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RESEARCH TRENDS AND STRUCTURE OF ARTIFICIAL INTELLIGENCE: A BIBLIOMETRIC ANALYSIS

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ABSTRACT

The aim of this study is to analyze the trends and structure of artificial intelligence. Artificial Intelligence (AI) has become one of the most actively researched business and management fields in the scholarly community over the past few years. Based on a sample of about 501 peer-reviewed articles found in the Dimensions database (2010-2025). The results have shown that AI-related publications have increased exponentially after 2020, with the concentration being in the works of such journals as the International Journal of Academic Research in Business and Social Sciences and the Journal of Business Research. India, China and the United States become the major contributors basing on the scientific output, and the United States and Finland have the highest average citation impactThe research shows that the study has major gaps in research such as insufficient focus on AI ethics, AI governance in developing economies and longitudinal organizational performance of AI adoption.

Keywords: Artificial Intelligence, bibliometric analysis, machine learning, business and management, science mapping, intellectual structure.

Introduction

Artificial Intelligence (AI) has experienced an incredible change as a fringe computational idea to an ever-present force that is changing business and management. The last ten years have provided the opportunity to use AI in marketing, supply chain management, human resource management, financial forecasting, and strategic decision-making due to the development of machine learning, natural language processing, and big data analytics (Davagdorj et al., 2021). An increasing amount of evidence proves the fact that companies that implement AI technologies can achieve tangible competitive advantages related to increasing the efficiency of operations, the quality of decisions, and the speed of innovation (Sjodin et al., 2021; Makarius et al., 2020). Irrespective of this acknowledgement, the cognitive framework of AI management studies is incoherent. The reviews that have been conducted so far have been biased to cover certain sub-domain e.g. AI in marketing (Verma et al., 2021) or AI-driven human resource management (Votto et al., 2021); they have not presented a data-driven visualization of the land. It then follows that an intensive,

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methodical synthesis is necessary, which extends beyond narrative summaries and strips away to uncover latent trends in the activity of publication, clusters of knowledge and new horizons of research. To address this requirement, this study presents a bibliometric research on AI literature in business and management research. As a quantitative approach to the statistical measurement of academic literature, bibliometric analysis makes it possible to systematically identify the most influential journals, most prolific scholars, most dominant countries, or thematic groups through the quantification of bibliographic measures, namely citation counts, co-occurring keywords, and co-author networks (Donthu et al., 2021).

The central research question is:

What are the primary research trends, intellectual frameworks, and thematic advances in studies of Artificial Intelligence in scholarly literature?

The operationalisation of this question is based on a bibliometric study of about 501 peer-reviewed articles of the Dimensions database (2010-2025). The rest of the paper will be as follows: Section 2 is a literature review and is consequently very detailed; Section 3 entails a discussion on the methodological design; Section 4 results and discussion; and finally, Section 5 will employ the conclusions on the future research direction.

Literature Review

2.1 Theoretical Foundations of AI in Business and Management

There are several intersecting frameworks that have influenced the theoretical exploration of AI in business and management. Innovation diffusion theory (Rogers, 1983) and Technology Acceptance Model variants (Davis, 1989) were the initial researchers that attracted scholarly attention to the topic by exploring the diffusion processes of AI technologies in the context of organization. These models predict use of perceived usefulness and ease of use as antecedents of adoption, but researchers have come to doubt the adequacy of these models in explaining AI-specific adoption complexity. The second strand is based on the resource-based perspective (Barney, 1991), according to which the AI capabilities are modeled as a strategic resource that provides a competitive advantage in case of their high value, scarcity, imperfect imitability, and inability to substitute. As Sjodin et al. (2021) show, the capabilities of AI facilitate the new type of business model innovation through co-evolutionary feedback between technology development and value creation. On the same note, Makarius et al. (2020) develop a sociotechnical model that demonstrates that effective AI implementation necessitates complementary organizational capacities and not the deployment of technology. The third emergent lens uses the theory of corporate digital responsibility (CDR) to analyze the change in governance arrangements and accountability relations by AI systems. According to Lobschat et al. (2021), ethical externalities of the algorithmic decision-making used by organizations must be embedded in the corporate responsibility models. This viewpoint overlaps with the development of growing interest in the topic of algorithmic transparency, explainability, and bias reported in the literature of AI ethics.

2.2 Publication Trends and the Growth of AI Research

The analysis of the dynamics of publication in the field of AI is based on empirical research, which indicates that the field is growing exponentially since 2020. This expansion reflects the progress in AI capabilities and the COVID-19 pandemic, which at the same time contributed to the greater pace of digital transformation and created an urgent need in AI-

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enabled healthcare management. According to Krishnamurthy (2020), the pandemic is a catalyst that has condensed a decade of technology-driven change into several years that has fundamentally changed the manner in which organizations operate and the way business scholars learn them. Lee and Trimi (2020) also describe the pandemic as the inflection point of convergence innovation, in which the combination of AI, IoT, and data analytics generates new organizational capabilities. The development of AI scholarship has also been geographically dispersed, but Asia has gained a more significant role, especially in India and China. Agbehadji et al. (2020) show how AI and the model of big data computing were quickly deployed to detect the COVID-19 and identify contacts in various countries, which is the worldwide character of the pandemic and the AI-based research reaction to it. Nevertheless, analyses of citation impact indicate significant asymmetries: not only are India and China prolific producers of citation impact, the average citation impact per article is found to be the highest in the United States, Finland, and Norway.

2.3 Thematic Clusters and Research Streams

Analysis of co-occurrence of keywords can be seen to result in a number of thematic clusters. The initial and the most noticeable one focuses on the use of machine learning, including neural networks, algorithmic decision-making, and predictive analytics. Shrestha et al. (2021) formulate the organizational tenets that drive the enhancement of managerial decision-making by deep learning algorithms and state that transparency, contestability, and human control are key design imperatives. Within the field of the IoT, Khalil et al. (2021) survey the applications of deep learning in industrial IoT settings, reporting the performance benefits possible and the computational and security issues limiting its implementation. The second cluster to be identified is one of big data analytics and how it is used in organizations. In their review of AI usage in smart cities, Herath and Mittal (2022) indicate that the major limitation to AI-enabled city management is data integration architectures. Langley et al., (2021) follow the history of data-driven marketing and report the shift in the forms of analytics to predictive and prescriptive AI-based models changing the way companies find, attract and maintain customers.

A third research cluster is related to the use of AI in healthcare management, which got even more serious since 2020. Abdulkareem et al. (2021) illustrate the effectiveness of machine learning models with IoT infrastructure to perform high-accuracy COVID-19 diagnostics in the smart hospital setting to minimize the work of clinical facilities and mortality. Habibzadeh et al. (2019) offer a clinical-perspective survey of healthcare IoT architectures, mapping technical demands and organizational governance issues of patient monitoring systems, in the greater domain of health AI. The fourth new cluster deals with the implications of AI on human resource management and labor relations. Braganza et al. (2020) discover that the use of AI undermines the positive impacts of the psychological contracts on the job engagement and trust of employees, and it introduces what they call an alienational type of contract that jeopardizes the UN Sustainable Development Goal 8 decent work agenda. In their study on the organizational and technological factors of successful data analytics adoption in HRM, Shet et al. (2021) also reveal that the top management support and the data literacy is more critical than the technical infrastructure. The fifth cluster is the AI governance, ethics, and digital responsibility. Allal-Cherif et al. (2021) demonstrate the ways AI is changing the way purchasing functions are governed by automating the process of evaluating suppliers and managing contracts, which casts doubts on accountability in relation to the authority of algorithms to decide. Gupta et al. (2024) examine the theoretical foundations of generative AI adoption and come up with interpreting trust,

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explainability, and the readiness of an organisation as the main factors that define effective implementation.

2.4 Theoretical Debates and Areas Requiring Further Investigation

Several unresolved theoretical debates characterize the current state of AI management research. First, there is an ongoing tension between optimistic, efficiency-oriented narratives exemplified by Sjödin et al.'s (2021) business model innovation framework and more critical perspectives foregrounding risks of bias, opacity, and adverse labor market consequences documented by Braganza et al. (2020). The literature has yet to develop frameworks that simultaneously account for AI's performance-enhancing effects and its disruptive social consequences. Second, the predominance of cross-sectional research designs limits causal inference about AI's organizational effects. Knudsen et al. (2021) is one of the few studies to examine the durability of digitalization-conferred competitive advantage over time, finding that digital capabilities do not automatically self-reinforce without continued managerial investment. Longitudinal research of this type remains rare. Third, AI ethics and governance represent structurally underdeveloped research streams despite their increasing practical urgency, as highlighted by Lobschat et al. (2021) and Mariani and Dwivedi (2024) in their calls for responsible AI innovation management frameworks.

Methodology

3.1 Research Philosophy and Design

This research is based on a post-positivist philosophical stance (Phillips and Burbules, 2000; Saunders et al., 2019), which supports systematic empirical methods but takes into account interpretive limitations. Publication records, citation networks, author affiliations are regarded as observable phenomenon that exist without the researcher although their interpretation is admitted to be theory-laden. The study will make use of systematic research design, which is replicable and relies on known bibliometric guidelines to guarantee transparency and methodological soundness (Donthu et al., 2021).

3.2 Database Selection

Dimensions database was chosen as the main source of data set building. Dimensions is among the most prominent academic citation databases that provide complete coverage of business and management literature and precise metadata such as authors, affiliations, keywords, abstracts, and citation numbers (Harzing and Alakangas, 2018). Its high-level Boolean search system allows the building of very specific and repeatable search query. Admitted disadvantages are an orientation mostly in the English language and possible coverage bias compared to Scopus or Web of Science.

3.3 Search Strategy and Dataset Construction

The research question was the basis of the search strategy which was formulated iteratively. The fined search query incorporated the Boolean OR operators between the core AI terms and business context terms:

("artificial intelligence" OR "machine learning" OR "AI") AND ("business" OR "management" OR "organization*" OR "strategy" OR "decision making")

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The use of subject-area filters which limited the results to Business, Management and Accounting cut the original 4,800 records to about 501 records.

3.4 Screening and Inclusion Criteria

A structured inclusion criterion was used: (1) Publication date 2010-2025; (2) Document type: peer-reviewed journal articles and review papers; (3) Language: English; and (4) Subject area: Business, Management, and Accounting. Topical relevance was checked with a manual title and abstract screening, which has resulted in a final dataset of about 501 publications. Some of the publications were exported in CSV format with metadata of authors, titles, abstracts, keywords, year of publication, citation count and source titles.

3.5 Analytical Procedures

The Bibliometrix package of R was used to perform bibliometric analyses in R and executed by the Biblioshiny web interface. Analysis of performance was done on the output of publications over time, most productive journals, most cited journals, the productivity of authors, scientific production by country and distributions in citation impact. Bradford Law analysis was considered as a science mapping to categorize journals based on core and peripheral relevance, the Law of Lotka analysis of the author's productivity distribution, and the analysis of key word co-occurrence and trend topic were taken to visualize the intellectual structure and temporal development of AI management research.

Results and Discussion

4.1 Publication Growth and Output Trends

The bibliometric analysis indicates the presence of a strong and steep increase curve in the number of AI-related publications in the business and management literature in the period 2010-2025. The level of publication activity was rather low until the mid-2010s, and it is typical of the early development of AI applications in the organizational setting. As of 2020, a step-shifting point can be spotted, due to the COVID-19 pandemic, which spurred the rapid digitization of organizations, and the maturation of machine learning systems open to non-specialist researchers. This epoch is described by Lee and Trimi (2020) as a convergence innovation, in which AI, IoT, and big data technologies come together to develop compounding organizational capabilities. Krishnamurthy (2020) also cites the pandemic as a structural shock that condensed decades of education and management transformation into months permanently changing the need of digital and AI-literate management research. Figure 1 shows the amount of output in annual publications in the five most leading sources.

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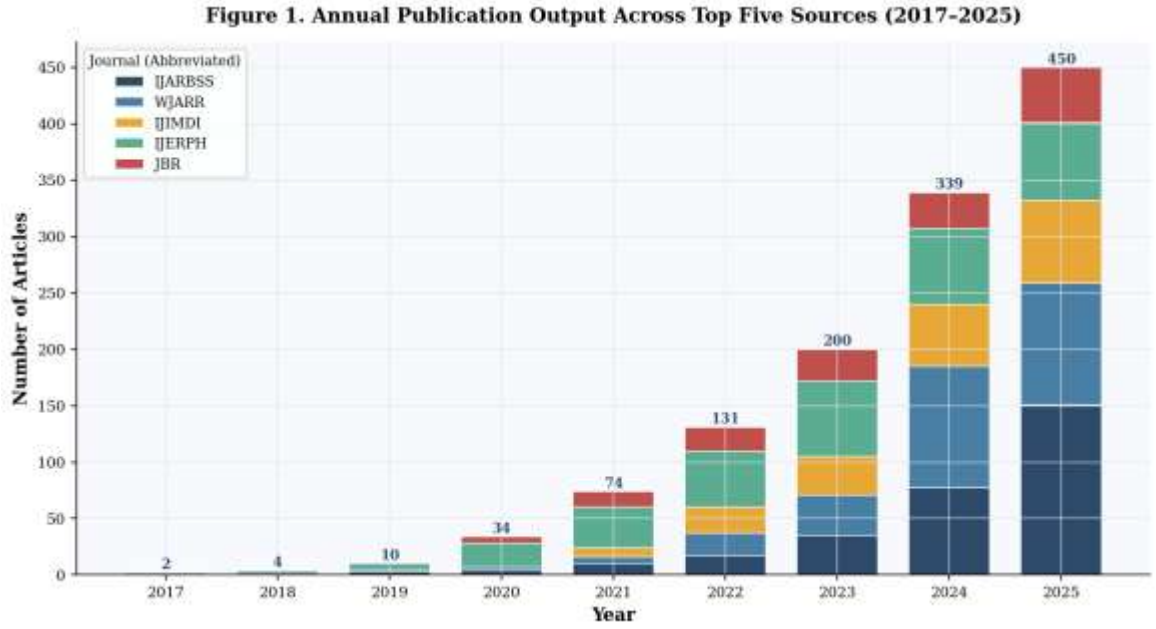


Figure 1. Annual Publication Output Across Top Five Sources (2017–2025)

The stacked bar chart validates the fact that the rate of increased volumes of publications became significant in 2022, and 2024 will be a peak of a number of top journals. This development does not only indicate the broadening of the access of data-analytic instruments that allow a new generation of management researchers to work empirically with AI-related issues.

4.2 Most Relevant Sources and Bradford's Law Analysis

The analysis of the performance indicates an evidently hierarchical journal landscape. The most relevant sources in terms of the number of articles are displayed in Figure 2, whereas the cumulative distribution of Law by Bradford by area of the journals is shown in Figure 10.

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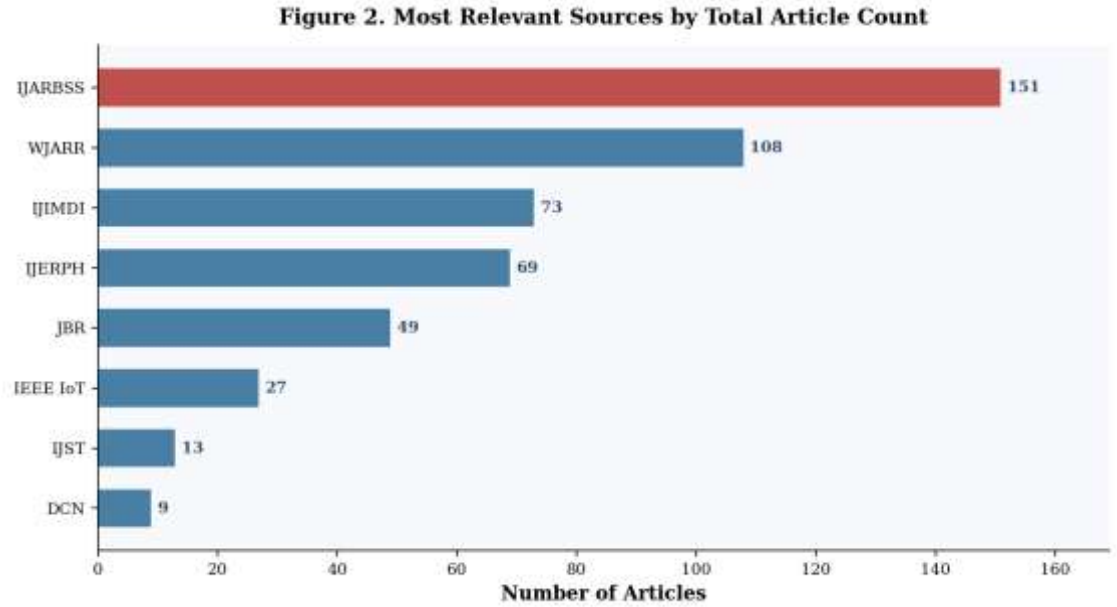


Figure 2. Most Relevant Sources by Total Article Count

Table 1. Most Relevant Sources by Article Count

ource	rticles
ternational Journal of Academic Research in Business and Social Sciences	51
orld Journal of Advanced Research and Reviews	08
ternational Journal of Information Management Data Insights	3
ternational Journal of Environmental Research and Public Health	0
urnal of Business Research	0
EE Internet of Things Journal	7
dian Journal of Science and Technology	3
igital Communications and Networks	

Table 2. Bradford's Law Zone Classification

one	urnal (Abbreviated)	requency	umulative
one 1 (Core)	ARBSS	51	51
one 1 (Core)	JARR	08	59
one 2 (Related)	IMDI	3	62
one 2 (Related)	ERPH	0	01
one 3 (Peripheral)	R	0	60
one 3 (Peripheral)	EE IoT	7	77
one 3 (Peripheral)	ST	3	00
one 3 (Peripheral)	CN		09

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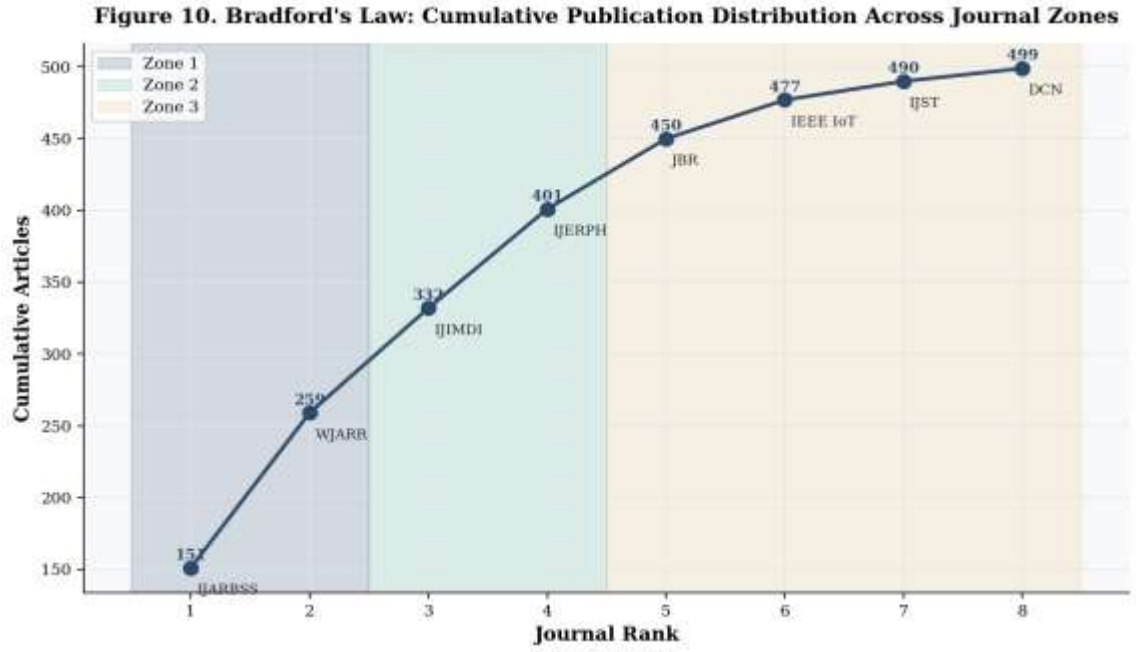


Figure 10. Bradford's Law: Cumulative Publication Distribution Across Journal Zones

The Bradford Law analysis has two journals under the core zone only. These are open access journals with high volumes indicating democratisation of AI scholarship. Nonetheless, the Journal of Business Research (JBR) is located in the periphery area and publishes high-impact scholarship of AI strategy and organization. As an example, Sjodin et al. (2021), Makarius et al. (2020), Braganza et al. (2020) and Mariani and Dwivedi (2024), respectively, are all present in JBR and have been some of the most heavily cited to date on AI business model innovation, sociotechnical AI adoption frameworks, impact of AI on employment, and governance of generative AI respectively. In the same way, the International Journal of Information Management Data Insights (IJIMDI) in Zone 2, which has been in operation a bit longer, which releases seminal reviews on AI in marketing (Verma et al., 2021) and AI in human resource management (Votto et al., 2021) have created a significant citation effect even though this journal is relatively new.

4.3 Author Productivity and Lotka's Law

Author-level analysis determines the most prolific authors of the AI management literature. Figure 9 shows the Law of Lotka, and author productivity is observed versus expected inversely square.

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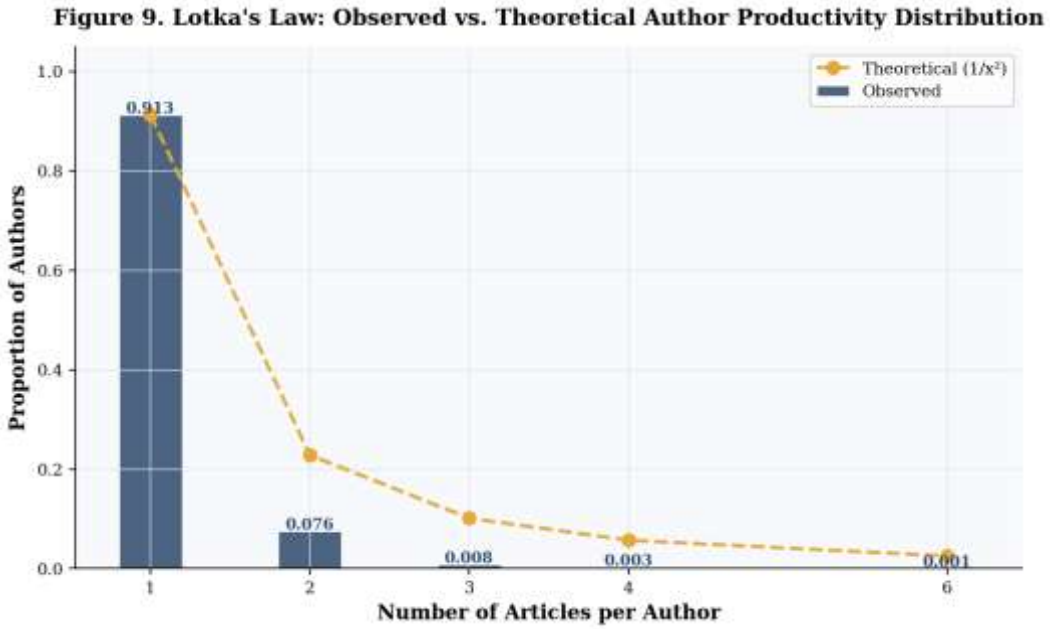


Figure 9. Lotka's Law: Observed vs. Theoretical Author Productivity Distribution

Table 3. Most Relevant Authors by Article Count

uthor	rticles	rticles (Fractionalized)
UMAR A		23
CHARYA UR		55
ASHIM H		67
NWUZULIKE OC		20
AY S		20
ANG X		53
DEWUSI AO		87
AUD P		95
AUST O		48
MAIL NL		03
IM Y		79
ARIDA V		75
ASDI RM		00
ERMA S		83
ANG J		50

Table 4. Lotka's Law: Author Productivity Distribution

rticles per Author	umber of Authors	roportion (%)
	486	.3%
	23	6%
	6	8%
		3%
		1%

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The analysis of the Lotka Law confirms that 91.3% of the authors made but a single publication, which is an inverse-square characteristic of mature scientific fields. Verma et al. (2021) systematic review of AI in marketing is one of the most impactful studies to include in the dataset with 659 citations. Votto et al. (2021) and Rawat et al. (2021) also created an extremely cited systematic review of AI in tactical HRM (270 citations) and machine learning-based decision support in insurance (138 citations) respectively. The large percentage of fractionalized article counts of HASHIM H is associated with mostly unique-author articles to the situation of education management- a sub-discipline that is gaining more and more academic interest in the application of AI in classroom and institutional settings.

4.4 Country-Level Scientific Production and Citation Impact

An analysis on the country level brings out a hierarchically organized but geographically varied research terrain. Figures 3, 4 and 5 show country scientific production, citation impact and production over time respectively.

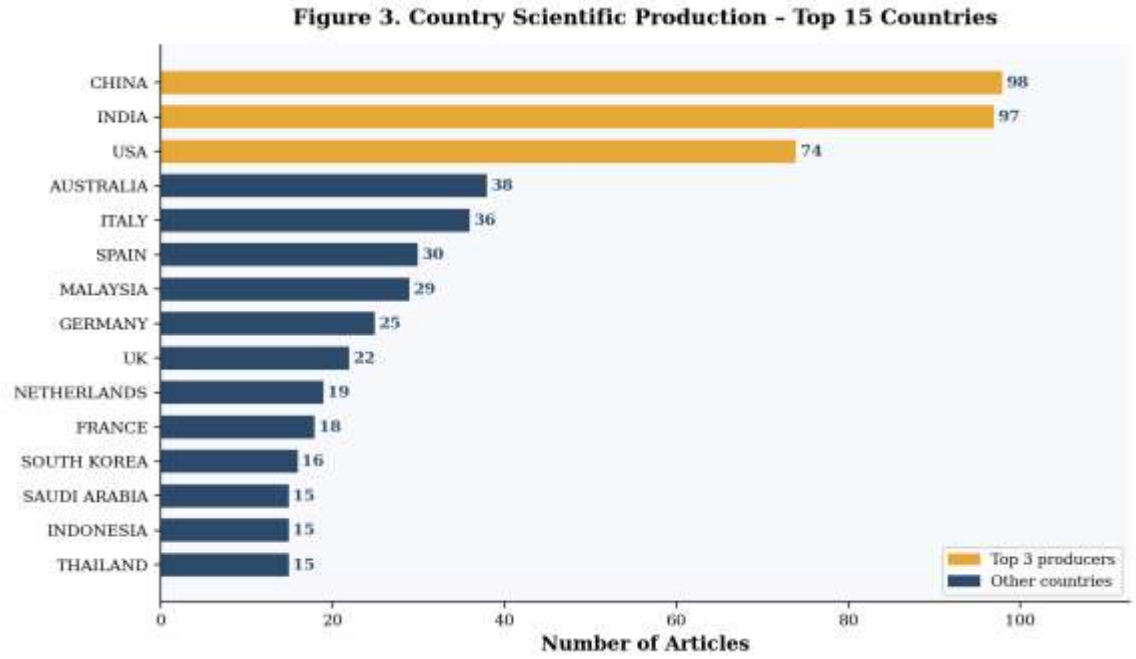


Figure 3. Country Scientific Production: Top 15 Countries

Table 5. Scientific Production by Country (Top 15)

ountry	rticles
hina	3

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dia	7
SA	4
ustralia	3
aly	3
ain	0
alaysia	0
ermany	3
K	2
etherlands	0
rance	3
uth Korea	3
donesia	3
udi Arabia	3
hailand	3

Figure 4. Country Citation Impact: Total Citations vs. Average Citations per Article

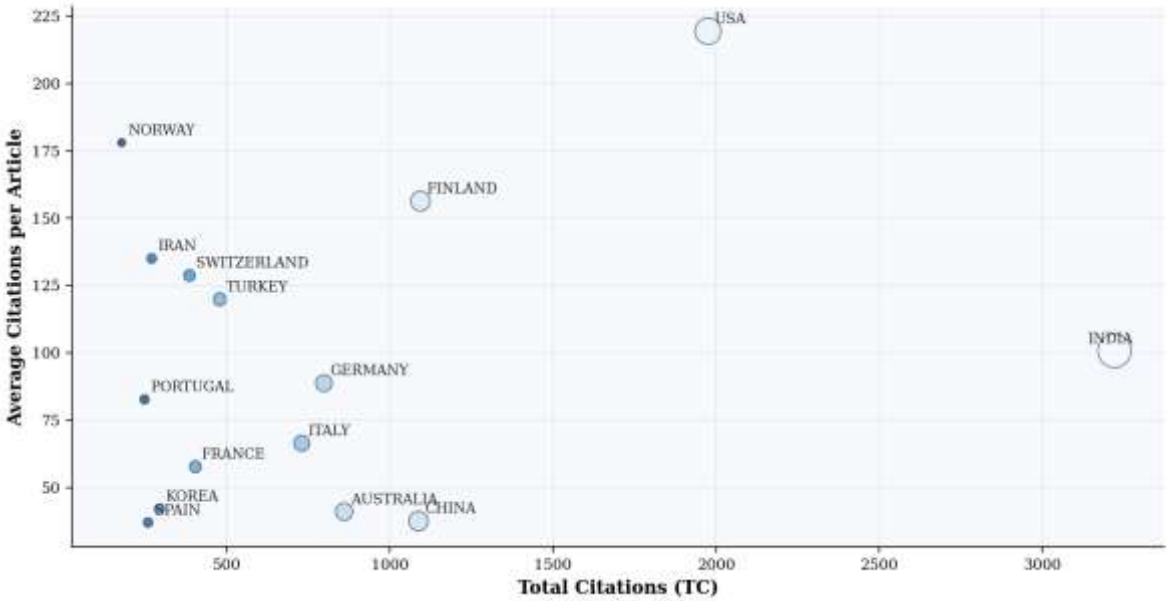


Figure 4. Country Citation Impact: Total Citations vs. Average Citations per Article

Table 6. Most Cited Countries by Total Citations and Average Citations per Article

ountry	otal Citations (TC)	vg. Citations per Article
dia	221	0.7
SA	975	9.4
nland	094	6.3
hina	088	7.5
ustralia	60	.0
ermany	98	3.7
aly	60	5.4
urkey	79	9.8
rance	04	7.7

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vitzerland	36	28.7
orea	04	2.0
an	70	35.0
ain	59	7.0
rtugal	48	2.7
orway	78	78.0

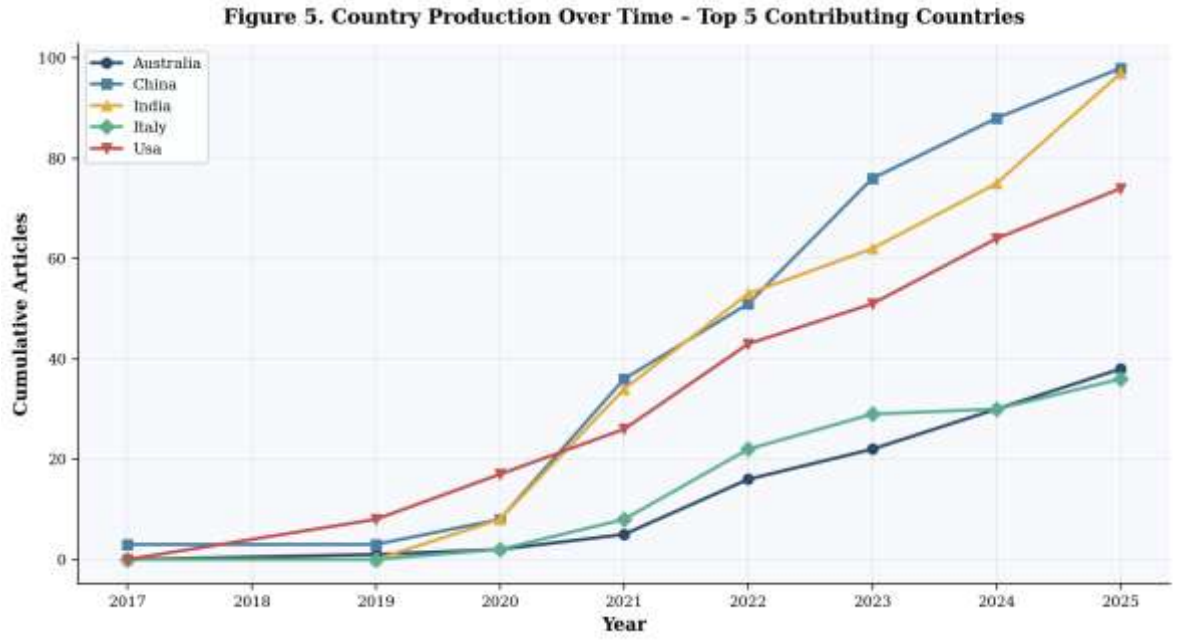


Figure 5. Country Production Over Time: Top 5 Contributing Countries

China and India are the leader in raw publication. The USA produces the largest average citation impact (219.4 per article) indicating the existence of high impact scholarship in major institutions in the US. The citation bubble chart (Figure 4) shows that some of the mid-sized national research systems, such as Norway, Iran, Switzerland, are over-performing based on their volume in average citation impact. It is indicative of the trend in individual contributions with the highest number of citations like Habibzadeh et al. (2019) by Swiss-affiliated authors (399 citations) and Chamola et al. (2020) by Indian institutions (138 citations) on the topic of disaster and pandemic management through machine learning. As Figure 5 shows, the production-over-time chart shows increasing growth in all five countries at the top of the rating in 2021, with China showing the steepest curve.

4.5 Keyword Analysis and Thematic Evolution

The frequency and trend analysis of the keywords will give an overview of the thematic scenario. The most common keywords, the frequency of the keywords with time and the trend

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topics are shown in figures 6, 7 and 8 respectively.

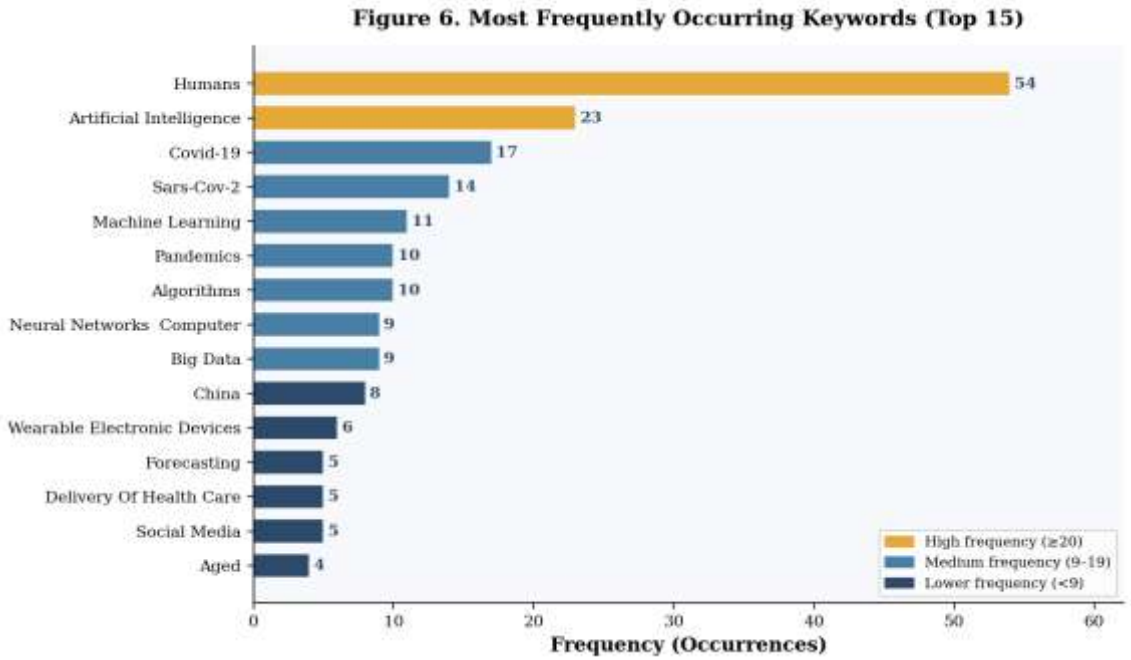


Figure 6. Most Frequently Occurring Keywords (Top 15)

Table 7. Most Frequently Occurring Keywords

eyword	ccurrences
umans	
rtificial Intelligence	
ovid-19	
rs-Cov-2	
achine Learning	
lgorithms	
ndemics	
g Data	
eural Networks / Computer	
hina	
earable Electronic Devices	
elivery of Health Care	
orecasting	
ocial Media	
ged	

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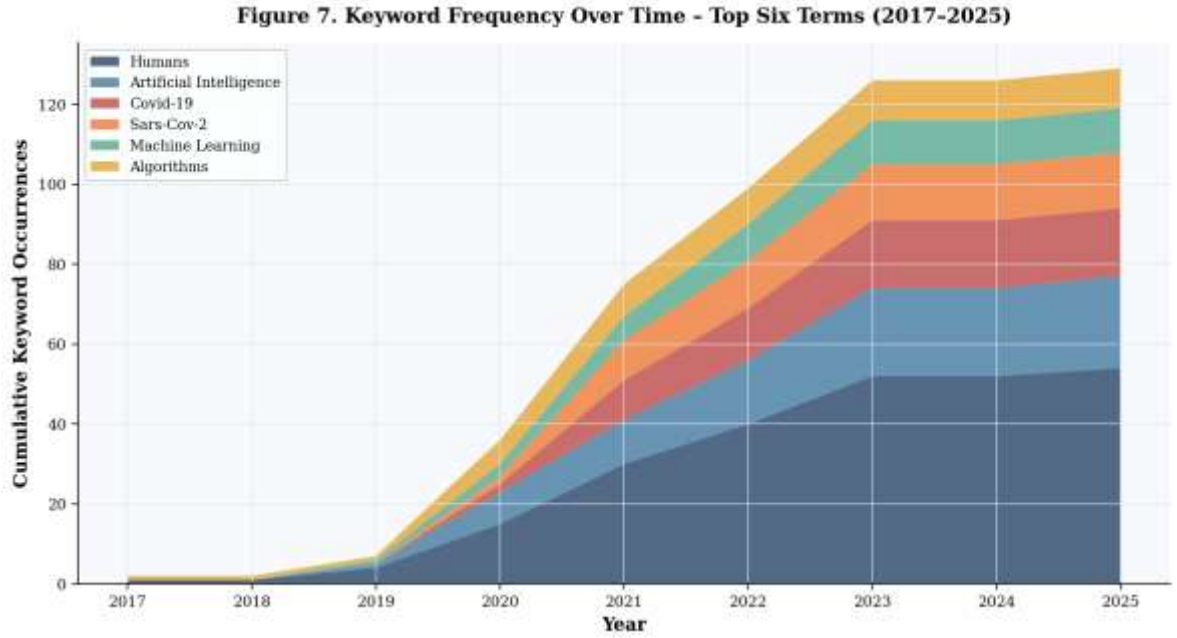


Figure 7. Keyword Frequency Over Time – Top Six Terms (2017–2025)

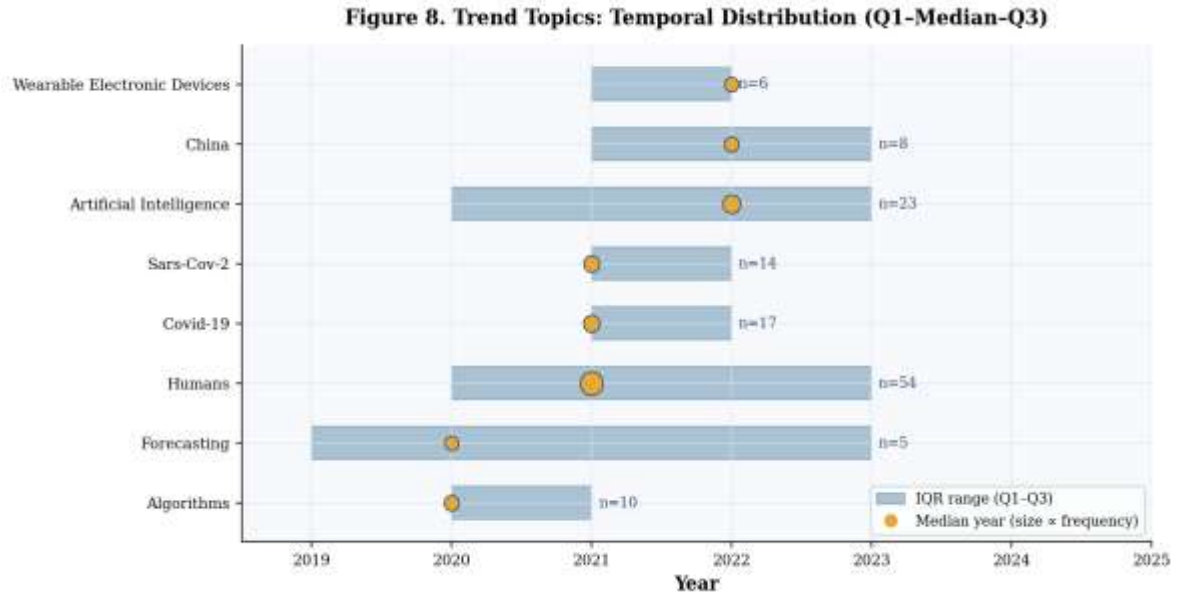


Figure 8. Trend Topics: Temporal Distribution (Q1–Median–Q3)

Table 8. Trend Topics by Year

erm	requency	ear Q1	ear Median	ear Q3
gorithms	)	)20	)20	)21
recasting		)19	)20	)23
umans	4	)20	)21	)23

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ovid-19	7	)21	)21	)22
rs-Cov-2	4	)21	)21	)22
rtificial Intelligence	3	)20	)22	)23
hina		)21	)22	)23
earable Electronic Devices		)21	)22	)22

The keyword frequency bar chart (Figure 6) supports the fact that the keyword Human is used most frequently (n=501), as many health-management publications involving MeSH terminology that use human subjects as a standard phenomenon are present in the search results. Contributions to the MeSH-driven prevalence of the keywords terms, as an example, include Agbehadji et al. (2020) on AI and COVID-19 detection, Abdulkareem et al. (2021) on ML-IoT hospital systems, and Chamola et al. (2020) on machine learning to detect pandemic management.

As the stacked area chart (Figure 7) shows, the keywords AI and machine learning began to be used more actively starting in 2020 along with the COVID-19 related keywords showing the impact of the pandemic on the interdisciplinary use of AI tools in managing health systems. Figure 8 shows that the trend topic timeline indicates the temporal concentration of COVID-19 and SARS-CoV-2 in the past year (2021-2022). The explicit keyword of the term Artificial Intelligence presents a later median year of 2022, which is a sign of a maturing discourse. The emergence of wearable electronic devices as a new trend of 2021-2022 is an indicative of the increasing research on IoT-enabled health monitoring, of which the survey of healthcare IoT architecture by Habibzadeh et al. (2019) and the comprehensive review of integrated sensing and communication technologies to use in the IoT application are well-representative studies. The prevalence of algorithmic and forecasting terms in 2019-2020 is the effect of the early-pandemic spike in AI-assisted epidemiological prediction recorded by publications like Mariani et al. (2023) on AI-powered conversational agents and Cheng et al. (2023), on AI to power UAV-assisted IoT interactions.

Conclusion

In this study, a systematic bibliometric analysis of AI research in business and management has been introduced based on about 501 peer-reviewed publications in the Dimensions database (2010-2025). A number of substantive contributions are developed. First, the analysis records the exponential increase in publications since the year 2020, and COVID-19 pandemic was reported as a structural inflection point where the demand of AI management

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scholarship shifted (Krishnamurthy, 2020; Lee and Trimi, 2020). Second, the Law analysis of Bradford indicates the coexistence of two-track publication models: as democratizing conduits, high-volume open-access journals are found; as low-volume yet high-impact outlets, landmark AI business model studies (Sjodin et al., 2021), sociotechnical AI adoption studies (Makarius et al., 2020), and AI governance studies (Lobschat et al., 2021) are found. Third, the analysis reveals that there is a large asymmetry in the volume of national scientific production and impact on citation, as the United States has much higher average citations per article even though it is in the third place in terms of volume. Fourth, the thematic clusters are identified in terms of key words and trends (such as machine learning applications and big data analytics and healthcare AI and human-AI interaction and digital marketing) with Verma et al. (2021), Herath and Mittal (2022), and Langley et al., (2021) being the pioneering works in their substream. Fifth, the law of Lotka proves the productivity of authors to be inverse squarish as it is a typical feature of mature scientific spheres.

Limitation and Future Direction

There are a number of limitations associated with this study. The coverage bias occurs due to the use of Dimensions as a single database. The limitation on English-language publications can also result in a deficit of research groups. The peer-reviewed journal articles limit the inclusion of conference proceedings and working papers that might include much early work, especially in a fast-moving field such as generative AI where Gupta et al. (2024) mention that an academic establishment can lag industry progress by several years. Despite these shortcomings, the study offers a rigorous and extensive methodological basis of the intellectual landscape of AI management research.

The results indicate that there are a number of areas, which can be explored in future research. First, the AI ethical and governance are underexpressed in the data in comparison with their practical urgency. Mariani and Dwivedi (2024) explicitly demand accountability and responsible innovation models of generative AI, whereas Lobschat et al. (2021) believe that corporate digital responsibility should be institutionalized and not voluntary. There is limited empirical management research on the mechanisms governing AI systems in high-stakes areas that organizations develop. Second, with AI management research focused in large, resource-intensive organizations in developed economies, there remains much unexplored on the

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experiences of SMEs and organizations in emerging markets. Third, a significant number of cross-sectional studies are the primary sources because this limitation hinders the cause-effect conclusions regarding the sustainability of AI-based benefits even as demonstrated by Knudsen et al. (2021). Fourth, the fact that the sub-stream of healthcare management that was observed to be strong in the dataset (Abdulkareem et al., 2021; Agbehadji et al., 2020; Habibzadeh et al., 2019) opens the space of more profound cross-disciplinary synthesis of management scholars and health services researchers in the context of AI governance in clinical contexts.

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