A BIBLIOMETRIC REVIEW OF ARTIFICIAL INTELLIGENCE IN TALENT ACQUISITION WITH RESPECT TO INDIA

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ABSTRACT:

Artificial intelligence (AI) is booming in today's Digitalization era. Every organisation is implementing Artificial Intelligence technology for various business activities. Human Resource Management is also utilising Artificial Intelligence technology for HR functions such as Talent Acquisition. All the world's developed countries have already adopted advanced technologies for their businesses. In comparison to developed countries, India's use of artificial technology is gradually increasing. Business experts and professionals must gain knowledge about AI, and publications on AI technology related to talent acquisition should be expanded. As a result, there is increase in AI and talent acquisition-related publications in India, hence bibliometric analysis study is conducted on the pieces of literature published on AI and Talent Acquisition in India. The purpose of the study is to investigate academic publication trends in the research interaction between Artificial Intelligence and Talent Acquisition in India that helps to provide the information for researchers regarding the publication trend, the top authors based on the citations, the best source published literatures on AI usage in Talent Acquisition, and the keywords which are frequently used in the publications done on the topic i.e., Artificial Intelligence and Talent Acquisition in India. To achieve the study's goal, systematically extracted 684 published pieces of literature from 2010 to 2022 in the database "Dimensions" in the form of CSV format. Then the results are imported into VOS viewer software for analysis. The study finds that Artificial Intelligence, Talent Acquisition, Adoption, and Human Resource Management are the keywords having more co-occurrences with the highest number of average publications per year between 2010 to 2022 and with the Network Visualization and Overlay Visualization the study concludes that there are more studies are happening on the topics related to Adoption of Artificial Intelligence for Talent Acquisition in India.

Keywords: Artificial Intelligence, Dimensions, India, Talent Acquisition, Talent Identification, Bibliometric Review.

1. INTRODUCTION:

Bibliometric analysis is citation analysis. The debate of bibliometric analysis began in the 1950s, although the number of works on bibliometric analysis has expanded recently.(Donthu et al.,

2021). As technology advances, the usage of Artificial Intelligence for talent acquisition grows, and so the literature on Artificial Intelligence and talent acquisition grows in the modern digital era.

Artificial Intelligence (AI) is a game-changing invention. Although worldwide investment in cognitive and Artificial Intelligence (AI) technologies are expanding, AI adoption in Indian enterprises is restricted and delayed in comparison to developed countries. (Pillai & Sivathanu, 2020). Due to rapid change in innovation, the definition of Artificial Intelligence changes a lot hence the definition of Artificial Intelligence as per the previous authors is as follows:

According to Oxford Dictionary (2003), Artificial Intelligence is defined as "The theory and development of computer systems that are able to perform tasks that usually require human intelligence as it could be decision-making or speech recognition" (Tuffaha & Perello-Marin, 2021).

According to McCarthy, Pillai and Sivathanu AI is defined as "making a machine behave in ways that would be called intelligent if a human were so behaving" (McCarthy et al., 2006; Pillai & Sivathanu, 2020).

There are many software tools available for bibliometric analysis some of them are as follows: Bibexcel, Gephi, SciMat, Sci2, Vosviewer etc. among all these software tools, Vosviewer is quite easier and the neural network that we obtained from these tools is having more clarity regarding the cooccurrences.

2. OBJECTIVE OF THE STUDY

1. Analyze the trends in scholarly papers on the convergence of Artificial Intelligence and Talent Acquisition in India from 2010 to 2022.
2. Identify and categorise the most commonly used terms in Artificial Intelligence and Talent Acquisition articles, offering insights into prevalent themes.
3. Determine the top authors based on the number of citations in the literature, offering insight on the field's key contributors.

4. Investigate and evaluate the sources that publish material on AI utilisation in Talent Acquisition in India, identifying notable journals or platforms in this field.

3. RESEARCH METHODOLOGY:

The current study is a Bibliometric review of the Literature published on Artificial Intelligence and Talent Acquisition in India. The current study chooses a database for the research is "Dimensions" and then the database is searched by using a certain keyword based on the study requirements along with the application of certain filters The procedure followed for conducting the study is as shown in figure 3.1. Vos viewer software is used for various analyses such as Co-authorship analysis, Citation analysis and Co-citation analysis has been done with the help of the network created based on the data obtained from the database. Then the cooccurrences of the keywords and the average publications per year are obtained by the network visualization and overlay visualization. Finally, the density visualization provides the density of the keyword used in the literature on Artificial Intelligence and talent acquisition in India.
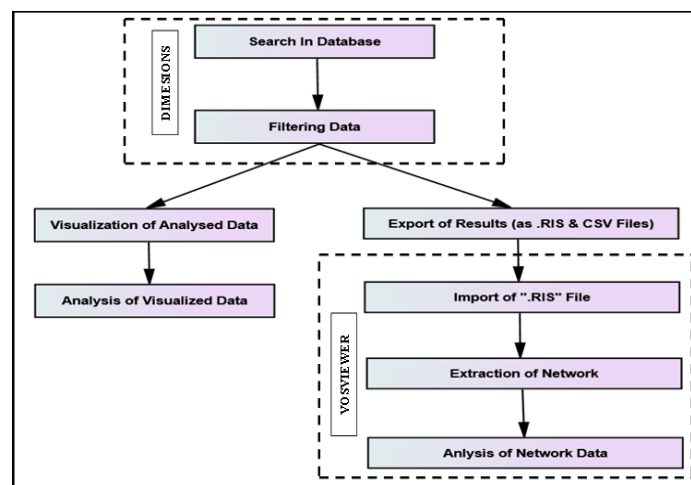

Figure 3.1 : Process Chart of Bibliometric Review (Bilan et al., 2022)

3.1 Procedure for the Study

The procedure followed by the study is shown in the above figure

Step 1: Search in the Database.

The database is searched with the Keyword choice based on the requirements of the study. The purpose of the study is to investigate the influence of publications which are related to Artificial technologies and talent acquisition in India. As a result, the study selects three keywords: "Artificial Intelligence," "Talent Acquisition," and "India. "In this study, the combination of keywords used for the search is "Talent Acquisition "+"Artificial Intelligence "+"India". From this step, the study founds there are 689 publications as search results.

Step 2: Filtering the Data.

Segregating the Publications based on the requirements of the study by applying filters. The current study is restricting the time-period between 2010 to 2022 and got there are 684 publications as an outcome of the search results. The study further continued to apply the filters i.e., the Source type considered are Articles, Conference proceedings and monograph only. The search results are then narrowed down to 272, including 128 articles, 77 conference proceedings, and 67 monographs.

Step 3: Export of Search results.

After applying the Filter, the final search results are exported in the form of "RIS" or "CSV" formatted files. These are the necessary format is required to analyse data exported from database using the Vos viewer software application.

Step 4: Import of "RIS" or "CSV" File.

Open the Vos viewer application and import the "RIS" formatted file which was previously exported from Database to create a network visualisation.

Step 5: Extraction of Network.

Create the bibliometric network visualization by using the imported "RIS" formatted file based on the various type of analysis such as Co-Authorship, Citation, and Co-citation using a different unit of analysis like Documents, Sources, Authors, Organizations and Countries. Using full counting and fractional counting. Full counting means that each co-authorship bibliographic coupling or co-citation link has the same weight, and fractional counting means that the weight of a link is fractionalized for instance if an author co-authors a document with 10 others, each of the Ten co-authorship links has a weight of 1/10.

Step 6: Analysis of Network Data

Finally based on the Network obtained Start analysing the relatedness of the items is determined based on their number of co-authored documents. the relatedness of items is determined based on the number of times they cite each other. And relatedness of items is determined based on the number of times they are cited together.

Table 4.1: Total number of search results obtained from the "Dimensions" database

Source Keywords	Category of Filter	Filter Value	Search Results
"Artificial Intelligence" + "Talent Acquisition" + "India"	-	-	689
	Period	2010-2022	684
	Source Type	Article	128
		Conference Proceeding	77
		Monograph	67
		Total	272

4. RESULTS AND DISCUSSION

When the Dimensions database is searched with predefined keywords along with the Boolean operators as "Artificial Intelligence" + "Talent Acquisition" + "India" obtained 689 search results for that search and then the obtained literature by setting time-frame of 2010 to 2022 then results are reduced to 684. Thereafter the filtration has been done based on the source type then the study founds 272 kinds of literature, among those, there are 128 Articles, 77 Conference Proceedings and 67 Monographs.

Until 2015, the number of publications in India related to artificial intelligence and talent acquisition was quite low, then dramatic changes happened in the year 2016 and an increase in the number of publications relating to AI technology and talent acquisition in India. In 2017, there was another drop in publishing, similar to hibernation. However, from 2010 to 2022, as time passes and post-covid technology progresses, the utilisation of technology-related publications grows. The publication of AI for Talent Acquisition in India is pretty high as shown in the figure 4.2. This

shift indicates that there is a need for technology-related publications that educate business executives and experts.
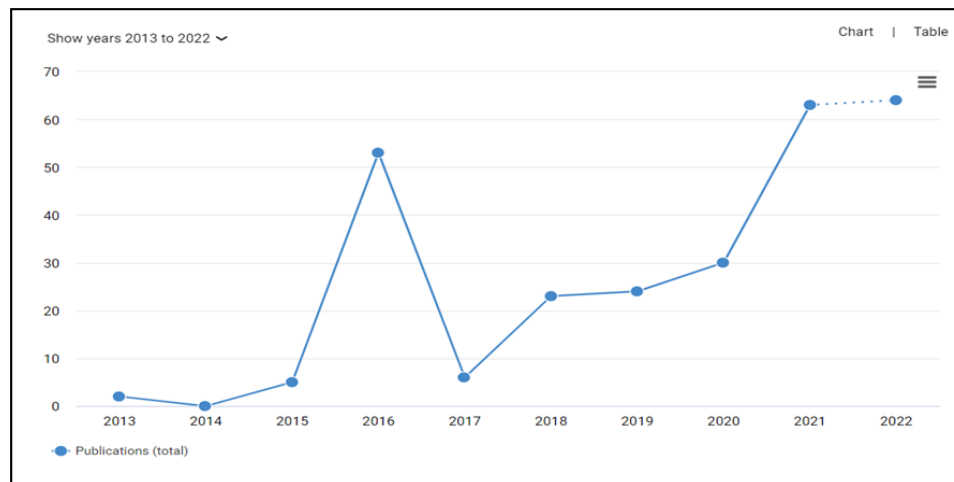

Figure 4.2: Overview - Timeline of publication related to Artificial Intelligence and Talent Acquisition India between 2013 – 2022
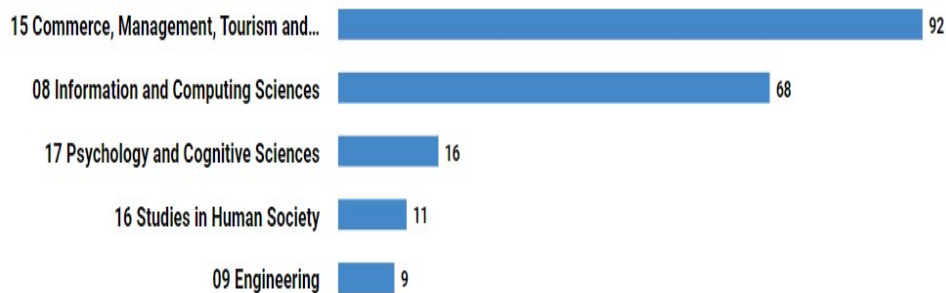

Figure 4.3: Field of Research in which publication on Artificial Intelligence and Talent Acquisition happen between 2010 to 2022

The research publications related to Artificial Intelligence and Talent Acquisition are done in various fields, the top 5 such fields are as follows:

Commerce, Management, Tourism and Services field is having the highest number of literatures i.e., 92 publications are available on AI and Talent acquisition in the dimensions database, and the Engineering field is having the least number of literatures i.e., 9 publications are available on AI and Talent Acquisition in the dimensions database. Other fields such as literature in Information

and Computing Sciences is 68 publications, finally Psychology and Cognitive Sciences is having16 publications and Studies in Human society is 11 having publications.

Table 4.2: Geographical region-wise publication done on AI and TA between 2010 to 2022

Sl. No.	Country	Documents	Citations
1	India	71	352
2	United States	24	150
3	United Kingdom	17	188
4	China	9	140
5	France	8	35
6	Australia	6	87
7	Germany	6	52
8	Canada	5	51
9	United Arab Emirates	4	44
10	Malaysia	4	19
11	Saudi Arabia	4	22
12	Greece	3	26

The above Table signifies the number of Documents published on Artificial Intelligence and Talent Acquisition in various countries along with the citations got for those publications. From the above data we got to know that India is the country that is more concentrated on a publication related to Artificial Intelligence and Talent Acquisition because there are 71 documents published by Indian authors and overall, those publications got 352 citations. The United States lies in second place for having 24 pieces of literature with overall 150 citations and the authors from the United Kingdom published 17 documents and got a total citation of 188 overall.

There are so many authors were published a lot of Articles on Artificial Intelligence and Talent Acquisition and some of the authors with more than 30 citations are shown in the above table. From the available data the top three authors are Dwivedi, Yogesh Gunasekaran, Angappa Kar & Arpan Kumar and Dwivedi & Yogesh are the authors who have a greater number of citations for their publication i.e., 52 and Gunasekaran and Angappa is lies in second place with 51 citations and finally Kar, and Arpan Kumar are in the third position with overall 49 citations for their publication.

Table 4.3: Top authors with more than 30 citations per publication on AI and TA between 2010 to 2022.

Sl. No.	Author	Citations
1	Dwivedi, Yogesh.	52
2	Gunasekaran, Angappa	51
3	Kar, Arpan kumar	49
4	Aguinis, Herman	45
5	Dubey, Rameshwar	39
6	Sivathanu, Brijesh	34
7	Collings, David.	32
8	Wamba, Samuel fosso	32
9	Pillai, Rajasshrie	31

Table 4.4: Top Sources with more than 50 citations for the publications on AI & TA between 2010-2022

Sl. No.	Source	Citation
1	Journal of applied psychology	221
2	International journal of information management	144
3	The international journal of human resource management	134
4	Personnel psychology	121
5	SSRN electronic journal	116
6	Human resource management review	115
7	Technological forecasting and social change	113
8	Journal of business research	111
9	Business horizons	87
10	Academy of management review	81

Table 4.4 shows the top 10 Sources for Artificial Intelligence and Talent Acquisition related publications in India that have got more than 50 citations. Among those top 3 sources are Journal of applied psychology is the best source with 221 citations and followed by some other sources such as the international journal of information management with 144 citations, and the international journal of human resource management with 134 citations.

From the analysis done by using the VOS Viewer software, the study got the Network visualization as shown in below figure. Further network analysis indicates the correlations between publications.

Not only can the connected objects (nodes) be weighted, but also the connections (edges). Analysed objects may be keywords, terms, citations, authors, and others.
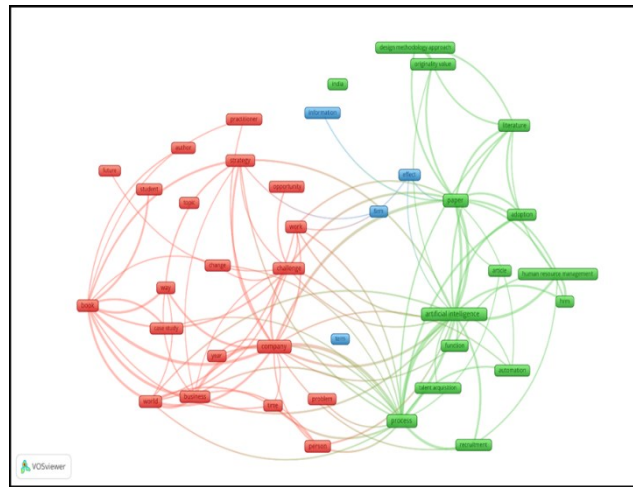

Figure 4.4: Network Visualization of Keywords used in publications on Artificial Intelligence and Talent Acquisition in India between 2010 to 2022

As seen, the most affiliating keyword is "artificial intelligence". This is also the most connected keyword with the occurrence of keyword i.e., 59 in its cluster with terms "Talent Acquisition", "Human Resource Management", "Adoption", "Recruitment" etc. Then we can conclude that most of the publications are published on the topics related to Adoption of Artificial Intelligence for Talent Acquisition in Human Resources. The citations obtained for Indian Authors are highest as compared to the authors in other countries is a piece of evidence that says most of the authors are currently working on papers related to Artificial Intelligence in Talent Acquisition. Hence the study found that the research works on Artificial Intelligence in Talent Acquisition still going on and the need for such a study is also increasing currently.

Table 4.5: List of Keywords with most co-occurrences

Sl. No.	Label	Cluster	Weight Links	Weight Total link strength	Weight Occurrences
1	adoption	2	36	169	25
2	Article	2	35	124	23
3	artificial intelligence	2	38	335	59
4	Author	1	37	122	19
5	automation	2	36	115	19
6	Book	1	33	219	43

7	business	1	37	210	37
8	case study	1	36	141	23
9	challenge	1	38	250	42
10	Change	1	38	145	28
11	company	1	38	331	59
12	design methodology approach	2	37	163	21
13	Effect	3	37	129	23
14	Firm	3	36	111	21
15	function	2	38	165	25
16	Future	1	29	83	16
17	Hrm	2	35	130	19
18	human resource management	2	36	168	27
19	India	2	37	109	18
20	information	3	38	131	20
21	literature	2	35	180	30
22	opportunity	1	38	138	22
23	originality value	2	37	169	23
24	Paper	2	37	310	60
25	Person	1	37	193	29
26	practitioner	1	38	155	22
27	problem	1	36	131	24
28	process	2	37	327	59
29	recruitment	2	37	157	25
30	strategy	1	38	235	40
31	student	1	36	154	24
32	talent acquisition	2	35	86	15
33	term	3	36	80	15
34	time	1	37	160	28
35	topic	1	37	125	18
36	way	1	38	176	29
37	work	1	38	201	38
38	world	1	36	203	36
39	year	1	36	116	20

Overlay Visualization provides knowledge on the total average publications per year on the specific keywords used by the authors in their publications. With the help of the VOS viewer software, the study obtained the Overlay Visualization of keywords used in Publications done on Artificial Intelligence and Talent Acquisition between 2010 to 2022 as shown in Figure 4.6 above.

From the Overlay Visualization, the study found that the keywords "Artificial Intelligence", "Adoption", "Talent Acquisition", and "Human Resource Management" are having the highest
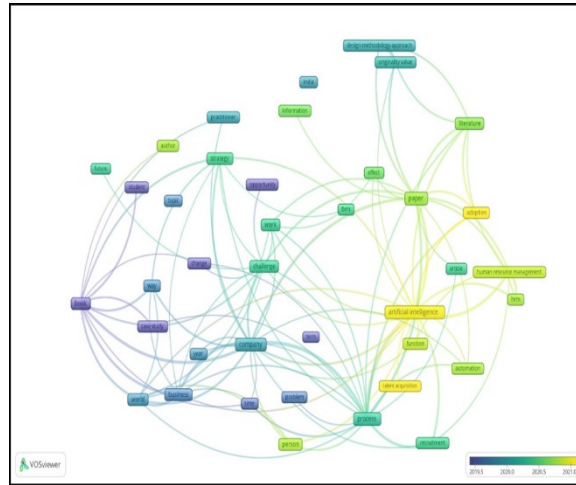

Table 4.6: List of Keywords that published highest average publication per year

number of publications per year. The keyword "Artificial Intelligence" is having on an average of 2020.94 publications per year and the keyword "Talent Acquisition" is having on an average of 2021.06 publications per year. Hence these findings show that most of the authors concentrate on publishing articles related to Talent acquisition and Artificial Intelligence also in other words we can say these topics are the hotcakes for research in today's digital era.

Table 4.6: List of Keywords that published highest average publication per year

Sl. No.	Label	Score Avg. pub. year	Score Avg. citations
1	Adoption	2021.04	10.16
2	Article	2020.35	9.17
3	artificial intelligence	2020.95	7.00
4	Author	2020.74	4.63
5	Automation	2020.74	8.05
6	Book	2018.95	7.63
7	Business	2019.73	9.03
8	case study	2019.43	7.70
9	Challenge	2020.31	6.74
10	Change	2019.11	12.71
11	Company	2019.95	6.78
12	design methodology approach	2020.05	14.05
13	Effect	2020.57	4.57
14	Firm	2020.38	5.76
15	Function	2020.80	4.04

16	Future	2020.31	3.81
17	HRM	2020.74	11.32
18	human resource management	2020.81	8.19
19	India	2019.94	9.17
20	Information	2020.60	10.40
21	Literature	2020.67	9.67
22	Opportunity	2019.41	7.91
23	originality value	2020.13	13.61
24	Paper	2020.72	9.27
25	Person	2020.76	8.83
26	Practitioner	2020.00	9.68
27	Problem	2019.67	4.67
28	Process	2020.25	6.80
29	Recruitment	2020.36	8.28
30	Strategy	2020.38	6.15
31	Student	2019.21	7.75
32	talent acquisition	2021.07	3.53
33	Term	2019.53	15.33
34	Time	2019.61	7.75
35	Topic	2019.78	6.78
36	Way	2019.79	8.59
37	Work	2020.32	6.58
38	World	2019.86	7.36
39	Year	2019.85	8.20

5. LIMITATIONS FOR THE STUDY

The CSV formatted file is exported from the dimensions database on dated 28th September 2022 and then conducted bibliometric analysis. Based on the data exported from dimensions database which are published before the time period considered for the study is included in this analysis. the literature added to database after September 28th are excluded from the study. Hence the study has limitations on the database update regarding literatures published after data exported from Dimensions database.

6. CONCLUSION

Based on the above discussions, the study concluded that India is the country that has the greater number of publications on the topic related to Artificial intelligence and Talent Acquisition. Dwivedi and Yogesh are the authors who got a greater number of citations for their documents the Keywords Artificial Intelligence and Talent Acquisition are having more correlations with Adoption and Human Resources. Hence, we got the evidence that highlighting the publications related to the adoption of Artificial Intelligence for Talent Acquisition in Human resources is more. Also, the study concludes the same based on the Network visualization and Overlay visualizations created on VOS Viewer software using the CSV formatted file extracted from the Dimensions database.

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