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Research Article

Application of Artificial Intelligence in Social Sciences Research in India: A Bibliometric Analysis

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ABSTRACT

This study presents a bibliometric analysis of the top 100 highly cited publications on the application of Artificial Intelligence (AI) in social sciences research in India during 2013-2024, retrieved from the Scopus database. The analysis reveals a steady annual growth rate of 13.42%, with the selected papers receiving an average of 101.2 citations per document, reflecting high scholarly impact. These publications originated from 394 authors across 73 sources, with nearly 40% resulting from international collaborations. Keyword co-occurrence and trend analyses highlight key thematic clusters, including data analytics, sentiment analysis, and social simulations, underscoring the growing interdisciplinarity between AI and social sciences. The citation structure indicates that the top 10 papers account for over half of all citations, signalling concentration of influence within a few high-impact works. The findings offer insights into India's evolving research ecosystem, emphasizing collaborative, data-driven, and ethically grounded directions for future social science research powered by AI.

Keywords: AI, Artificial Intelligence, Bibliometrics, Collaboration Networks, India, Research Trends, Social Sciences.

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INTRODUCTION

Social research encompasses the study of human behaviour, societies, and social phenomena, significantly influenced by technological advancements. Artificial Intelligence (AI) has become an influential force in this field, transforming research methods by improving the rapidity and precision of gathering, processing, and analyzing large datasets. "AI in education is expected to be worth $6 billion by 2024" (UNESCO, 2021). AI is becoming increasingly important in the social sciences as it affects productivity and tackles pressing concerns like health and climate change (OECD 2012).

AI-driven analyses use a variety of data sources, such as social media and online forums, to reveal previously undiscovered insights into human behavior, while traditional methods, such as surveys, can include biases. The technology helps academics build predictive models and promotes interdisciplinary cooperation by processing vast volumes of data. India's National Strategy on AI, which encourages social and inclusive growth, aligns with this move towards data-informed research (#AIforAll) (NITI, 2018; Kumar, 2021). Social scientists can better navigate complex information, enhance their understanding of societal dynamics, and improve methodologies to tackle intricate social problems by integrating AI tools for data analysis and visualisation.

LITERATURE REVIEW

The integration of Artificial Intelligence (AI) into social sciences research has been thoroughly studied in the scholarly literature. The data analysis becomes simpler by using AI applications, which provide essential insights into social patterns and human behavior (Kitchin, 2014). Researchers can analyse large datasets from diverse sources utilising machine learning and natural language processing, uncovering patterns and sentiments that traditional methodologies might overlook (Binns, 2018; Afzaal *et al.*, 2024), highlighted the use of AI-related tools in education by analysing 2101 articles from WoS and Scopus, indexed 963 sources. The USA and China have emerged as collaborators in research on AI applications in education. They have highlighted a rising interest in AP applications within education and healthcare. On average, each document was cited more than six times, and the cumulative number of references was 78,908 (Afzaal *et al.*, 2024).

(Kartal and Yesilyurt, 2024) have analysed the use of AI tools in second language teaching and applied linguistics through 185 articles indexed in SSCI. The authors identified four clusters of AI, natural language processing, robot-assisted language

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learning, and chatbots. The study has underlined the potential of NLP and AI technologies to provide personalized feedback and instructions for learners.

(Rodrigues *et al.*, 2025) have explored the relationship between academic integrity and AI through 163 publications indexed in WoS. The study has highlighted that more research must be done to ascertain the positive and favourable applications of AI in education. The study has identified two main thematic patterns- academic integrity, traditional and evolving concept of integrity in education; negative predictors of academic integrity- factors which compromise academic integrity, and AI tools impact them. It has suggested an innovative framework to strike a balance between the benefits and risks associated with the use of AI in education.

(Xu *et al.*, 2024) have highlighted considerable progress in AI with the fast developments in the large language models. They have categorized the published literature into two categories- AI for Social Sciences and Social Sciences of AI. They have introduced a framework that differentiates between AI for social sciences and social sciences of AI. AI can be a tool for research and a subject for analysing and understanding its components. It has also underlined the importance of collaboration between technical and social science experts in understanding the role of AI in Social Sciences.

To ensure equitable outcomes and integrity in research methods, several concerns must be addressed for the responsible use of AI in the social sciences.

OBJECTIVES OF THE STUDY

The primary objective of this study is to explore the application of Artificial Intelligence (AI) within the domain of social sciences in India. The specific objectives of the study include:

- Assessing the annual scientific output in the selected research area,
- Identifying patterns of co-authorship across different countries,
- Analyzing the frequency and distribution of keywords in relevant publications,
- Examining international research collaborations and determining the most frequently co-cited authors,
- Identifying the most relevant and influential publication sources,
- Exploring the core research themes within the field.

METHODOLOGY

The appropriate and relevant keywords from the published literature across the globe on “AI and Social Sciences Research” in India were identified and retrieved using a comprehensive search strategy. The search strategy was formulated using a set of relevant keywords along with their synonyms for both the artificial intelligence and social sciences. These two sets of keywords were put individually in the "Keyword" tag using Boolean operators, and put together as a search strategy used in the "Advanced search" functionality of the Scopus online database from the beginning till April 2025.

KEY ("artificial intelligence" OR "machine learning" OR "deep learning" OR "neural network*" OR " natural language processing" OR "expert system" OR "Fuzzy logic" OR "computer vision" OR "robotics" OR "big data") AND AFFILCOUNTRY (india) AND (KEY (social AND computing) OR KEY (social AND science AND computing))

A total of 776 documents were identified and sorted by decreasing order of citations, considering only the top 100 documents, which had received 25 to 2115 citations for detailed analysis. The extracted data for each downloaded publication included various bibliographical features, such as title (source), author, country, organisation, serial, and citation received. Bibliometric indicators, including the total number of publications, publication years, types and source of publications, top ten funding agencies, top foreign collaborating countries, organizations and authors, top twelve countries, top fifteen institutions, top twelve authors, top thirteen journals, and the top ten most cited articles, were gathered using an Excel spreadsheet. Network maps were constructed to depict the co-occurrence of author keywords appearing in titles or abstracts, which helped us to segregate terms into distinct clusters, which were further enhanced by colour coding based on their temporal distribution.

The documents in the dataset were published between 2013 and 2024, covering over a decade of research. The documents are published across 73 different sources, such as journals, books, and conference proceedings. There are 100 documents in total included in this analysis. The number of documents is growing at an average annual rate of 13.43%, indicating increasing interest and research in the field. On average, the documents are approximately 5.37 years old, suggesting a balance of both recent and moderately older publications. Each document has been cited, on average, 101.2 times, indicating high impact or relevance of the publications. These 100 documents have collectively cited 5662 references, showing a rich and diverse knowledge base. The present study is limited to the data covered in the Scopus database from 2013 to 2024.

ANALYSIS AND RESULTS

Growth of Publications

The number of publications on this topic shows an increasing and decreasing trend from 2013 to 2024. The number of publications ranged from 1 in 2013 to 4 in 2024, with a maximum of 18 each in 2020 and 2021. Two distinct stages of growth were observed: the first stage, from 2013 to 2021, had an increasing growth rate of publication production, while the second stage, from 2022 to 2024, had a decreasing trend. Most of the top 100 cited articles (74%) were concentrated in 2018-2022. The annual average growth rate was 88.97% (Table 1, Figure 1). The 6-year cumulative publications showed a substantial increase, rising from 30 during 2013-18 to 70 during 2019-24, registering an absolute growth of 133.33%.

The publication years of the top 100 HCPs in this field spanned from 2013 to 2024 with a citation ranging from 25 to 2121 times since publication. The 100 HCPs together received 10120 citations, averaging 101.2 citations per paper. The distribution of citations showed uneven distribution: 4% and 18% publications were in citation range 407-2121 and 103-337 as against only 24% and 54% publications in citation range 51-100 and 24-50.

Funding

External funding was received for 27.0% publications from more than 25 global funding agencies and these together received 4243 citations averaging 157.15 CPP. In particular, the Department of Science and Technology, Govt. of India emerged as the most active funding agency in the field, supporting 82.0% (*n*emerged as the most active funding National Science Foundation, USA and Ministry of Electronics and Information Technology (3 papers each), Council of Scientific and Industrial Research (2 papers) and 21 other funding agencies contributed 1 paper each.

International Collaboration

Foreign Countries

India collaborated with 35 countries in 39 papers, of which 23 countries collaborated in one paper each, 5 countries in 2 papers each, 3 countries in 3 papers each, 1 country in 6 papers, 2 countries in 7 papers each and 1 country in 11 papers as displayed. India's collaboration with foreign countries in 39 papers registered 5657 citations, averaging 145.05 citation impacts per paper. Among 36 foreign countries collaborating with India, the USA made the largest contribution (11 papers, 28.21%), followed by the UK and Australia (7 papers, 17.95% each), China (6 papers, 15.38%), Canada, Saudi Arabia and Turkey (3 papers, 7.69% each), etc. the UK registered the highest citation impact per paper (346.95 CPP) among foreign countries collaborating with India, followed by Brazil and Portugal (238 CPP each), Australia (111.29 CPP) and Canada (109.0 CPP) (Table 2).

Foreign Organisations

The 149 foreign organisations from 35 countries participated in Indian research on "AI and social sciences research in India", of which 140 organisations contributed 1 paper each and 9 organisations 2 papers each. The top 9 foreign organisations with 2 or more papers are listed in the Table 3, along with their links with important Indian organisations (Table 3).

Foreign Authors

The 293 foreign authors from 149 foreign organisations in 35 foreign countries participated in Indian research on "AI and

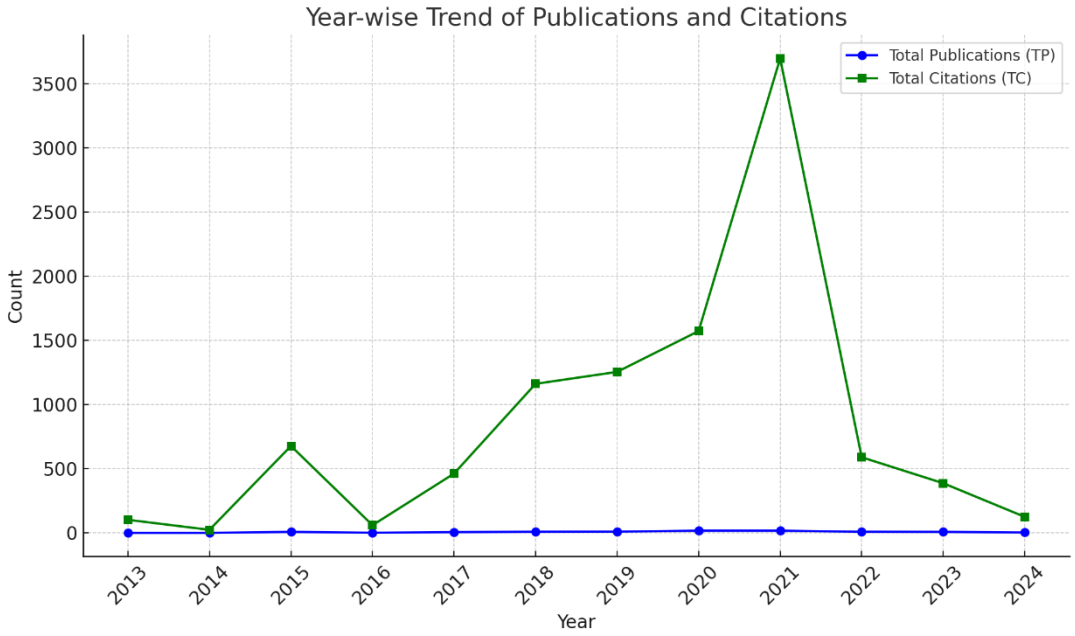

Figure 1: Year-wise Publications and Citations.

Table 1: Annual Growth of Publications.

Year	TP	TC	CPP
2013	1	103	103.0
2014	1	25	25.0
2015	9	678	75.3
2016	2	61	30.5
2017	7	463	66.1
2018	10	1162	116.2
2019	11	1255	114.1
2020	18	1573	87.4
2021	18	3696	205.3
2022	10	590	59.0
2023	9	388	43.1
2024	4	126	31.5
2013-18	30	2492	83.07
2019-24	70	7628	108.97
2013-24	100	10120	101.2

TP- Total Publications; TC- Total Citations; CPP- Citations Per Paper.

Table 2: List of Countries Collaborating with India in "AI and Social Sciences".

Sl. No.	Name of foreign country	TP	TC	CPP	% TP
1	USA	11	1095	99.55	28.21
2	UK	7	2428	346.86	17.95
3	Australia	7	779	111.29	17.95
4	China	6	478	79.67	15.38
5	Canada	3	327	109.00	7.69
6	Turkey	3	121	40.33	7.69
7	Saudi Arabia	3	180	60.00	7.69
8	Portugal	2	476	238.00	5.13
9	Brazil	2	476	238.00	5.13
10	Pakistan	2	167	83.50	5.13
11	South Korea	2	79	39.50	5.13
12	Ethiopia	2	73	36.50	5.13
	23 countries 1 paper each				
	Total ICP	39	5657	145.05	

social sciences research in India", of which 5 authors contributed 2 papers each, and the rest contributed 1 paper each. The top 5 foreign authors with 2 or more papers are listed in the Table along with their links with important Indian authors (Table 4).

Leading Organizations

In all, 274 organisations participated in "AI and Social Sciences Research in India", of which 124 were Indian. Among 124 Indian organisations, 109 contributed on paper each, 9 contributed 2 papers each, 3 contributed 3 papers each and 2 and 1 organisations contributed 5 and 6 papers each.

The top 15 Indian participating organisations individually contributed 2 to 6 papers each and collectively contributed 43 papers and 5965 citations, accounting for 43.0% and 59.53% share respectively in total publications and citations. Among top 15: (i) 7 organizations contributed more than the average productivity (2.87): Delhi Technological University, Delhi (6 papers), Thapar Institute of Engineering and Technology, Patiala (6 papers), Vellore Institute of Technology, Vellore and National Institute of Technology, Kurukshetra (5 papers each), IIT-New Delhi, ISI-Kolkata and Manit-Bhopal (3 papers each); and (ii) Four organizations registered citation impact, measured by CPP

and RCI, more than their average (187.8 and 1.38): Symbiosis Institute of Business Management, Pune (1090.0 and 10.88), Thapar Institute of Engineering and Technology, Patiala (156.2 and 1.56), National Institute of Technology, Kurukshetra (141.67 and 1.41) and Delhi Technological University, Delhi (141.17 and 1.41) as shown in Table 5.

Leading Authors

In all, 139 authors participated in "AI and Social Sciences Research in India", of which 125 contributed one paper each, 7 authors contributed 2 papers each and 5 authors 3 papers each.

The top 13 Indian participating authors individually contributed 2 to 3 papers each and contributed 29 papers and 5431 citations, accounting for 29.0% and 54.20% share respectively in total publications and citations. Among top 13: (i) 5 authors contributed more than the average productivity (2.46): Akshi Kumar, A.K. Kar, S.K. Pal, Neeraj Kumar and Sahil Garg (3 papers each); and (ii) Five authors registered citation impact, measured by CPP and RCI, more than their average (189.13 and 1.89): A.K. Kar (774.67 and 7.73), Kuljit Kaur (289.0 and 2.88), Neeraj Kumar (229.33 and 2.29) and Sahil Garg and B.B. Gupta (212.5 and 2.12 each) (Table 6).

Leading Journals

Of the top 100 HCPs on "AI and Social Sciences Research in India", 66 were published in 51 journals and 34 in conference proceedings. Among 51 journals, 38 journals published 1 paper each, 11 journals 2 papers each and 2 journals 3 papers each. For detailed analysis, a list of the top 13 journals with 2 or more papers is presented in Table 7.

The top 13 journals individually published 2 to 3 papers each and collectively 28 papers, accounting for a 42.42% share of all journal papers. Among these, the top 2 most productive journals were Expert Systems and Expert Systems with Applications (with 3 papers each); (ii) the three journals by citations registered per paper were Social Network Analysis and Mining (266.5 CPP), Expert Systems with Applications (177.67 CPP), IEEE Transactions on Network and Service Management (138.5 CPP); (iii) the top 3 journals by impact factor were IEEE Access (n=3) (IF=10.5), Multimedia Tools and Applications (*n*=2)(IF=8.6) and Expert Systems with Applications (n=3) (IF=7.5).

Significant Keywords

The analysis revealed many significant keywords, highlighting key themes in AI applications within social sciences in India. As illustrated in Table 8 and Figure 1, the most frequently occurring keywords include "social media," "data analysis," "machine learning," and "sentiment analysis." These keywords not only reflect current research trends but also emphasise the interdisciplinary nature of the field. The co-occurrence network presented in Figure 1 demonstrates the relationships between these keywords, indicating prominent research areas and potential gaps that future studies could explore. This keyword distribution underscores the evolving landscape of AI-driven social science research.

Table 3: List of Foreign organisations with 2 or more papers.

Sl. No.	Name of the foreign organisation	TP	TC	CPP	TLS	Linkages with Indian organisations
1	Swansea University, School of Management, UK	2	2180		28	Symbiosis Institute of Business Management, Pune (2); NIIT, Mumbai (1); IIT-New Delhi; NIT, Tiruchirapalli (1)
2	University of Edinburgh, UK	2	2147		28	Symbiosis Institute of Business Management, Pune (1); IIT- New Delhi; IIM, Tiruchirapalli (1)
3	University of Sydney, School of Computer Science, Sydney, Australia	2	294		5	TIET, Patila (2)
4	University of Technology, Sydney, Australia	2	178		7	NIT-Rourkela (1); GITAM, Vijayawada (1)
5	Near East University, Nicosia, Turkey	2	78		3	VIT, Vellore (1)
6	Peng Cheng Lab., Shenzhen, China	2	156		11	VIT, Vellore (1); University of Allahabad (1)
7	Harbin Institute of Technology, China	2	156		11	VIT, Vellore (1); University of Allahabad (1)
8	National Institute of Telecommunication, Portugal.	2	576		8	Thapar University, Patiala (1); NIT, Rourkela (1)
9	ITMO University, University of Fortaleza, Brazil	2	476		8	Thapar University, Patiala (1); NIT, Rourkela (1)

Table 4: List of the top 5 foreign authors with 2 or more papers.

Sl. No.	Name of the author	Affiliation of the author	TP	TC	CPP	TCL	Linkages with Indian authors
1	Y. K. Dwivedi	Swansea University, School of Management, UK	2	2180		40	
2	A. Y. Zomaya	University of Sydney, School of Computer Science, Sydney, Australia	2	294		10	S. Garg (2), K. Kaur (2), N. Kumar (2)
3	F. Al -Turjmani	Near East University, Nicosia, Turkey	2	78		4	B.D.Deebak (1), S.K. Malchi(1), S. Kallam (1), R. Patan (1)
4	W. Zhang	Peng Cheng Lab., Shenzhen, China	2	156		11	
5	J.J.P.C. Rodriques	National Institute of Telecommunication, Portugal.	2	576		8	K. Kaur (1), S.Garg (1), G. Aujila (1), N. Kumar (1)

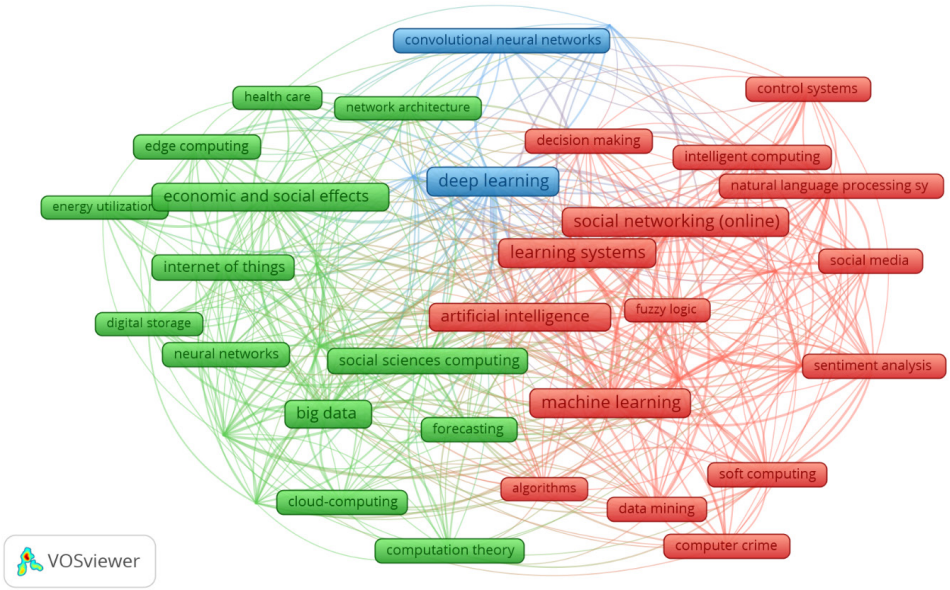

Figure 2: Co-occurrence Network Visualisation of top 40 keywords.

Word Cloud

The word cloud in Figure 2 visually represents the most prevalent terms associated with AI applications in social sciences in India. The size of each word correlates with its frequency in the analysed documents, highlighting key themes such as "data," "analysis," "social media," and "behavior," reflecting current research priorities in the field.

Trending Topics

The analysis of trend topics reveals the evolving research landscape at the intersection of artificial intelligence and social sciences. The frequency and temporal distribution of key terms indicate shifts in focus over time. Table 9 illustrates emerging and influential topics, showing that before 2017, researchers were primarily interested in infrastructure foundations and exploratory data analysis. From 2017 to 2018, core AI applications like big data, sentiment analysis, and learning systems gained prominence. Between 2018 and 2021, research expanded to social and behavioural applications, focusing on public opinion, online behaviours, decision-making, and ethical considerations, with Q1 marking the start of traction for each topic, Q2 indicating the year it was most prominent, and Q3 highlighting when most mentions occurred.

Top 10 Highly Cited Papers (HCPs)

A citation analysis of the top 10 HCPs in AI and social science research in India reveals an impressive average of 505.4 per paper, totalling 5054 citations. The citation counts for these articles range from 187 to 2115, with the top 10 accounting for over 50% of the total citations from the top 100 papers on this topic, as shown in Table 10. These papers were published between 2015 and 2021, with two papers published in 2018 and 2021. Among the ten HCPs, there is a mix of eight journal articles and two

conference papers, of which eight involve collaboration among multiple organisations while two stem from a single organisation. Three papers received external funding support.

The contributions come from 12 countries, 43 organisations (15 from India), and 65 authors (22 Indian). The USA, UK, and Australia each contributed two papers, while nine other countries contributed one paper each. Notable Indian organisations include Thapar Institute of Engineering and Technology (TIET) and the National Institute of Technology (NIT), Kurukshetra, each producing two papers. The most significant journals publishing these works include Expert Systems with Applications and IEEE Transactions on Network and Service Management, among others.

CONTENT ANALYSIS OF HCPS

The most cited paper, authored by Dwivedi, reviews AI's transformative potential in various sectors, emphasising its impact on future industries and society while acknowledging influences on AI's development pace. It highlights breakthroughs in algorithmic machine learning and autonomous decision-making, indicating a potential disruption across industries such as finance and healthcare.

Ishwarappa and Anuradha (2014) investigated the 5Vs of big data and recommended that traditional SQL queries cannot handle significant data problems. They suggested Hadoop and support NoSQL databases like MongoDB, as a top open-source option for distributed data processing. Nandwani (2021) examined social media websites, illustrating the approach to use unstructured data to express emotions and providing information on sentiment analysis, emotion models, and text analysis. (Singhal *et al.*, 2011) discussed the issue of misleading information by presenting SpotFake, a multi-modal framework for detecting false news that surpasses existing models on various datasets.

Tomar and Gupta (2020) used data-driven methods to forecast the number of COVID-19 cases in India. Their approach led to a reliable 30-day prediction that proved useful for guiding public health efforts. Meel and Vishwakarma (2020) discussed how social media is used to spread biased information and provided a taxonomy for classifying hostile content at different stages. Finally, (Gupta *et al.*, 2017; Gupta *et al.*, 2018) investigated the growing threat of phishing assaults, discussed phishing concerns in the Internet of Things (IoT), and described the tactics used by cybercriminals.

Table 5: Top 15 Organisations with 2 or more papers.

Sl. No.	Name of the organisation	TP	TC	CPP	RCI	ICP	%ICP	TLS
1	Delhi Technological University, Delhi	6	847	141.17	1.41	0	0.0	1
2	Thapar Institute of Engineering and Technology, Patiala	5	781	156.20	1.56	4	80.0	13
3	Vellore Institute of Technology	5	494	98.80	0.99	3	60.0	14
4	National Institute of Technology, Kurukshetra	3	425	141.67	1.41	3	100.0	4
5	Indian Institute of Technology, New Delhi	3	270	90.00	0.90	0	0.0	3
6	Indian Statistical Institute, Kolkata	3	113	37.67	0.38	0	0.0	0
7	MANIT, Bhopal	2	118	59.00	0.59	1	50.0	3
8	Sardar Patel Institute of Technology, Mumbai	2	135	67.50	0.67	0	0.0	0
9	Symbiosis Institute of Business Management, Pune	2	2180	1090.00	10.88	2	100.0	28
10	Amrit Vishwa Vidyapaath, Chennai	2	143	71.50	0.71	1	50.0	2
11	National Institute of Technology, Tiruchirappalli	2	102	51.00	0.51	2	100.0	6
12	Jamia Millia Islamia, Delhi	2	98	49.00	0.49	0	0.0	1
13	Indian Institute of Science, Bangalore	2	80	40.00	0.40	2	100.0	3
14	South Asia University, New Delhi	2	91	45.50	0.45	1	50.0	1
15	Graphic Era University, Dehradun	2	88	44.00	0.44	0	0.0	5
	Total of the top 15 organisations	43	5965	138.72	1.38	19	44.2	84
	Global total	100	10020	100.20	1.00			
	Share of top 15 organisations in the global total	43	59.53					

Table 6: Top 12 authors with 2 or more papers.

Sl. No.	Name of the author	Affiliation of the author	TP	TC	CPP	RCI	ICP	%ICP	TLS
1	Akshi Kumar	Delhi Technological University	3	232	77.33	0.77	0	0	3
2	A.K. Kar	Indian Institute of Technology, New Delhi	3	2324	774.67	7.73	1	33.3	39
3	S.K. Pal	Indian Statistical Institute, Kolkata	3	113	37.67	0.38	0	0	4
4	Neeraj Kumar	Thapar Institute of Engineering and Technology, Patiala	3	688	229.33	2.29	3	100	13
5	Sahil Garg	Thapar Institute of Engineering and Technology, Patiala	3	621	207.00	2.07	3	100	12
6	Arunima Jaiswal	Delhi Technological University	2	174	87.00	0.87	0	0	2
7	B.B. Gupta	National Institute of Technology, Kurukshetra	2	425	212.50	2.12	2	100	8
8	Reema Aswani	Indian Institute of Technology, New Delhi	2	134	67.00	0.67	0	0	5
9	Kuljit Kaur	Thapar Institute of Engineering and Technology, Patiala	2	578	289.00	2.88	2	100	8
10	Rajiv Ratn Shah	Indraprastha Institute of Information Technology, Delhi	2	472	236.00	2.36	0	0	7
11	Muhammad Abdulaisa	South Asia University, New Delhi	2	94	47.00	0.47	0	0	3
12	S. Kundu	Indian Statistical Institute, Kolkata	2	84	42.00	0.42	0	0	2
		Total of top 12 authors	29	5431	187.28	1.87	8	27.58	97
		Global total	100	10020	100.20	1.00			
		Share of top 12 authors in global total	29.00	54.20					

DISCUSSION

The present paper has analysed 100 top-cited documents published during the period 2013 to 2024. The study has shown that there was an annual growth rate of 13.42% of publications, with an average of 101.2 citations per document. The 100 top-cited documents were authored by 394 researchers who published in 73 unique journals; 40% of the total publications involved multi-national collaborations.

The keywords analysis highlighted that topics of "data analysis", "machine learning", and "social media" were pursued and researched, indicating the interdisciplinary nature of the field.

The top 10 papers garnered 505.4 citations, which was over 50% of the total citations accrued by 100 publications. The analysis reinforces that AI is making rapid advances in the social sciences.

The number of publications on the use of AI in social sciences shows that AI technologies are imparting the social science education and research landscape, which is evident through the citations the published research has accrued in a short span of time. The researchers are inquisitive to know how AI may be incorporated into the social sciences field. The various themes found in the published research highlight that data analysis, sentiment education and social evaluations strengthen traditional research methods (Kitchin, 2014; Binns, 2018).

Furthermore, the collaboration among various institutions and countries highlights the interdisciplinary nature of the field, promoting teamwork that may catalyze innovation (NITI, 2018; Kumar, 2021).

The top cited papers have encompassed a wide spectrum of perspectives, ranging from the judicious responsible use of AI to its potential in public health and prevention of the circulation of fake news. The study has underlined the need to elaborate on best practices, ethical considerations, data privacy, algorithmic bias, and the positive societal impact of judiciously using AI tools in the social sciences (O'Neil, 2016; Binns, 2018).

FUTURE RESEARCH DIRECTIONS

Future research on the application of AI in social science studies may involve utilizing data from sources such as the Web of Science and Google Scholar, along with the examination of emerging research trends. Additionally, analyzing the existing

Figure 3: Word Cloud of Publication Themes.

Table 7: List of top13 journals with 2 or more papers.

Sl. No.	Source title	TP	TC	CPP	IF
1	Expert Systems	3	174	58.00	3.6
2	Expert Systems with Applications	3	533	177.67	7.5
3	Cognitive Computation	2	83	41.50	5.38
4	IEEE Access	2	150	75.00	10.5
5	IEEE Sensors Journal	2	161	80.50	2.35
6	IEEE Transactions on Industrial Informatics	2	164	82.00	4.3
7	IEEE Transactions on Network and Service Management	2	277	138.50	3.9
8	International Journal of System Assurance Engineering and Management	2	96	48.00	1.6
9	Information Sciences	2	173	86.50	5.02
10	Multimedia Tools and Applications	2	95	47.50	8.6
11	Nature Computing and Applications	2	232	116.00	4.5
12	Sustainable Cities and Society	2	73	36.50	5.6
13	Social Network Analysis and Mining	2	533	266.50	2.3
		28	2744	98.00	
		66			
		42.42			

Table 8: **List of Top 20 Keywords.**

Sl. No.	Keyword	Occurrences	TLS	Cluster	Links	Keyword	Occurrences	TLS	Cluster	Links
1.	Machine Learning	31	168	1	34	Social media	10	44	1	19
2.	Social Networking (online)	36	161	1	32	Decision making	9	37	1	23
3.	Learning Systems	28	203	1	57	Forecasting	8	35	2	22
4.	Deep learning	31	126	3	35	Algorithms	5	48	1	20
5.	Artificial intelligence	22	108	1	34	Convolutional neural networks	9	30	3	16
6.	Big data	25	119	2	32	Data analytics	7	40	2	19
7.	Learning Algorithms	12	95	1	32	Mental health	5	47	2	26
8.	Economic and Social Effects	22	83	2	28	Fuzzy logic	6	29	1	21
9.	Cloud computing	16	86	2	28	Edge computing	9	36	2	18
10.	Social sciences computing	18	88	2	31	Computation theory	7	31	2	21
11.	Computation Theory	7	31	2	21	Energy utilization	6	27	2	12
12.	Natural language processing systems	9	65	1	22	Online social networks	5	28	3	13
13.	Support vector machines	9	59	1	23	Computer crime	7	36	1	17
14.	Internet of Things	15	64	2	26	Decision trees	5	41	2	26
15.	Deep neural networks	10	59	3	27	Digital storage	6	36	2	20
16.	Data mining	11	60	1	25	Affective computing	7	39	3	25
17.	Soft computing	10	54	1	19	Control systems	8	36	1	16
18.	Sentiment analysis	11	53	1	21	Neural networks	7	30	2	21
19.	Intelligent computing	12	57	1	23	Health care	6	29	2	19
20.	Distributed computer systems	8	57	2	25	Information management	5	31	2	19

Table 9: **Trending topics.**

Sl. No.	Term	Frequency	Year (Q1)	Year (Median)	Year (Q3)
1.	Algorithms	6	2015	2015	2020
2.	Optimization	5	2015	2016	2017
3.	Data mining	13	2015	2017	2018
4.	Distributed computer systems	8	2016	2017	2018
5.	Big data	25	2017	2018	2021
6.	Social Sciences Computing	18	2017	2018	2021
7.	Dentiment analysis	10	2017	2018	2020
8.	Social networking (online)	36	2018	2019	2020
9.	Learning systems	28	2018	2019	2020
10.	Learning algorithms	12	2018	2019	2021

Table 10: **List of Top 10 Highly-Cited Papers.**

Sl. No.	Name of authors	Title	Source	Citations
1	Dwivedi, Y.K., Hughes, L. *et al.*,	Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy	*International Journal of Information Management*, 2021, 57, art. no. 101994	2115
2	Nandwani, P., Verma, R.	A review on sentiment analysis and emotion detection from text	*Social Network Analysis and Mining*, 2021, 11 (1), art. no. 81	490
3	Singhal, S. Shah, R.R. *et al.*,	SpotFake: A multi-modal framework for fake news detection	*Proceedings - 2019 IEEE 5th International Conference on Multimedia Big Data, BigMM 2019*, art. no. 8919302, pp. 39-47.	424
4	Meel, P., Vishwakarma, D.K.	Fake news, rumour, information pollution in social media and web: A contemporary survey of state-of-the-art, challenges and opportunities	*Expert Systems with Applications*, 2020, 153, art. no. 112986.	407
5	Kaur, K. , Garg, S *et al.*,	Edge Computing in the Industrial Internet of Things Environment: Software-Defined-Networks-Based Edge-Cloud Interplay	*IEEE Communications Magazine*, 2018, 56 (2), pp. 44-51	337
6	Tomar, A., Gupta, N.	Prediction for the spread of COVID-19 in India and the effectiveness of preventive measures	*Science of the Total Environment*, 2020, 728, art. no. 138762	331
7	Ishwarappa, Anuradha, J.	A brief introduction to big data 5Vs characteristics and Hadoop technology	*Procedia Computer Science*, 2015, 48 (C), pp. 319-324.	322
8	Garg, S , Kaur, K. *et al.*,	A hybrid deep learning-based model for anomaly detection in cloud datacenter networks	*IEEE Transactions on Network and Service Management*, 2019, 16 (3), pp. 924-935.	238
9	Gupta, B.B., Tewari, A. *et al.*,	Fighting against phishing attacks: state of the art and future challenges	*Neural Computing and Applications*, 2017, 28 (12), pp. 3629-3654	203
10	Gupta, B.B , Arachchilage, N.A.G *et al.*,	Defending against phishing attacks: taxonomy of methods, current issues and future directions	*Telecommunication Systems*, 2018, 67 (2), pp. 247-267.	187

policy frameworks and evaluating their effectiveness will serve as a valuable contribution to both researchers and policymakers.

POLICY IMPLICATIONS

- Policy makers should invest in capacity building and a digital library to equip social scientists with AI literacy and computational skills.
- The interdisciplinary collaboration between social scientists and data scientists should be encouraged.
- The extent of use of AI in social science research needs to be clarified, ensuring that researchers maintain ethical standards.
- Ethical review mechanisms should be strengthened to monitor AI's use in data collection and analysis.

CONCLUSION

This study provides an evidence-based overview of how Artificial Intelligence is reshaping social sciences research in India. The bibliometric findings-showing a 13.42% annual publication growth and substantial international collaboration-demonstrate that AI is emerging as both a research tool and a subject of inquiry within the social sciences. Highly cited works indicate that Indian researchers are contributing meaningfully to global debates on data analytics, predictive modelling, and sentiment assessment. However, the analysis also exposes concentration of research in a few elite institutions and limited engagement with ethical and policy dimensions of AI.

Future progress will depend on fostering interdisciplinary collaboration among social scientists, computer scientists, and policymakers; investing in research infrastructure; and promoting responsible AI practices that ensure transparency, inclusivity, and fairness. Strengthening national research networks and open data initiatives can further consolidate India's position in AI-enabled social science scholarship.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

ABBREVIATIONS

AI: Artificial Intelligence; **CPP:** Citations Per Paper; **HCPs:** Highly Cited Papers; **IF:** Impact Factor; **ICP:** International Collaboration Papers; **%ICP:** Percentage of International Collaboration Papers; **IoT:** Internet of Things; **NLP:** Natural Language Processing; RCI: Relative Citation Impact; **TC:** Total Citations; **TIET:** Thapar Institute of Engineering and Technology.

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