's affiliated institution. A total of 67 identified countries participated in publications regarding "talent development" in higher learning institutions. Table 8 presents the leading active countries that contribute the least number of articles on talent development. The United States accounts for the largest amount of publications (278), constituting 40.35% of the total publications on talent development, followed by China (14.08%), the United Kingdom (8.27%), Australia (5.66%), Canada (4.5%), Germany (4.06%), and Malaysia (2.9%). This outcome signifies that most industrialised countries played prominent roles in talent development research relative to developing countries.

Table 8. Most active countries

Country	Total Publications (TP)	Percentage (%)
United States	278	40.35
China	97	14.08
United Kingdom	57	8.27
Australia	39	5.66
Canada	31	4.50
Germany	28	4.06
Malaysia	20	2.90
Netherlands	16	2.32
Denmark	15	2.18
Russian Federation	14	2.03
Hong Kong	12	1.74
South Korea	12	1.74
Singapore	11	1.60
Taiwan	11	1.60
Brazil	10	1.45
India	10	1.45
Spain	10	1.45
Hungary	9	1.31
New Zealand	9	1.31

#### 4.8 Most Active Institutions

This study analyses the top affiliation of the author. Most of the research on talent development, with over 16 publications per institution, originates from Northwestern University, the American Psychological Association, the University of California, Purdue University, and the University of Connecticut. The remaining institutions are presented in Table 9.

Table 9. Most active institutions for publications

Affiliation	Country	Total Publications (TP)	Percentage (%)
Northwestern University	United States	34	5.25
American Psychological Association	United States	25	3.86
University of California	United States	19	2.93
Purdue University	United States	16	2.47
University of Connecticut	United States	16	2.47
Johns Hopkins University	United States	13	2.01
University of Central Lancashire	United Kingdom	13	2.01
Duke University	United States	10	1.54
State University of New York Albany	United States	9	1.39
University of Virginia	United States	9	1.39
University of North Texas	United States	9	1.39
Rijksuniversiteit Groningen	Netherlands	8	1.23
Liverpool John Moores University	United Kingdom	8	1.23
Universität Regensburg	Germany	8	1.23
Leeds Beckett University	United Kingdom	8	1.23

#### 4.9 Citation Metrics

This study presents the citation metrics derived from the Scopus database. The software Harzing's Publish or Perish was employed to obtain the citation metrics. Table 10 summarises the citation metrics for the retrieved documents as of September 2024. Table 10 presents the total number of citations and the average citation per annum for all retrieved documents. According to the data, there were 10,543 citations recorded for 25 years (1999-2023) for 725 retrieved documents, resulting in an average of 421.72 citations annually.

Table 10: Citations Metrics

Metrics	Data
Publication years	1999-2023
Citation years	25 (1999-2024)
Papers	725
Citations	10543
Citations/year	421.72
Citations/paper	14.54
Authors/paper	2.63
h-index	45
g-index	88

## 5.0 Discussion

This study employed bibliometric analysis to record the evolution of literature on talent development over the last 25 years. The study identified essential topics that delineate the significance and extent of talent development required by management. Our analysis of Scopus-indexed documents published from 1999 to 2023 reveals a steady growth trend from 1999 to 2015, succeeded by a significant surge in research publications in subsequent years. These findings substantiate the notion that this subject constitutes a dynamic, swiftly evolving knowledge base capable of yielding potentially substantial results in a relatively short period.

This topic of talent development among high learning institutions has not actively been discussed due to some of the authors focusing on other pertinent issues to education based on the author's field. Hence, talent development in the education sector is analysed in the present study to measure the recent changes in the field of study for 25 years. Moreover, the findings indicate that English is the predominant language utilised in 95.6% of research publications, with over half (67.59%) published in academic journals. As for the contributing publications, the United States reported the highest numbers of contributing authors, followed by China, United Kingdom, and Australia. However, as the number of citations is not consistent with the number of publication ranks, it is determined that a researcher should develop strategies to raise the exposure of their research that affect both before and after publications.

## 6.0 Conclusion and Recommendations

This study demonstrates bibliometric analysis as a scientific method to reflect on the expansion of human resources management to provide new insights to evaluate the trend of talent development. This study demonstrates that talent development has proliferated across various disciplines, including social sciences, business, management, accounting, psychology, and computer science. This critical issue of talent development merits further study, especially to understand the trend of this talent development in higher education institutions through bibliometric analysis.

The limitation of the study is that the data sources are restricted to Scopus. Future studies can supplement other pertinent data sources such as the Web of Sciences, ScienceDirect, Google Scholar, and others to get a holistic view of talent development in higher education institutions. Future studies also can set the lengthy time boundary of past research to review the article. Since this study did not delve into the specifics of each variable, future studies are anticipated to delve into more integrated variables, sub-variables, and dimensions and to test empirically proven in greater depth to produce much more accurate results.

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## Paper Contribution to Related Field of Study

This present study contributes to the expanding literature and the advancement of human resource management research, particularly regarding talent development in higher education institutions through the Scopus database-indexed journals from 1999 to 2023.

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