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A BIBLIOMETRIC ANALYSIS OF ORGANIZATIONAL AMBIDEXTERITY: TRENDS, THEMES, AND INTELLECTUAL STRUCTURE

Hina Shoukat [1], Dr. Farida Faisal [2], Dr. Sidra Akhtar [3], Prof. Dr. Muhammad Hanif [4]

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Affiliations:

[1] PhD Research Scholar, University Institute of Management Sciences, PMAS Arid Agriculture University, Rawalpindi, Punjab, Pakistan
Email: hinas299@gmail.com

[2] Director/Associate Professor, University Institute of Management Sciences, PMAS Arid Agriculture University, Rawalpindi, Punjab, Pakistan
Email: farida.faisal@uaar.edu.pk

[3] Assistant Professor, University Institute of Management Sciences, PMAS Arid Agriculture University, Rawalpindi, Punjab, Pakistan
Email: sidraakhtar66@uaar.edu.pk

[4] Professor/Director, Department of Statistics, University Institute of Management Sciences, PMAS Arid Agriculture University, Rawalpindi, Punjab, Pakistan
Email: hanif@uaar.edu.pk

Corresponding Author's Email:

[1] hajisoysayali@yahoo.com

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Abstract

The paper examines the dynamics of organizational ambidexterity through a bibliometrics trend over a period of more than five decades (1974 to 2025). Based on a sample of 3,678 academic publications published in 963 journals, the study will analyse the development of publications, the contribution of various countries, institutional affiliation, and citation styles to reveal the changing intellectual framework in the discipline. At a rate of 11.06 per annum with the co-authorship ratio on the international level rising to 32.38, the results reveal the growth of the ambidexterity research as well as its globalization.

Using bibliometric mapping and citation analysis, the study addresses three core research questions: (1) how has global scientific production on ambidexterity evolved over time? (2) Which countries, institutions, and journals have contributed most significantly to advancing the field? (3) What are the intellectual and citation patterns that shape the theoretical and practical discourse on ambidexterity? Findings indicate that USA and China lead in terms of publication volume whereas other countries such as Switzerland and the Netherlands have a disproportionate impact in terms of citation. Besides, the university of Alicante and university of science and technology of China become the most dominating affiliations with knowledge-based systems and journal of business research being the most powerful publication outlets. The research study has a contribution to the literature by bridging a gap in the research on mapping the global trend of ambidexterity research in a systematic manner and establishing the emerging trends. Combining the aspects of productivity, collaboration, and citation impact, it brings to the fore the interaction between the already-existing foundations and the streams of inquiry that are emerging. The results are important to the scholars, practitioners, and policymakers to learn not just the direction that the ambidexterity research has taken but also where it is going to lead to, providing a roadmap to future theoretical development and cross-disciplinary integration.

Keywords: Organizational Ambidexterity, Bibliometric Analysis, Citation Analysis, Scientific Production, Research Trends

1. Introduction

Organizational ambidexterity, the ability of firms to venture into new opportunities and leverage on existing competencies have emerged as one of the most powerful constructs in management and organizational studies with strategic management, leadership, innovation, knowledge systems and dynamic capabilities being some of the applications. The notion of ambidexterity has come to be a handy tool in both theorizing and managing the organizational adaptability, resilience, and long-term performance in the present-day environment of digital transformation, global competition, and sustainability.

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This twin focus which balances efficiency and innovation has become the staple of the theoretical enquiry and practice of management. Despite the significant scholarly interest in the concept of ambidexterity in the last 50 years and the resulting wide variety of literature, the theoretical basis of the concept, its performance implications, and antecedents in management, as well as synthesis of the intellectual development, collaborative patterns, and new themes are underrepresented. The majority of the previous reviews are narrative or conceptual in nature, without a thorough bibliometric overview that allows tracing how the field has evolved over time. This leaves a major gap in research: the lack of the comprehensive, data-driven overview that connects the productivity, impact, collaboration, and thematic evolution.

In order to fill this gap, the current study uses bibliometric analysis of 3,678 publications published between 1974 and 2025 to track the trends, intellectual structure, and global dynamics of the ambidexterity research and provide a single, unified picture of the direction the research took and where it is heading. The study answers three major research questions: (1) How has global scientific production on ambidexterity evolved over time? (2) Which countries, institutions, and journals have contributed most significantly to advancing the field? (3) What are the intellectual and citation patterns that shape the theoretical and practical discourse on ambidexterity?

Review of Literature

The notion of organizational ambidexterity is based on the wider domain of organizational theory and innovation management. This was popularized by the original efforts of Tushman and O Reilly (1996) who contended that organizations should strike a balance between the competing demands of the exploration, the pursuit of new knowledge, innovation, and adaptability and the exploitation of the available resources, capabilities and efficiencies. This bifurcated ability was theorized as a key to survival in the dynamic and uncertain environments in the long-term. The initial studies in this field were more concerned with theoretical development, discussing the ways in which firms might structurally divide exploration and exploitation or combine them through contextual mechanisms.

Some of the potential future research directions of this study include: First, the growing convergence between ambidexterity and digital transformation and the new technologies, including artificial intelligence, machine learning, big data analytics, and automation, may be investigated further, specifically how these technologies may assist firms to form ambidextrous capabilities, how they may balance exploration and exploitation by using data-driven decision-making and adaptive innovation systems (Mirjalili, 2016; Faramarz et al., 2020), and how digital infrastructures are part of ambidextrous organizational cultures for achieving both competitive advantage and technological adaptability in long run.

Second, the area of ambidexterity and sustainability and the circular economy are not developed yet, and there is a research gap to study how ambidextrous strategies can facilitate sustainable innovation and the creation of circular economy. Despite this remarkable advancement, literature is divided in many areas and journals, not only because of the diversity and complexity of the concept and high theoretical foundations of the foundational literature, but also because of the emergent applications, methodological developments, and evolving contexts. The bibliometric method can thus give a useful map of the intellectual framework of the study of ambidexterity, important contributions, and thematic evolution over the years.

Study Design

The research uses a three-step bibliometric and scientometric process Paltrinieri et al. (2019) which involves (1) a systematic search of the databases in the field of interest, (2) the use of inclusion criteria (subject area, publication stage, and language), and (3) bibliometric and network analysis to evaluate the performance of publications, citation patterns, collaboration networks, and thematic clusters. The methodological paradigm of the present research is rigorous and reproducible and gives a full mapping of the intellectual and thematic structure of the discipline.

Data Election Strategy

The information was obtained in the Scopus database of Elsevier, the largest multidisciplinary index of peer-reviewed scholarly journals, books, and conference proceedings Goodell et al. (2021) and Kent Baker et al. (2020). The bibliometric review of Scopus has been applied in numerous innovations, leadership, and management areas Chalissery et al. (2023) and Losse and Geissdoerfer (2021), which is why it is the best

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source to use in this study. The search was performed using the search terms as key words (Table 1) and the keywords included ambidexterity and its associated constructions; this resulted in 19,115 documents initially.

The first search was narrowed down to the topic area of Business, Management, and Accounting, and subsequently a further narrowing down to final stage publications, which provided 3,742 documents. Lastly, the English language filter was used to end up with a final number of 3,678 publications. To further limit the search to central themes, a secondary key word filtering was done using author keywords (DE) and Keywords Plus (ID), including, among others, ambidexterity, organizational ambidexterity, ambidextrous leadership, exploration and exploitation, contextual ambidexterity, innovation ambidexterity and individual ambidexterity.

This filtered collection produced 2,172 documents, and they were analysed in terms of thematic and intellectual structure.

Table 1

Data Selection Strategy

Step	Query wording / Filter	Documents retrieved	Final set
Initial Search	TITLE-ABS-KEY (“ambidexterity” OR “organizational ambidexterity” OR “exploration and exploitation” OR “ambidextrous leadership” … etc.)	19,115	–
Subject Area Filter	LIMIT-TO (SUBJAREA, “BUSI”)	3,868	–
Publication Stage	LIMIT-TO (PUBSTAGE, “final”)	3,742	–
Language Filter	LIMIT-TO (LANGUAGE, “English”)	3,678	3,678
Keyword Refinement	LIMIT-TO (EXACTKEYWORD: “Ambidexterity,” “Exploration,” “Exploitation,” “Organizational Ambidexterity,” etc.)	2,172	2,172

The dual approach broad dataset 3,678 documents for general performance analysis and refined dataset 2,172 documents for thematic analysis ensured both comprehensive coverage and thematic precision.

Tools of Analysis

The analysis of data was performed with a mixture of bibliometric and scientometric tools. Co-authorship networks, co-occurrence maps of keywords, and co-citation structures of journals were built and visualized using VOSviewer van Eck and Waltman (2014). Statistical calculations and descriptive performance measures including annual growth rate, citation averages, and collaboration indices were done with Bibliometrix (R package). Microsoft Excel was used to develop charts and tabular summaries of publication trends, country output and institutional contribution. This combined set of tools offered quantitative performance analysis and thematic cluster mapping.

Type of analysis

Four complementary types of analysis were conducted:

1. **Performance analysis** – records publication growth patterns, most popular journals, authors, and institutions.
2. **Citation analysis** – the most influential documents, authors, and countries are identified based on the number of citations and normalized measures.
3. **Collaboration analysis** – analysis of co-authoring networks, international collaboration rates and institutional collaborations.
4. **Content and network analysis** – mapping of co-occurrence of keywords, clustering of thematic areas, and visualization of the intellectual structure of ambidexterity research.

The combination of these analyses allowed gaining a comprehensive picture of the ambidexterity research field, providing information about its development, intellectual background, and future research perspectives.

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Performance Analysis

Main Information about Data

Table 1

Data Information

Description	Results
Main Information About Data	
Timespan	1974:2025
Sources (Journals, Books, etc)	963
Documents	3678
Annual Growth Rate %	11.06
Document Average Age	6.42
Average citations per doc	51.86
References	189448
Document Contents	
Keywords Plus (ID)	5941
Author's Keywords (DE)	7686
Authors	
Authors	7189
Authors of single-authored docs	419
Authors Collaboration	
Single-authored docs	491
Co-Authors per Doc	2.85
International co-authorships %	32.38
Document Types	
article	2925
book	46
book chapter	278
conference paper	273
conference review	18
editorial	13
erratum	11
note	6
retracted	5
review	103

It covers 51 years (1974–2025) with 3,678 documents from 963 publication outlets, ranging from journals, books, and other sources in the field a sign of maturity and diversity), with 8,994 contributing authors (reflecting the collaborative nature of knowledge production, with single-authored papers constituting only 357, and an annual growth rate of 11.06%, which is high compared to the global average in most disciplines, and 27.49% international co-authorship, which often increases research visibility and citation performance by leveraging multiple scholarly networks (average citations per document: 19.49).This amalgamation of long-term output, rising productivity, and global engagement suggests a vibrant and influential scholarly environment with strong potential for sustained impact in the future.

Table 2

Affiliation over Time

Affiliation	Year	Articles
ZHEJIANG UNIVERSITY	2025	46
POLITECNICO DI MILANO	2025	39
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA	2025	56

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UNIVERSITY OF ALICANTE	2025	53
BINA NUSANTARA UNIVERSITY	2025	36
ZHEJIANG UNIVERSITY	2024	44
POLITECNICO DI MILANO	2024	33
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF CHINA	2024	53
UNIVERSITY OF ALICANTE	2024	53
BINA NUSANTARA UNIVERSITY	2024	25

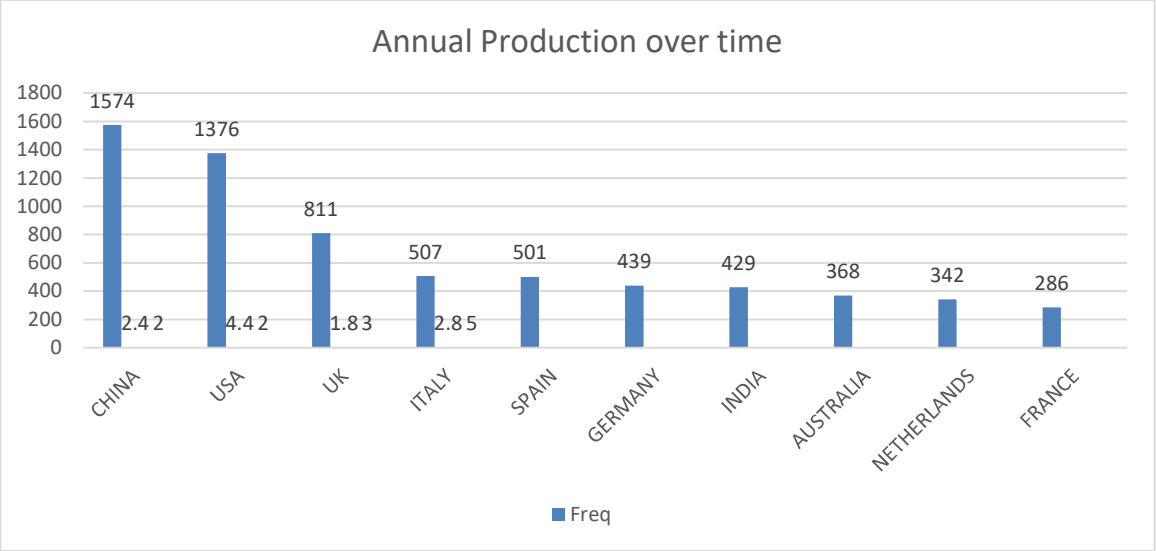
The Affiliation over Time data tends to monitor the publications, authors, or contributions of various institutions or countries over the course of the study. This information helps to identify which universities, research institutes or organizations have occupied a leading role in the field and how their contributions have evolved over time. This metric is often defined in a bibliometric perspective with a small number of institutions initially dominating the research output, then becoming more generally distributed as the field matures and more institutions enter the field with the early leaders continuing to have a strong influence over time but with the growth stage being typified by more institutions contributing annually.

When we match this with the current trends that have already been identified in the Annual Total Citation per Year data, then the rising number of institutions is probably connected with the drastic growth of the volume of publications in the past ten years. Another aspect that tends to be disclosed by such datasets is the globalization of research affiliations. International co-authorship is increasing as indicated by the 27.49% international co-authorship as illustrated above.

In general, the rate affiliations over time will tend to be more institutional (with stronger institutional pairings across countries), forming a more diverse and interconnected academic network, and large research centers (e.g., major world universities or national research centers) will emerge consistently over time, and new institutions will emerge more recently (with a specific funding or strategic research agenda). Lastly, the affiliation patterns would be expected to change to diversification as opposed to concentration of a few large institutions leading the initial work to a wide network of contributors around the world, due to the high rate of growth of the field and its increasing stability as knowledge production is no longer concentrated at a few large institutions but rather spreads out across a wide base of international research actors..

Figure 1

Annual Production Country Contribution Analysis



The dataset demonstrates the most fruitful nations in terms of publications in the field under analysis. The leader is China (1,574 publications), which is indicative of the booming academic publishing in China,

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more government support of research, and the focus on international presence. The USA (1,376 publications) is a close follower and retains its historical position as a world leader in the academic production. UK (811 publications) comes in third, which shows that Europe is well represented and contributes to the overall research output in the world with evidence of high-profile international relationships. There are good Southern European contributions in Italy (507) and Spain (501) which almost have the same outputs as a testament to a regionally active research community and scholarly network. Germany (439 publications) is a solid European contributor with a long history of good academic work. The contribution of India (429 publications) is also an important contribution in Asia, which shows growing momentum and integration into the global scholarly networks. Australia (368 publications) demonstrates a high degree of participation in relation to its population size, which is indicative of internationally linked research institutions. The Netherlands (342) and France (286) also rank highly in the top 10, and are both well-established academic centres, even though the Netherlands is commonly cited to have a high citation impact per output and France is a consistent European scholarly presence.

Statistics indicate that the research in this field is highly internationalized, with Asia (China, India), North America (USA), and Europe (UK, Italy, Spain, Germany, Netherlands, France) making up the bulk of publications, with China and USA making nearly 40 percent of the total, indicating that they are the focal point of the research agenda, and Europe, as a region (UK, Italy, Spain, Germany, Netherlands, France) is making a significant contribution, indicating that the region is playing a balanced and collaborative role in the global research, and that emerging economies such as India and Australia.

Table 3

Annual Citations per Year – Interpretation

Year	MeanTCperArt	N	MeanTCperYear	CitableYears
2025	1.27	211	1.27	1
2024	5.94	409	2.97	2
2023	17.11	325	5.70	3
2022	24.45	364	6.11	4
2021	28.93	287	5.79	5
2020	42.54	329	7.09	6
2019	38.50	274	5.50	7
2018	46.13	216	5.77	8
2017	40.64	188	4.52	9
2016	68.31	190	6.83	10

1. **Recent Years (2024–2025)**: 025 The 211 publications have a low citation per article of 1.27, which is understandable given that the current year is still in progress and it takes time to build citations. The average number of citations per article is 5.94 in 2024, having 409 publications, which is also quite low. This is the citation lag effect, in which the latest papers have not had enough time to receive many citations.
2. **Mid-Term Years (2020–2023):** Publications of 2023 already have 17.11 citation per article, whereas 2022 publications have 24.45 on average and 2021 publications have 28.93 on average. These years of steady growth show that articles generally receive citations 2-4 years after publication, with 2020 showing the highest number of citations per article at 42.54, the most recent years of influence on the articles.
3. **Older Publications (2016–2019)**: 2019 and 2018 have 38.50 and 46.13 citations per article on average, respectively, indicating that their citation accumulation is at the high level. 2017 publications (40.64 per article) are also very influential. 2016 is the highest year with 68.31 citations per article on average. This implies that the 2016 cohort was filled with seminal/highly influential works that are still widely quoted.

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4. **This trend is supported by Citation Dynamics the MeanTCperYear values:** In 2020, papers have an average of 7.09 citations per year, whereas in 2016, the average is 6.83 citations per year, and the effect is still felt. All in all, the older works have a higher MeanTCperArt, although the mid-range years (202022) are at the highest citation growth, and the new year's (20232025) are in the initial growth stage. According to the dataset, there is a typical citation lifecycle: First stage (12 years): low citation rates because of insufficient exposure (20242025). Growth phase (3-6 years): The citations increase fast due to the increasing recognition (2020-2023). Maturity stage (710 years): large number of accumulated citations and consistent annual averages (20162019). The best year is 2016, which means that it has generated foundational research that still has a strong impact on the area. The recent years, though with a low number of citations today, are the direction of the influence in the future and will probably increase in power in the next 2-3 years.

Table 4

Interpretation of Journal Metrics

Author	H index	G index	M index	TC	NP	PY_start
Academia Revista Latinoamericana De Administration	1	1	1	1	1	2025
Business Ethics, The Environment and Responsibility	1	1	1	4	1	2025
Electronic Journal of Business Research Methods	1	1	1	2	1	2025
International Journal of Leadership in Education	1	1	1	7	1	2025
International Journal of Management Science and Engineering Management	1	1	1	11	1	2025
International Journal of Mining, Reclamation and Environment	1	1	1	4	1	2025
Internet of Things (The Netherlands)	1	1	1	1	2	2025
Journal of Global Operations and Strategic Sourcing	1	1	1	5	1	2025
Journal of Marketing Analytics	1	1	1	2	1	2025
Humanities and Social Sciences Communications	2	3	1	11	5	2024

Low h-index, g-index, and m-index Values The majority of the listed journals have h index = 1, g index = 1 and m index = 1, which implies: They are newly indexed or have only begun publication in this research field (2025). The number of publications in this dataset that is citable is only 1 each. Their influence is yet to be felt, with citations building up over time. Citations (TC) and Publications (NP) Although most journals had only 1 article with few citations (117), there are some exceptions: International Journal of Management Science and Engineering Management 1 article with 11 citations, meaning that the journal was quickly adopted in the early days. Also with early visibility, 7 citations, International Journal of Leadership in Education 1 paper. Communications Humanities and Social Sciences 5 papers (starting in 2024), 11 citations, h index = 2, g index = 3 this journal is the one that is accelerating its growth more than others. Emerging Journals in the Field (20242025) The hegemony of 2025 PY start the pre-eminence of 2025 PY start confirms that a large number of outlets have just started to publish on the topic of ambidexterity (your search topic). This is an indication of an increasing research trend with journals in various disciplines (leadership, business ethics, mining, IoT, marketing analytics) discussing the concept. The most promising journal in the dataset to date is the Most Promising Outlet Humanities and Social Sciences Communications with more than one article published, greater h index, and recognizable citations. Probably one of the most important interdisciplinary forums of ambidexterity research. The bibliometric trend indicates that 2025 will be a year of great growth in the ambidexterity research in the journals. Most of the journals are in their infancy, but some are already gaining traction (particularly in the management, leadership, and interdisciplinary journals). A follow-up of these journals in the coming 2-3 years will show which ones become the main publication outlets in this field of research.

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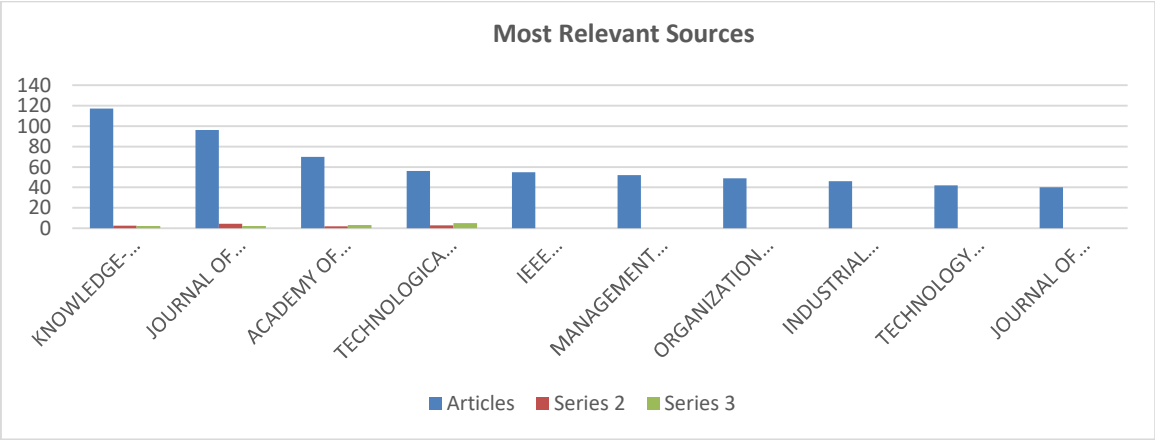
Most Relevant Sources

Figure 2

Most Relevant Sources

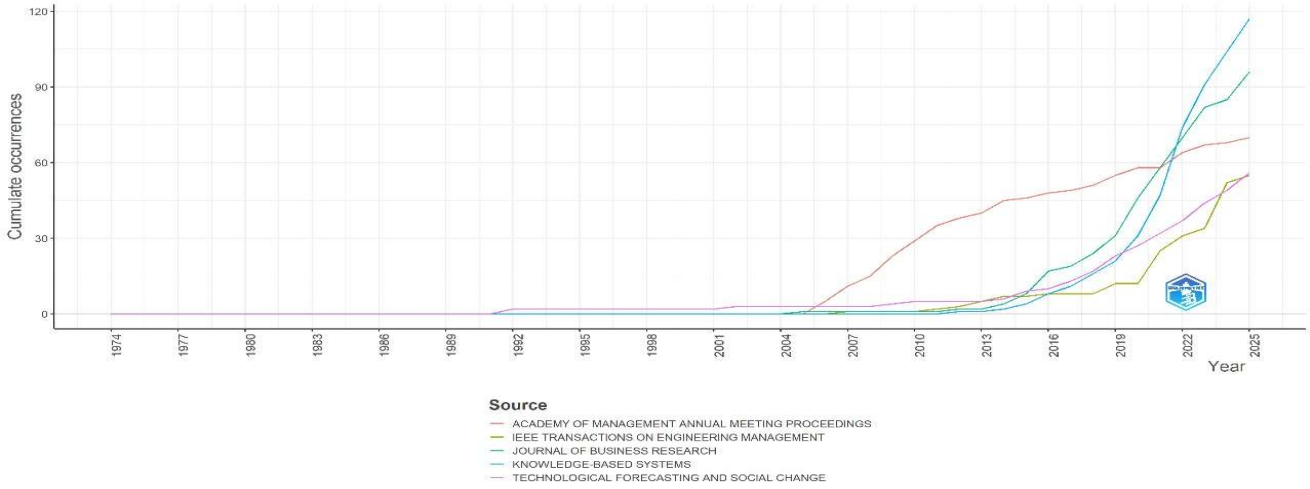


The research dispersion in the journals indicates that the academic research in this area is concentrated in a limited number of journals. The most influential journal is Knowledge-Based Systems with 117 articles in it, which means that this journal plays a significant role as the main platform to spread the research in this field. The Journal of Business Research is the next with 96 articles, as it is an interdisciplinary journal and can be applied to both scholarly and practical settings. Academy of Management Annual Meeting Proceedings is positioned at the third position with 70 contributions, which indicates the significance of conference-based outputs to influence the discussions and develop scholarly debates.

Other important sources are Technological Forecasting and Social Change (56 articles) and IEEE Transactions on Engineering Management (55 articles) which bring out the technological and managerial aspects of this area of study. Other journals like the Management Decision (52 articles), Organization Science (49 articles), and Industrial Marketing Management (46 articles) are also instrumental in the advancement of knowledge by combining the perspectives of decision-making, organizational dynamics, and marketing. Lastly, the Technology Analysis and Strategic Management (42 articles) and the Journal of Knowledge Management (40 articles) also highlight the interdisciplinary character of the field, which is the intersection of technology, strategy, and knowledge practices. Overall, these trends indicate that although some journals control the volume of publications, the distribution of the management, technology, and organizational sciences is interdisciplinary in nature.

Figure 3

Sources' Production Over Time



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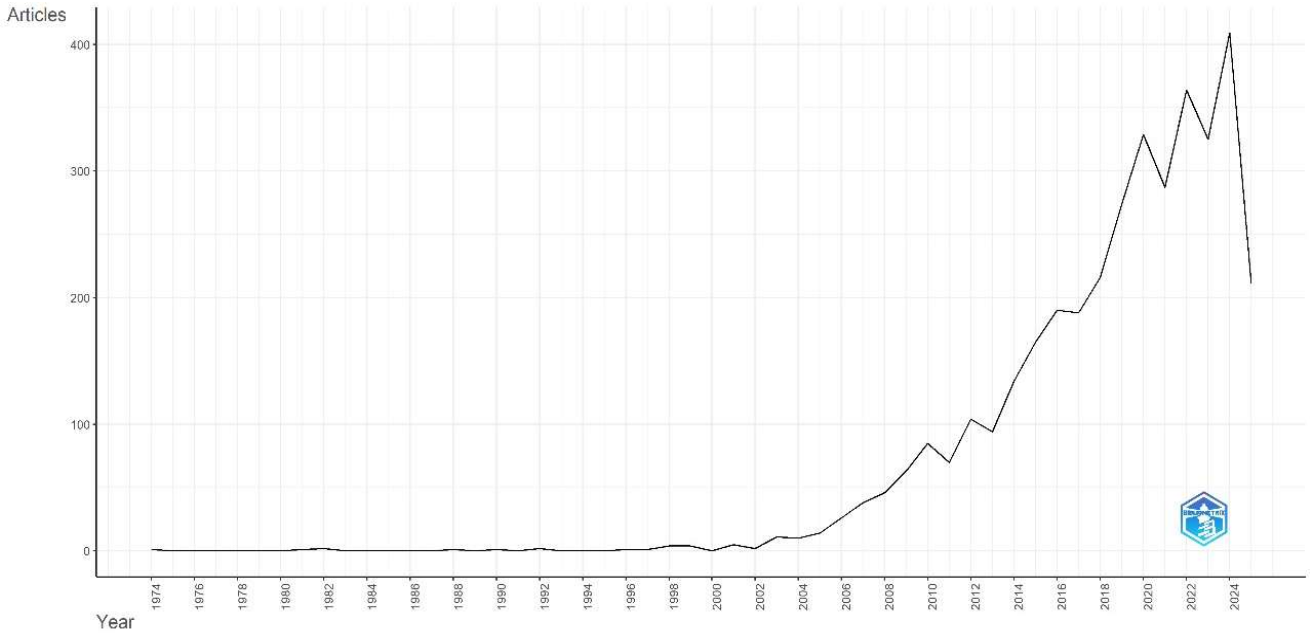
Time-by-source analysis of productivity shows a pattern of increased production in this area since about 20072010, with Technological Forecasting and Social Change leading all other outlets in 2020 and beyond, and with an upward trend in productivity since about 2015, which is why this source is now one of the most popular outlets to publish research on organizational ambidexterity in the digital transformation, sustainability, and innovation forecasting context. This tendency is also indicative of the increased attention of ambidexterity research to future- and cross-disciplinary issues, as even other sources are showing increasing contributions, albeit at much lower rates, such as Academy of Management Annual Meeting Proceedings, IEEE Transactions on Engineering Management, Journal of Business Research, and Knowledge-Based Systems, which concentrate on more specific or traditional issues in management theory, engineering applications and knowledge systems, respectively, but none of which comes anywhere near the sharp rise in the curve of Technological Forecasting and Social Change, which supports the trend towards a greater concentration on the forecasting and technological change in the field of ambidexterity research.

Table 4

Annual Scientific Production



The annual scientific production graph indicates the temporal increase in the volume of research output in the field of organizational ambidexterity: The number of articles published annually was insignificant between 1975 and early 2000s, which is the infancy of the field and the lack of recognition of the research on ambidexterity as a separate field of inquiry, whereas the number of articles started to grow around 2005 indicating the growing scholarly interest and the growing awareness of the research on ambidexterity as a distinct field of study. This increases at an alarming rate since 2010, which is the period when digital transformation, global competitiveness, and innovation management became the key business issues. The sharp growth curve of 2010 to 2017 indicates that the theme of ambidexterity had established and was growing very fast in academic literature in the said period. It is important to note that the data indicates a slight decrease in 2018 after the previous peak, which could indicate either the usual variations in the annual publication cycles or the boundaries of the indexing period of the dataset. However, the general trend indicates the dynamic growth of the field, with the emphasis on organizational ambidexterity as a growing but also more topical research area with a high momentum over the past decade.

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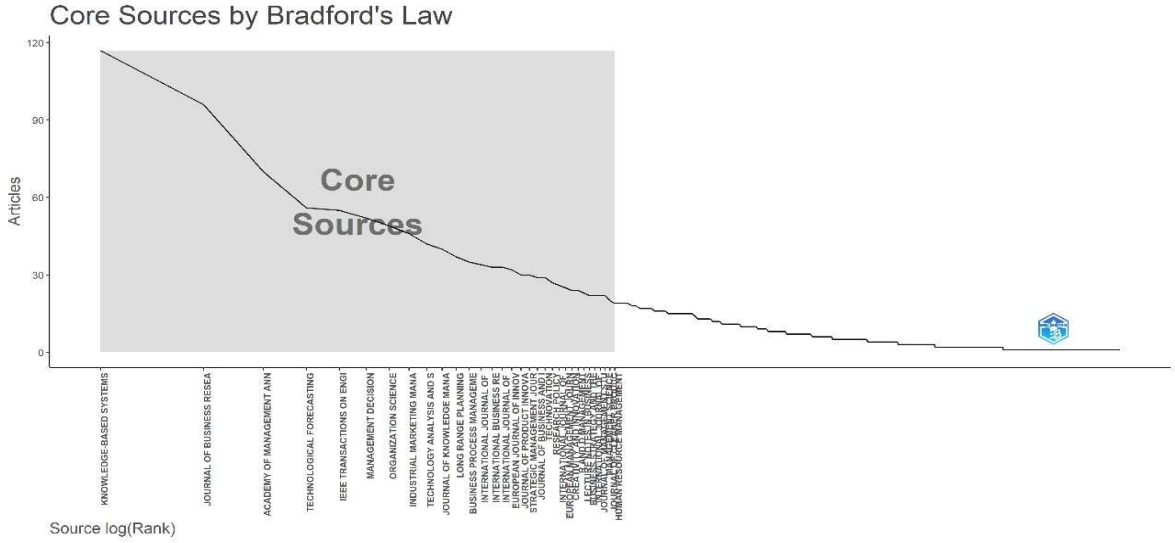
Table 5

Core Sources by Bradford's Law

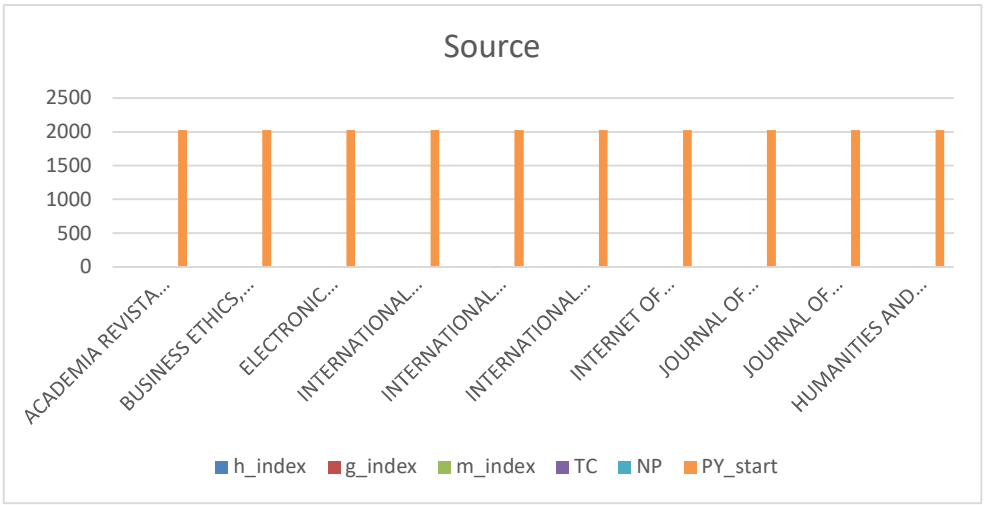


The Bradford Law distribution gives a summary of the distribution of research on organizational ambidexterity in the academic journals. When the number of articles are plotted against the vertical axis and the logarithmic rank of the sources against the horizontal axis, the characteristic curve demonstrates that the majority of publications are made by a small number of journals that are considered core journals, and a long tail of less significant journals that make fewer publications, with the steep initial slope on the curve indicating the dominance of a few high-impact journals as the main outlets of ambidexterity research. Such fundamental sources are probably the journals like Academy of Management Journal, Organization Science, and Strategic Management Journal which play a critical role in the intellectual framework of the discipline.

The curve flattens as the rank increases, and this indicates a wide distribution of articles in many secondary and peripheral journals. Although these sources do not add as many articles to the pool, when combined they broaden the scope of the ambidexterity studies to other fields like engineering, information systems, and applied business studies. This trend validates the Law of Bradford in that research activity is very concentrated in a few influential journals but is also widely distributed in a wide range of secondary outlets. To scholars, this implies that publication in core journals is still important in terms of visibility and impact whereas the wider distribution emphasizes the interdisciplinary nature of the field and the spread of ambidexterity research to other related fields.

Table 5

Source Impact Bibliometrix



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The bibliometric analysis of sources reveals that some journals have recently started to make their contribution to the research field as shown by the relatively low indices. The majority of the listed journals, including Academia Revista Latinoamericana de Administracion, Business Ethics, the Environment and Responsibility, Electronic Journal of Business Research Methods, and International Journal of Leadership in Education, have an h-index, g-index, and m-index of 1, and only one publication per year. This implies that these journals are interesting in the field, but their contributions are still new and have not earned a lot of citation. Similarly, the special outlets like the International Journal of Management Science and Engineering Management and the International Journal of Mining, Reclamation and Environment show low but initial interest in one of the articles and low citation rates, whereas the Internet of Things (Netherlands) shows a somewhat more significant involvement with two publications in 2025, with a low impact of citation.

One article is also available in the Journal of Global Operations and Strategic Sourcing and the Journal of Marketing Analytics, which suggests that these journals are now entering the overlap management and technology territory. With five articles since 2024, an h-index of 2, a g-index of 3, and 11 total citations, Humanities and Social Sciences Communications is doing better than these sources and can grow faster and is more interdisciplinary in linking management disciplines with social sciences.

Citation Analysis

Table 5

Country-wise Total Citations (TC) and Average Article Citations

Country	TC	Average Article Citations
USA	48023	122.50
China	13323	29.50
United Kingdom	12510	57.10
Netherlands	11265	134.10
Australia	8782	79.80
Switzerland	6707	203.20
Italy	5628	42.00
Spain	5329	38.30
Germany	4257	34.90
Canada	3800	60.30

The country-by-country analysis of research citations indicates that the United States has the highest total citations (48,023) and average (122.50) of any country; China has the second-highest total citations (13,323), but a relatively low average (29.50), indicating that the United States is the most productive and has the highest impact of any country. United Kingdom and the Netherlands also play very important roles with 12,510 and 11,265 total citations, respectively. Nevertheless, the Netherlands is the country with the highest average of 134.10 citations per article, indicating that the number of publications is lower, but the impact of each study is very high. Australia has an equal representation of productivity and impact with 8,782 total citations and 79.80 averages per article.

Switzerland has the highest average number of article citations (203.20) even with the lower number of 6,707 citations, which indicates that its research is smaller in size but highly influential. In the meantime, Italy (42.00), Spain (38.30), and Germany (34.90) show consistent contributions with average citation, which shows a steady but minor global impact. Canada has a good balance of output and influence with 3800 total citations and 60.30 average per article, higher than other countries such as Germany and Spain. In general, the statistics indicate that the USA is the largest contributor to research, but Switzerland and the Netherlands are the most successful in terms of quality and per-article impact, which provides a more detailed view of the contribution to research in the world.

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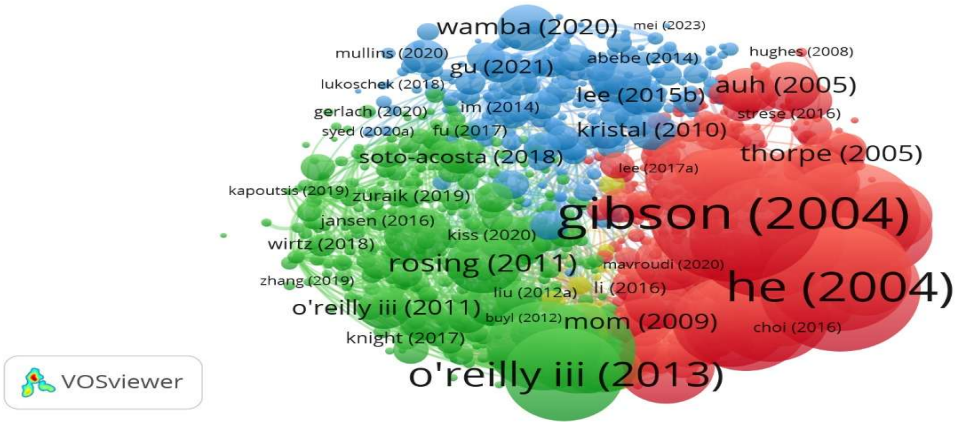
Table 6
Most Global Citied Documents

Paper	DOI	Total Citations	TC per Year	Normalized TC
Mirjalili S, 2016, Knowl Based Syst	10.1016/j.knosys.2015.12.022	4793	479.30	70.17
Tushman Ml, 1996, Calif Manage Rev	10.2307/41165852	3305	110.17	1.00
Gibson CB, 2004, Acad Manage J	10.2307/20159573	3178	144.45	3.12
HE Z-L, 2004, Organ Sci	10.1287/orsc.1040.0078	2839	129.05	2.79
Jansen JJP, 2006, Manage Sci	10.1287/mnsc.1060.0576	2666	133.30	6.83
Gupta AK, 2006, Acad Manage J	10.5465/AMJ.2006.22083026	2432	121.60	6.23
Brown JS, 2001, Organ Sci	10.1287/orsc.12.2.198.10116	2376	95.04	4.10
Faramarzi A, 2020, Knowl Based Syst	10.1016/j.knosys.2019.105190	1967	327.83	46.24
Raisch S, 2008, J Manage	10.1177/0149206308316058	1892	105.11	10.37
O'Reilly III CA, 2013, Acad Manage Perspect	10.5465/amp.2013.0025	1750	134.62	17.63

The analysis of the most highly cited papers highlights both foundational and contemporary contributions that have significantly influenced the field. The paper by Mirjalili (2016) in *Knowledge-Based Systems* stands out with an impressive 4,793 total citations and an exceptional 479.30 citations per year, coupled with the highest normalized TC (70.17). This indicates not only its immense popularity but also its sustained global impact. On the other hand, Tushman ML (1996) in California Management Review, while older and highly cited (3,305 total citations), has a much lower normalized TC (1.00), as a classical but less frequently cited work in contemporary research compared to more recent influential works, many of which were published in the early 2000s, and remain influential e.g., Gibson CB 2004, He Z-L 2004, Brown JS 2001, 2,300–3,100 and yearly citation rates above 90 citations per year, or, as is the case, impactful newer publications e.g., Faramarzi A 2020, 1,967 and 327.83, normalized TC 46.24, showing a rapid rise in influence and recognition in a short period of time and O'Reilly III CA 2013, 17.63, and Raisch S 2008, 10.

Table 6
Citation and Co-citation Network Analysis



VOSviewer produces a citation network visualization of the intellectual structure of organizational ambidexterity research, with each node being a cited reference, the size of the node being the frequency of citation in general, and larger nodes, such as Gibson (2004), He and Wong (2004) and O Reilly III (2013), are foundational to this field due to their central roles in the network, which is further subdivided into distinct color-coded clusters of research topics or streams of research, such as one cluster being the exploration exploitation paradigm from March (1991) and its subsequent development The other cluster appears to be a combination of ambidexterity and innovation: as well as performance results, which can be applied in practice in industries. The distance of nodes illustrates the degree of co-citation i.e. papers frequently cited jointly turn into intellectual ties and illustrate the prevailing schools of thought, and generally, demonstrate that the field

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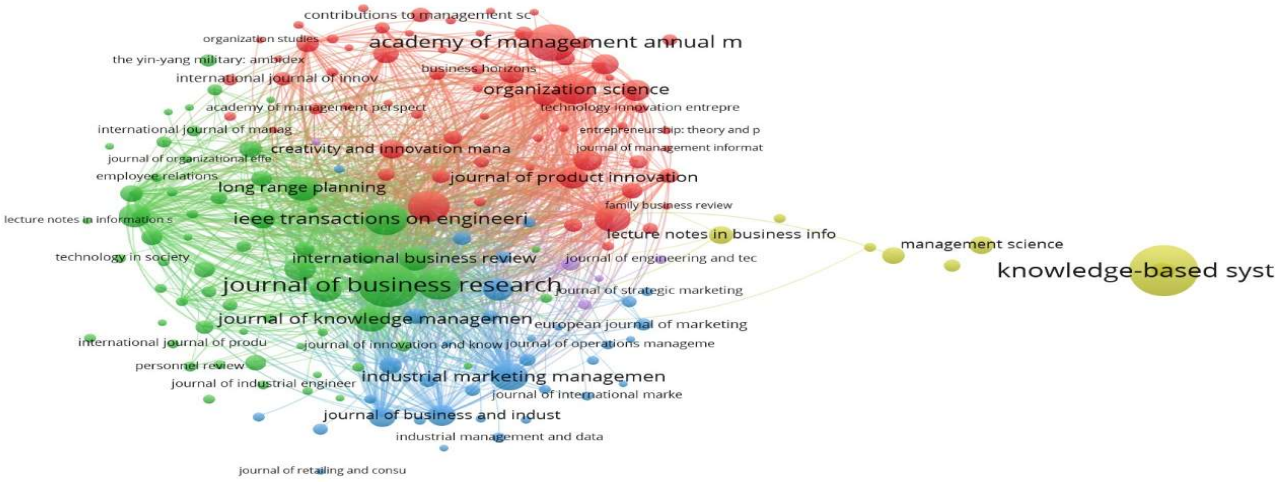
has a small number of works that are the backbone of the field that diverge into other fields.

Table 7

Journal Co-citation Network Analysis



The co-citation map of the journals produced by VOS viewer demonstrates the intellectual base of the ambidexterity studies in terms of the frequency of co-citation of journals, where each node is a journal and the size of the node indicates the frequency and influence of citation where the largest nodes are Academy of Management Annual Meeting Proceedings, Management Science, Organization Science, and Journal of Business Research which seem to be the main sources of theoretical and empirical contribution to the literature. The visualization can be seen to have several color-coded clusters, or communities, of journals that cite each other most. As an example, the theoretical and strategic management foundations of the field are published in one cluster e.g., Academy of Management Journal, Strategic Management Journal, Organization Science, applied and interdisciplinary perspectives are published in another e.g., Knowledge-Based Systems, IEEE Transactions on Engineering Management, and applied business and forecasting perspectives are published in a third e.g., Journal of Business Research, Technological Forecasting and Social Change, all of which now also represent the increasing intersection of ambidexterity with technology and knowledge systems. The network structure reveals that the research on ambidexterity is supported by a mix of both theoretical journals in management and practical interdisciplinary journals, and the high co-citation network between clusters indicates that the discipline is not only theoretically grounded but also becoming more multidisciplinary, cutting across strategic management, organizational behavior, and technology-based business research.

Collaboration Analysis

Table 7

Most Relevant Affiliations

Affiliation	Articles
University of Science and Technology of China	56
University of Alicante	53
Zhejiang University	46
Politecnico Di Milano	39
Bina Nusantara University	36
Notreported	30
Copenhagen Business School	28
University of Granada	28
Cranfield University	27
National University of Singapore	27

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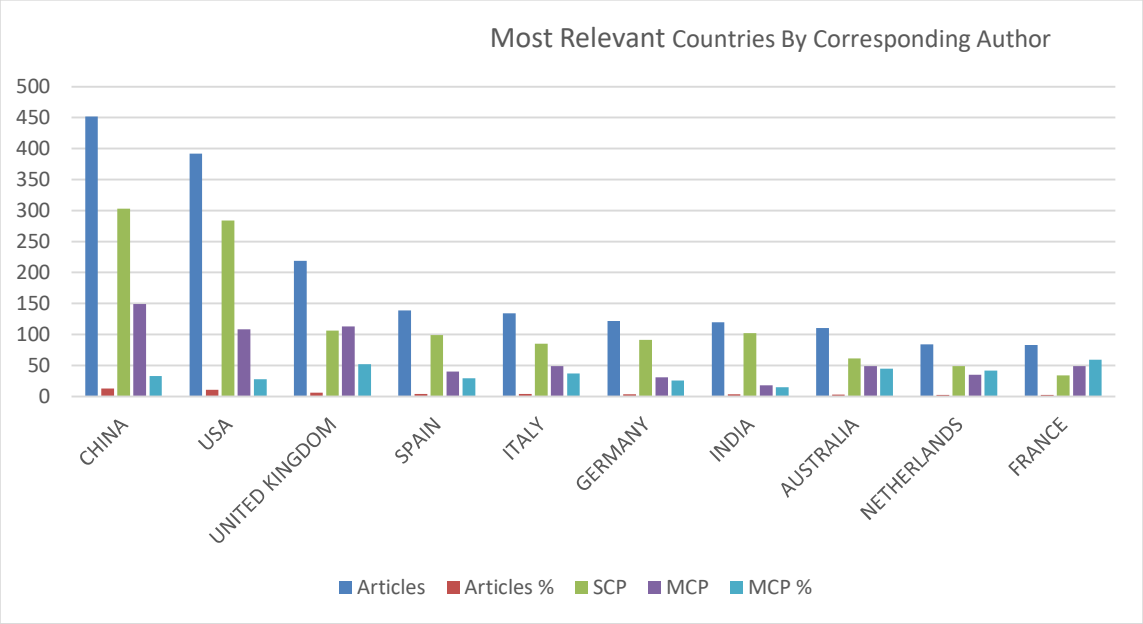
The list of articles published by affiliation indicates the most prominent universities in the field with the University of Science and Technology of China leading with 56 articles, then the University of Alicante with 53 articles, Zhejiang University with 46 articles, and the University of Alicante with 46 articles (the focus on research productivity and impact). European institutions also feature prominently, such as Politecnico di Milano (39 articles) and University of Granada (28 articles), and then Bina Nusantara University (36 articles) of Indonesia as an indicator of the greater participation of Southeast Asia in academic publication, and 30 articles under the affiliation category of Not Reported, which can be either an indication of a lack of reporting practice or an incomplete metadata. Other well-performing schools are Copenhagen Business School (28 articles), Cranfield University (27 articles) and the National University of Singapore (27 articles) which demonstrates the global contribution of the work, in Europe and Asia.

Table 8

Most Relevant Countries by Corresponding Author



The country-by-country contribution analysis indicates the number of articles as well as the level of global collaboration in research. China has the highest number of articles (452 articles or 12.3%), with 303 single-country publications (SCP) and 149 multi-country publications (MCP), providing it with an MCP rate of 33, which is both indicative of its increased globalization and domestic dominance. The USA comes next with 392 articles (10.7%), 108 MCPs (27.6%), which means that the international collaboration rate is slightly lower than in China, but still, it is significant since the USA has an impact on global research. The United Kingdom (219 articles, 6%), has a distinct profile: over half (51.6%) of its work is carried out in collaboration with other countries, which shows that it has a strong culture of networking and partnership-based research.

Other European countries contribute equally, with Spain (139 articles, 28.8% MCP) and Italy (134 articles, 36.6% MCP) having a balanced contribution, whereas Germany (122 articles, MCP 25.4%) has more national research output. India, having 120 articles, is remarkable due to the high percentage of SCP (102), which indicates the existence of a relatively independent research environment and a lower rate of MCP (15), indicating a lack of global integration in comparison with the Western countries. Australia (110 articles) and the Netherlands (84 articles) are the most collaborative countries, as their MCP rates are 44.5% and 41.7% respectively, which highlights their focus on cross-border collaboration. The collaboration intensity is highest in France (83 articles) where almost 59% of the output is international, the highest in this dataset. Overall, these findings imply that China and the USA are the volume leaders whereas the UK, France, Australia, and the Netherlands are the leaders in the international collaboration, which indicates the alternative strategic focus in global research involvement.

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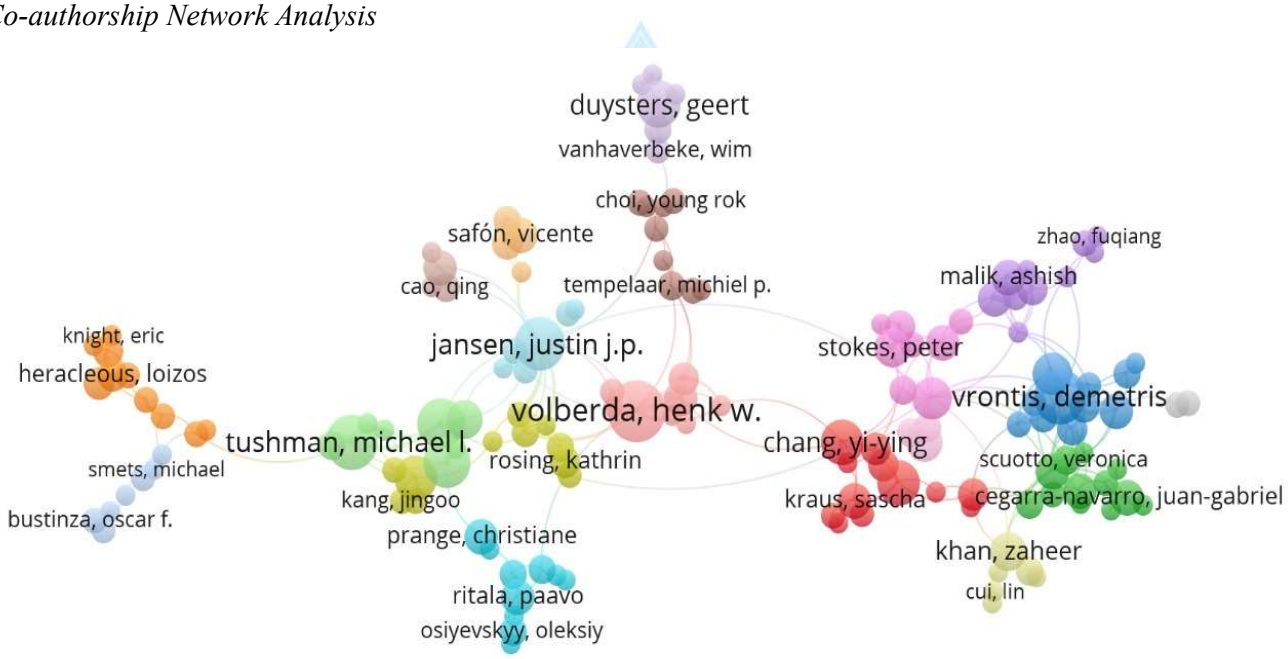
The contributions on the country level demonstrate the number of articles as well as the extent of international cooperation in academic research. China is the first in the list with 452 articles (12.3%), 303 SCP (76.9%), and 149 MCP (33.1%), indicating high level of domestic production and international interaction; the United Kingdom with 219 articles (6%) is unique in its profile, more than half of its work is based on international collaboration, which is a strong networking and partnering research culture. Other European countries contribute equally, with Spain (139 articles, 28.8% MCP) and Italy (134 articles, 36.6% MCP) having a balanced contribution, whereas Germany (122 articles, MCP 25.4%) has more national research output. India, having 120 articles, is remarkable due to the high percentage of SCP (102), which indicates the existence of a relatively independent research environment and a lower rate of MCP (15), indicating a lack of global integration in comparison with the Western countries. Australia (110 articles) and the Netherlands (84 articles) are the most collaborative countries, as their MCP rates are 44.5% and 41.7% respectively, which highlights their focus on cross-border collaboration.

The collaboration intensity is highest in France (83 articles) where almost 59% of the output is international, the highest in this dataset. Overall, these findings indicate that China and the USA are the leaders in terms of the volume, but other countries, such as the UK, France, Australia, and the Netherlands, are the best in terms of promoting international cooperation, which is a sign of different strategic orientations in the global research activity.

Table 9

Co-authorship Network Analysis



The co-authorship map created with the help of VOSviewer gives a visual representation of the collaboration structure of the research on the topic of organizational ambidexterity, which is defined by communities of scholars that collaborate with each other more often than with other researchers (i.e., clusters of nodes where lines between them are thicker), each node representing an author, the size of the node being the productivity (number of publications), and colours representing different clusters of scholars that collaborate more with others within the cluster than with others outside the cluster. As can be observed in the co-authorship map, there are a number of distinct clusters, which hint at the fact that ambidexterity research is structured around communities of scholars working in localized or thematically aligned groups, with nodes like Duysters, Geert and Khan, Zaheer becoming the centre of collaboration in their respective clusters, indicating hubs or schools of thought in which particular researchers and their teams have made significant

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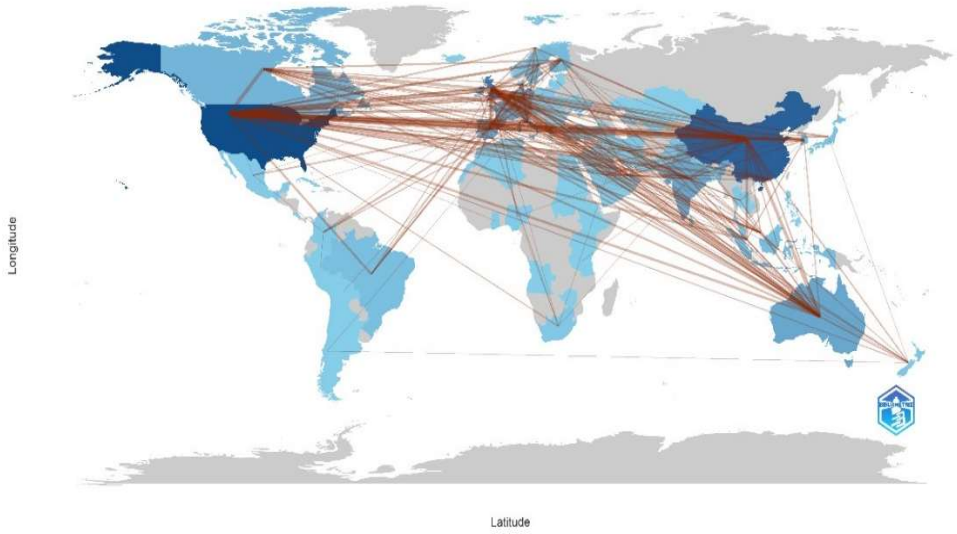
contributions towards specific areas of ambidexterity, like leadership, innovation, or technological applications.

Even though the level of connections within clusters is high, the number of connections across clusters is lower, which implies that the field is somewhat fragmented, and therefore, whereas intra-group cooperation is high and fruitful, knowledge sharing and cross-disciplinary views might be low. It is our hope that the incorporation of these clusters and the need to engage in institutional and geographic cross-boundary collaborations and integration of methodological and theoretical approaches will prove productive in the future of ambidexterity research.

Table 9

Country Collaboration Network



The international collaboration map depicts the research collaborations on the international level in the field of organizational ambidexterity. The nodes are countries, and the size of the node is the total output of research. The relationship between nodes is represented by lines, with the thicker the line, the stronger the co-authorship relationship between countries. The collaborative groups are usually determined by the geographic or institutional closeness and can be determined by the colour of each cluster. As illustrated in the diagram, the US and China are by far the most productive contributors to the research on ambidexterity, both in terms of total output and in the size of the network of collaborators with which they are both largest nodes and thickest connecting lines. Other significant contributors are the European countries, UK, Spain, and Italy and which have not only good European cooperation ties but also good ties with the US and India which has far fewer international connections but is gaining momentum in the area. It implies that even though ambidexterity research has become an actual global phenomenon, it is still concentrated in the US and some other major countries.

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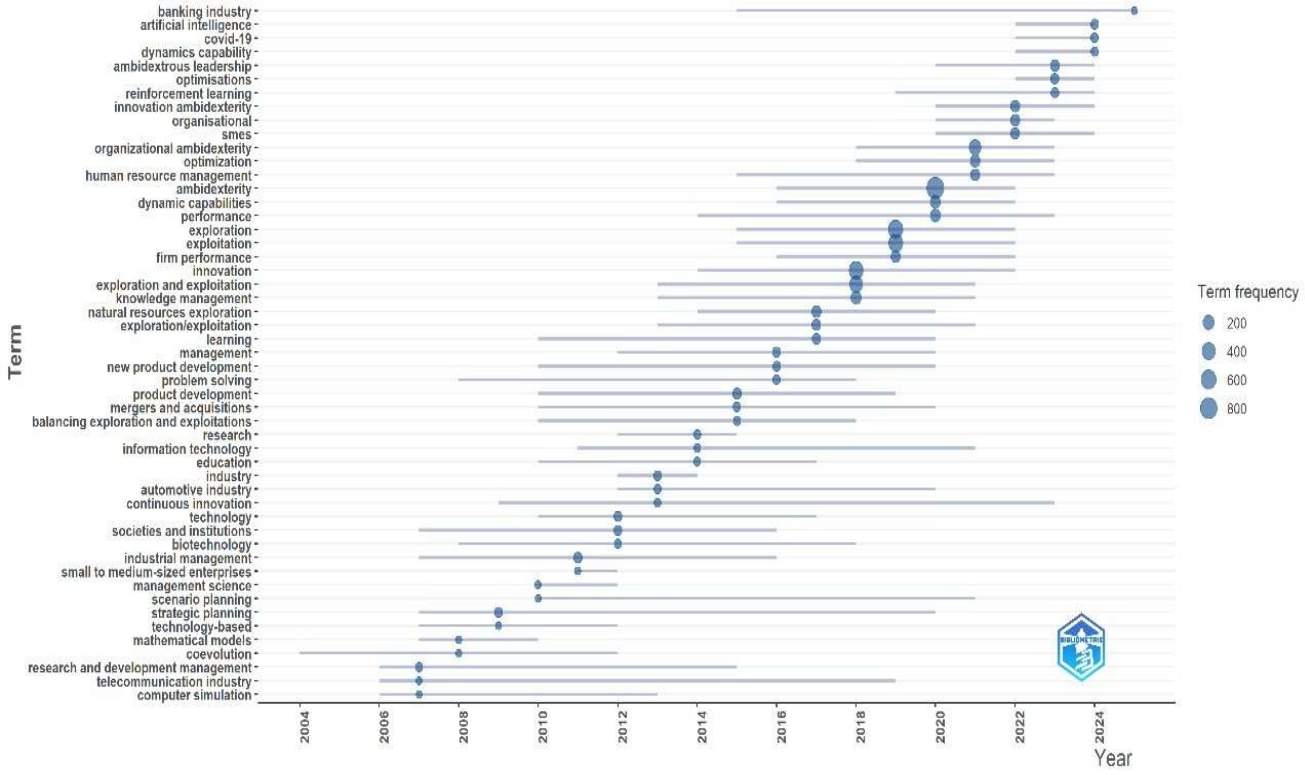
Content and Network Analysis

Table 10

Trend Topics



The Trend Topics graph narrates the history of how academic and organizational research priorities have changed since 2000 to after 2020, where the focus on foundational management concepts (leadership, industry dynamics, organizational ambidexterity) that reached their peak early and provided the basis of understanding organizational efficiency, structure, and balance, gave way to knowledge-intensive and strategic areas (innovation management, knowledge management, strategic management) that reflected the necessity of organizations to be competitive in an increasingly global and complex world. The topics were also more persistent, which means that the topics were still relevant over a longer period, which suggests that the topics were still relevant to bridge traditional management thinking with more modern organizational issues, but in the second half of the timeline (20152020+), the most notable change is the emergence of technology-related and sustainability-related ones, with the terms of artificial intelligence, big data, and blockchain having large peaks to reflect the rapid growth of scholarly interest, and sustainability becoming more prominent in the context of the global ESG and SDG agendas.

The keywords such as artificial intelligence, big data, and blockchain have higher peaks, which indicate a high increase in scholarly interest, whereas sustainability is another keyword that correlates with the global ESG and SDG agendas. The shift to the digital innovation and environmental responsibility as the new structural and managerial basis proves that the research has been developing in accordance with the surrounding world, and it has become a paradigm shift where the organizations not only have to be innovative in terms of technology, but have to develop in a responsible and sustainable manner.

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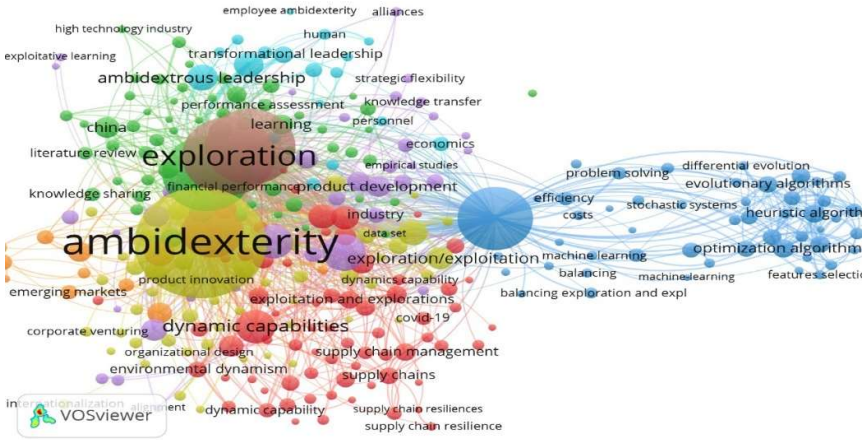
Figure 10

Keyword Co-occurrence and Thematic Clusters

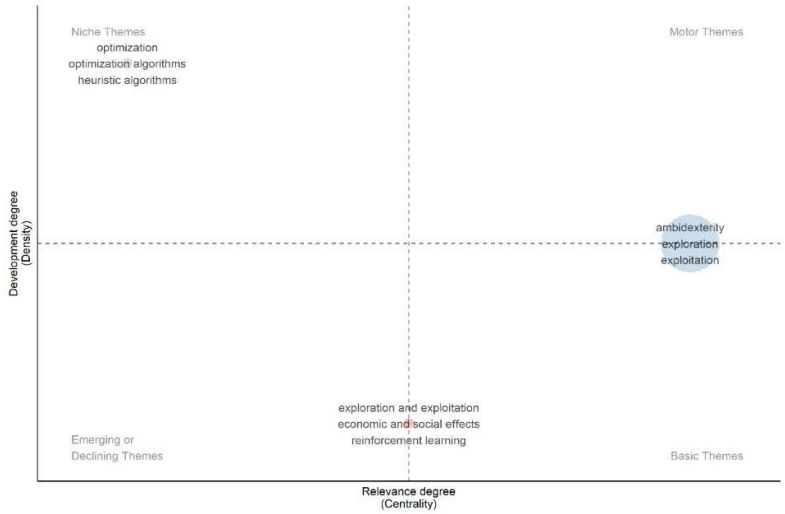


The keyword co-occurrence analysis offers information about the intellectual and thematic organization of organizational ambidexterity research. As indicated in the visualization of the VOSviewer, the terms that are most central and most common are ambidexterity, exploration, exploitation, ambidextrous leadership, and dynamic capabilities. Their pivotal role in the network indicates that they are fundamental in the development of the field and they have high co-occurrence ties to other fields including performance, learning and innovation. These words provide the literature with a sense of anchoring as the theoretical focus on the balance between exploration and exploitation as the key to organizational effectiveness is long-standing.

The analysis also shows specific thematic clusters. The blue cluster contains such terms as optimization, algorithms, and machine learning, which represent the increased incorporation of ambidexterity research with computational models and digital technologies; the green cluster contains such terms as leadership, learning, and high-tech industry, which represent the focus on human and contextual aspects of ambidexterity through managerial practices and organizational culture; the red/orange cluster contains such terms as dynamic capabilities, supply chains, and performance assessment, which reflect applied perspectives on how ambidexterity can be used to promote resilience and adaptability in complex operational environments. These interconnections imply that the research on ambidexterity is a cross-disciplinary subject that cuts across leadership and organizational behaviour, and more technology-focused innovation and performance management, and that classical theoretical constructs are still at the centre of the field as it extends to more practical applications of digital disruption and global competition.

Figure 11

Thematic Map: Development and Relevance of Research Themes



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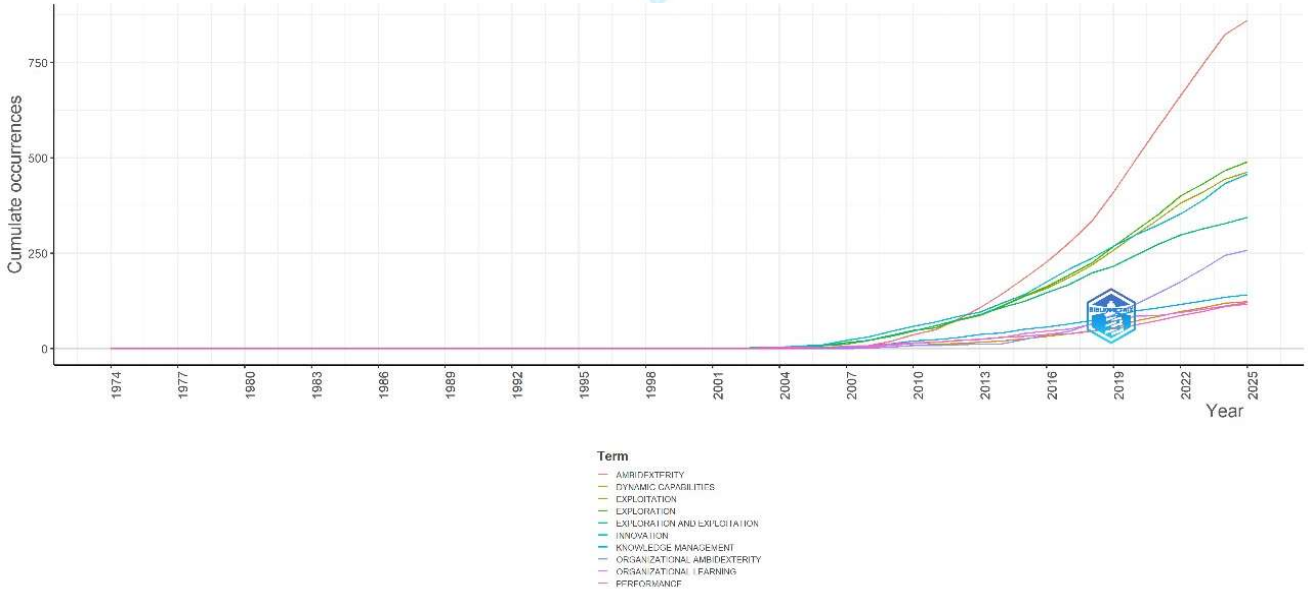
The thematic mapping analysis categorizes research themes on organizational ambidexterity on two dimensions: degree of development (maturity) and degree of relevance (centrality) [61]. This visualization provides a general picture of the structural position of concepts and their place in the field. Niche themes (top-left): These are optimization, optimization algorithms and heuristic algorithms which are all methodologically mature and well-developed yet of low centrality in the ambidexterity literature. They are put in the upper-left quadrant to show that they are expert contributions that are significant in computational modelling and decision-making yet remain on the margins of the ambidexterity literature. Motor Themes Top-Right: Exploration, exploitation, and ambidexterity are considered the most central theoretical and conceptual drivers of the field, representing the main debates of how to balance innovation and efficiency, and, therefore, they are the most central theoretical and conceptual anchor of the field, defining the intellectual basis of the research in the field of management and organizational studies.

No themes were specifically observed in this quadrant, and this may be seen as a lack of fading concepts or as a convergence of research into areas of interest or as lack of topic abandonment in a field that has not yet reached a level of maturity where topics are abandoned in favour of new ones. Bottom-Right: Exploration and exploitation, economic and social effects, and reinforcement learning themes are the central (high centrality) and immature (low maturity) themes in this quadrant, which are likely to have a lot of promise in the future, as they are all related to socio-economic implications and computational advances such as machine learning and reinforcement learning, and optimization-related studies are mature (high maturity) but peripheral to the field.

Overall, the thematic map reveals that the area of ambidexterity is well established in terms of the ambidexterity theory (motor themes), that the areas where the connection between organizational ambidexterity and societal impact can be made are open to expansion, and computer advances (including machine learning and reinforcement learning), and optimization-related research that are already mature (high maturity) is useful but peripheral to the field, which means that there is a good opportunity to make optimization-related research a more central part of the field..

Figure 12

Words' Frequency over Time



In the Frequency of the Words over Time, we can observe how the frequency of some of the research terms began to grow since 2010, with the x-axis marking the years, and the y-axis the cumulative number of times each of the terms was used, which implies that it is evident that the graph that is the most prominent is the red line, which signifies that the concept that this line represents became the primary focus of research in

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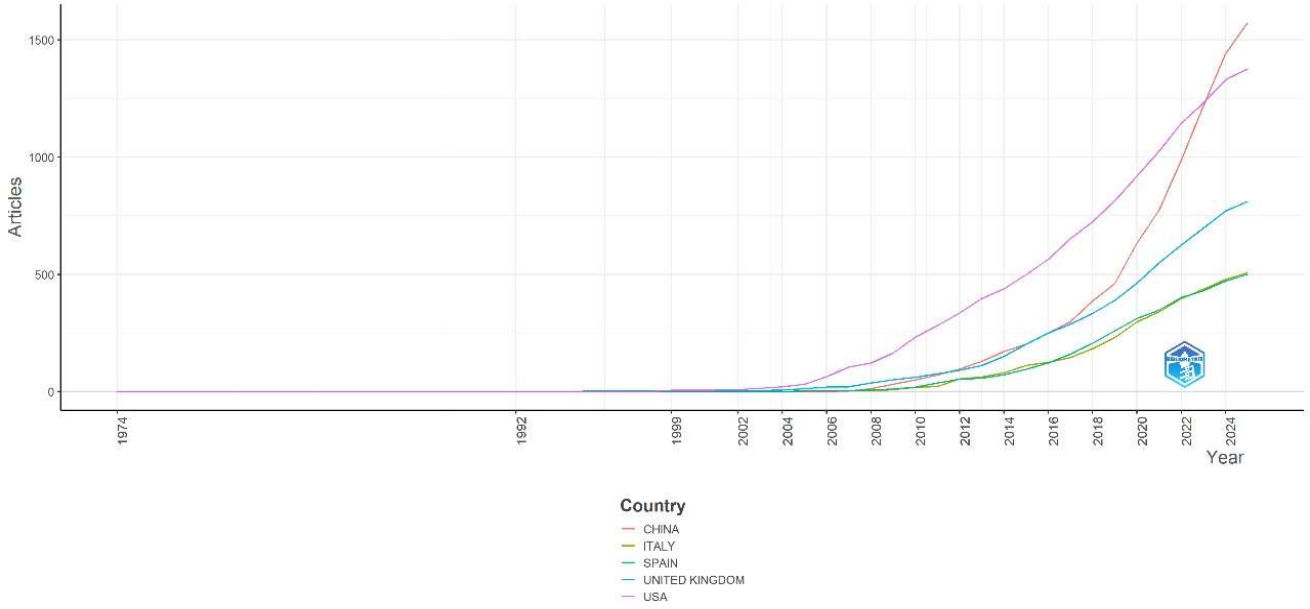
this area. The other coloured lines (green, blue, and purple) on the other hand also show upward trends, albeit with less strength and lower cumulative values at the end. These lines are secondary but significant words that have become relevant as secondary themes to the overriding idea. Their steady yet steady increase means that they are not the most important driver of research, but they are also a sign of increasing scholarly interest and expansion of the range of research interests.

The concomitant rise in various terms points to the expansion of the field with one dominating concept forming the basis of most discourse (red line), but with parallel themes being introduced to broaden the intellectual field. The graph is indicative of both consolidation and diversification: the consolidation around the most popular term, which serves as the centre of continuing research, and the diversification of the related terms, which indicates the maturity and multidimensionality of the field.

Table 12

Country Production Over Time



The country-level production analysis provides an international perspective of the research output in organizational ambidexterity, and the cumulative articles published over the period of 2010 to 2024 in six major countries, which include China, USA, United Kingdom, Spain, Italy, and India. China is the most active contributor, and its research output has increased dramatically since 2015 and significantly outpacing all others, because of the accelerated Chinese scholarly development in the field of management and business research, and because of the focus that the nation puts on innovation, digital transformation, and organizational resilience.

The USA is the second, and it has a steady upward trend and proves that it is one of the traditional centres of ambidexterity studies, especially with These contributions come from the top scholars and institutions. Other nations, including the United Kingdom, Spain, Italy, and India, also demonstrate consistent increases in the volume of publications, albeit at smaller rates, and their increasing tendencies since 2015, also indicate the increased interest of the world in ambidexterity and its use in different situations. In general, the tendencies of all six countries indicate that organizational ambidexterity has turned into a research topic and that production has become extremely fast in the past few years and reflects the tendencies of the global movement to digitalization, sustainability, and strategic flexibility.

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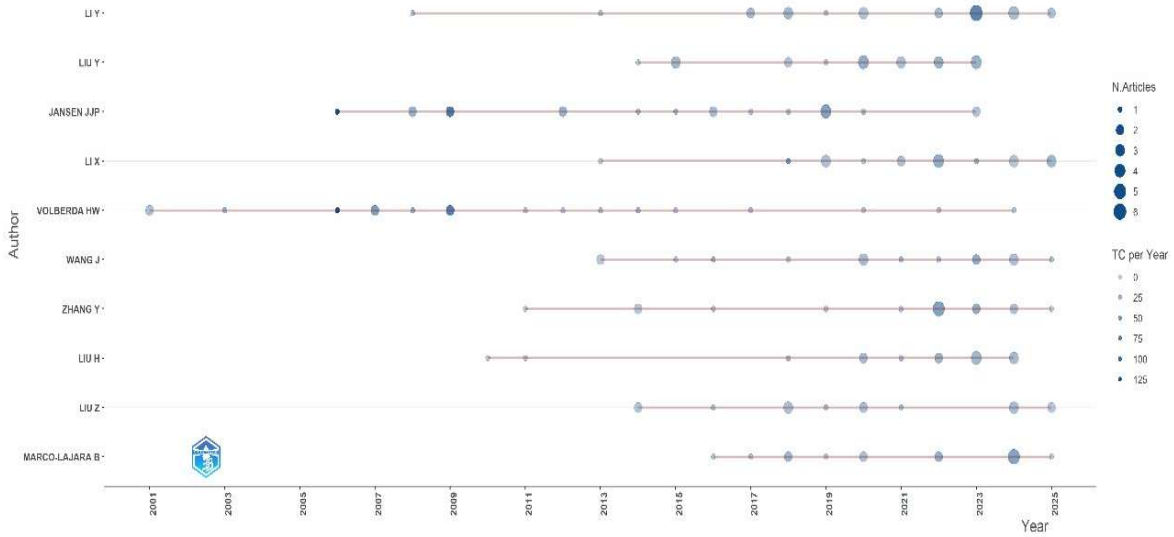
Figure 13

Authors' Production over Time



The production timeline provides a longitudinal perspective of the authors to the literature on organizational ambidexterity, where the x-axis values are the years between the early 1990s and 2020, the y-axis values are the names of the individual authors, and the dots are used to show the years during which the authors have contributed to the literature, the size of which corresponds to the number of articles published or the total citations (TC) per year, and, therefore, the productivity and scholarly impact of the authors.

Other scholars are prolific over decades, making consistent contributions to the field and becoming thought leaders, whereas others are more sporadic or clustered with a few influential works, usually during a particular period, contributing to large citation effects and impact on other research as shown by bigger dots in particular years. When combined, the graph indicates that although the number of authors who have been continuously prolific in the area of ambidexterity scholarship is relatively small, the area has also had periods of intermittent, yet, extremely impactful, contributions that have propelled the new directions and intellectual diversity.

Conclusion

It is bibliometric research that presents an in-depth account of how organizational ambidexterity research has been developed, structured, and conceptualized during the last five decades (19742025). The analysis of 3,678 documents in 963 sources demonstrates a rapidly growing field (annual growth rate of 11.06%), high levels of internationalization (32.38% co-authorship), and growing interdisciplinarity that cuts across the field of management, technology, and organizational sciences.

The findings highlight three important findings. To begin with, China and the USA are the two countries that dominate the research output (together they comprise almost 40 percent of the publications) and the European countries, including the UK, Italy, Spain, and the Netherlands, play a crucial role in quality and citation impact. Second, the theoretical framework is still based on classical literature (e.g., Tushman, Gibson, He, Jansen), but new topics, including AI, machine learning, optimization, and reinforcement learning, are becoming more popular, implying a paradigm shift to technology-inspired explanations of exploration exploitation relationships. Third, the collaboration networks indicate the presence of regional clusters and the expanding cross-border partnerships, which is due to the global character of the field and the need to share knowledge internationally. The research notes gaps in the research, absence of involvement of new areas beyond Asia-Pacific and Europe, underrepresentation of certain interdisciplinary views (e.g., behavioural sciences and sustainability studies), and the fact that more empirical support of ambidexterity in digital and socio-economic environments is needed.

Results confirm the importance of organizational ambidexterity as a key competency in long-term competitiveness and that it enables firms to combine exploitation and exploration. Moreover, the crossroad

between ambidexterity, digital technologies, and sustainability strategies can become the next frontier of management research (Cao et al., 2009; O'Reilly and Tushman, 2013), and our results may be the future direction of management research at the intersection of digital transformation, sustainability issues, and cross-cultural leadership. Lastly, organizational ambidexterity research has a theoretical depth and dynamism that is indicative of the nature of the concept, and the field is set to remain a key theme in management and organizational research that has a lot of potential to inform organizations to navigate through uncertainty, innovation and global change.

Future Research Directions

Among them are the integration of ambidexterity and digital transformation and the new technologies, including automation, big data analytics, machine learning, and artificial intelligence (Mirjalili, 2016; Faramarz et al., 2020), and how digital infrastructures can support ambidextrous organizational cultures to learn more about technological flexibility and long-term competitive advantage. Second, the concept of ambidexterity has not been researched widely in the framework of sustainability and the circular economy. Lastly, the possibility to investigate the development of ambi by leaders through the expansion of studies on behavioural ambidexterity and leadership is a possibility.

The cross-cultural comparative research can also contribute to better understanding of the impact of institutional and cultural factors on ambidextrous practices in geographical locations, and an increase in the geographical scope of the empirical study (to include under-researched regions of Africa, the Middle East, and Latin America) can further enrich the generalizability of the theoretical results and show distinct patterns of organizational innovation and adaptation (Raisch and Birkinshaw 2008). We would also anticipate that, in the presence of knowledge-oriented leadership, future research ought to investigate the relationship between organizational ambidexterity, intellectual capital and innovative performance with learning and innovation outcomes being viewed as the outcomes of knowledge-oriented leaders and that ambidexterity mediated or facilitated by intellectual capital to bridge the human, structural and relational aspects of organizational capability and that ambidexterity would translate to sustained innovative performance.

Conflict of Interest Statement

The author declares no conflicts of interest.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.

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