



The Profound Impact of Technology on Agile Change Management: A Bibliometric Analysis

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Abstract .In the current uncertain and turbulent world, agility and change management holds a great significance in an organization for its survival and success. Organizational change often results in failure or doesn't deliver the anticipated results predominantly due to employee resistance. Technology adoptions are crucial for organizations as they can foresee and help in risk mitigation, as well as prepare employees for change, transcending resistance. The main aim of this study is to analyze and discuss the mapping of research landscape, depicting relationship between technology and agile change management. For this, bibliographical data of 1054 documents published between 2014 to 2023, was extracted from Dimensions database after applying exclusion criteria. With the help of this we have analyzed the citation patterns, map collaboration networks, performance analysis, research locations, co-authorship relations and its visualizations using bibliometric software, VOSviewer. The research reveals the progress of topic in last ten years, providing theoretical assistance and core grounding for future studies. As per this analysis, in future, technology adoptions can be of a great help to enterprises for developing efficacious change management strategies that can be acceptable for employees.

Keywords: Technology, change management, techno change, organizational agility, agile organizations, change agility, bibliometrics.

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1 Introduction

- In this VUCA world, strategic management requires adopting new technological innovations and advancements to be in par with the competition as organizations undergo more changes than before (Conner, 1992). The changes can be of local, continuous, evolutionary, episodic, radical, and aspiring (Porras and Silvers, 1991; Romanelli and Tushman, 1994). The technical advancements hold an immense power, and it can be done in an organization by adopting various tools such as automation, data analytics, Big Data, 5G, AI, cloud computing etc. (Yu & Jinajun, 2020). Augmentation and automation applied in different areas of an organization helps in creating a powerful, agile, and errorfree work output. As per previous studies, the success ratio of change management is around 30% and one of the main reasons for this is employee resistance. This resistance due to the lack of self-confidence to undertake a new position, poor communication, lack of transparency and due the time taken in change process. To an extent all these can be solved by adopting technology in a right way, making the organization agile. Important components of agile organizations are flexibility, adaptability and work execution speed (Holsapple & Li, 2008; Highsmith, 2010)
- Algorithmic HR assists in decision making, outlining, and designing processes in strategic management. It works with electronic data that can assist in HR planning or execution (Meijerink et al., 2021). The relationship between technological or digital transitions and strategic management is still in evolving stage (Rego et al., 2021). Technological advancements can change the enterprise value, creating drift in strategic policies (Hess et al., 2016). Adoption of technologies in strategic management can result in an efficacious discernment and the process of evaluating the impact of technology on decision making goes on (Troise et al. 2022). Technological adoption and digital transformation relate to organizational change (Van de Ven and Poole 1995), which results in a positive impact (Dery et al. 2017). To have positivity towards change, organizations need to depend on data analytics and technology and these technologies needs to be incorporated with change strategies to generate a realistic and positive output (O’Leary and Lentz, 2020).
- As per (Heavin & Power, 2018) digitalization force to change the strategic and operational ways of organizations. A well implemented HRIS can enhance in data mining and documentation Choudrie and Dwivedi (2005). Technological adoptions have influenced various areas of human resource greatly (Bagdasarov et al., 2020; Myounghoon, 2017). Technological advancements like collaborative project management and cloud computing have made it possible for people to work from home during COVID. With the use of virtual coworking spaces, organizations were able to manage such uncertainties. Cloud based HR systems assists enterprises to work with real time data. Digitally powered transformations have great impact on human resource (Schmid & Pscherer, 2021) and an innovative HR can efficaciously enhance speed and productivity (Mosca. M, 2020).
- The principal objective of this study is to sketch and analyze the prevailing research landscape on technology adoption for organizational agility and change management. The scope of this study is steered by following research questions:

- RQ1: What is the contemporaneous publication trend in technology impact on change management and agility, with respect to different disciplines of study, countries, authors, time, organizations, and journals?
- RQ2: Which are the dominant studies and subjects in the related domain of research?
- RQ3: How the research on the selected topic has evolved over the years and how the impact can be mapped?
- RQ4: What is the existing research gap which can be considered for future studies?

2. Methodology

- The main intent of this article is to conduct a comprehensive bibliometric analysis on technology adoption, and agile change management. Bibliometric analysis helps in identifying the core of research conducted - author & co-author relationships, citations, different countries where studies are conducted, sources, documents, leading organizations, funding agencies, bibliographic coupling, co-occurrence of keywords and co relations of any of the above factors. It helps in analyzing the effect of research articles. It is a quantitative study based on prior publications, its sources, authors, citations, etc.

2.1 Data Retrieval

- Relevant bibliographical data of 1054 documents published between 2014 to 2023, was extracted from Dimensions database using combination keyword search. Initially, this search generated around 3760 related articles, out of which 1054 documents were selected and extracted using inclusion and exclusion criteria. The time-period selected for this was ten years, spanning from 2014 to 2023. Most of the analysis was carried out for documents with more than 10 citations in order to maintain the quality and relevance.

2.2 Evolution & Growth of Research (2014-2023)

- In the last ten years, a steady growth was found in the research areas of technology, agility and change management. Below graph (Fig 1) shows the evolution and growth from a time-period of 2014 to 2023. Though a slight dip is noticed in the year of 2016, it shows an immense growth after 2017. And during pandemic and post pandemic times, it is found to have a great influence on the subject due to its need.

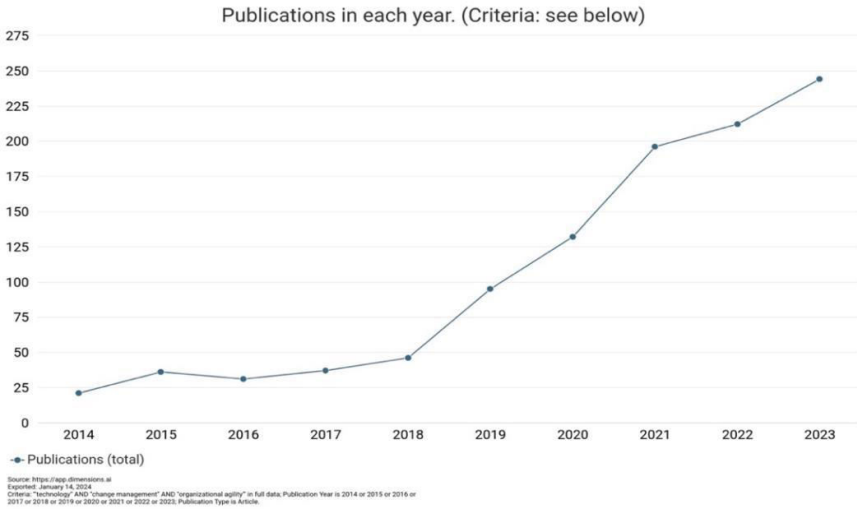


Fig1: Growth of research in relation to subject area from 2014-2023

2.3 Number of Publications

The below table (1) shows the total number of publications in the related field after applying exclusion criteria

Table 1: Total number of publications (2014-2023)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Publications (total)	21	36	31	37	46	95	132	196	212	244

- From a period of 2014 to 2023, a total of 1054 articles were extracted. It shows in 2014, only 21 research were made in techno assisted organizational agility and change management based on it, whereas by 2023 it had increased to 244. Except for the year of 2016, where only 31 related publications were found compared to 2015 with 36 publications, from year 2017 onwards it was found to have a substantial growth in publications. It shows the need, relevance and requirement for the study and its importance for an organization.
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- Publications in Different Research Category**
- Technological adoptions in change management and change agility are very important topics irrespective of the discipline or research category. As per the below figure (Fig2), commerce, management, tourism, and hospitality top the lists with 614 documents. Next is IT and computer science with 241 articles, followed by engineering 38, human society 30, built environment and design 21, philosophy and religious studies 21, education 16, Psychology 13, Health Sciences 09, economics 09, Biomedical 08, Economics 08, Environmental Sciences 6, Agricultural and food sciences 5, Mathematical sciences 4, Earth sciences 3, Law and Legal sciences 3, Physical Sciences 3 and biological sciences 2.

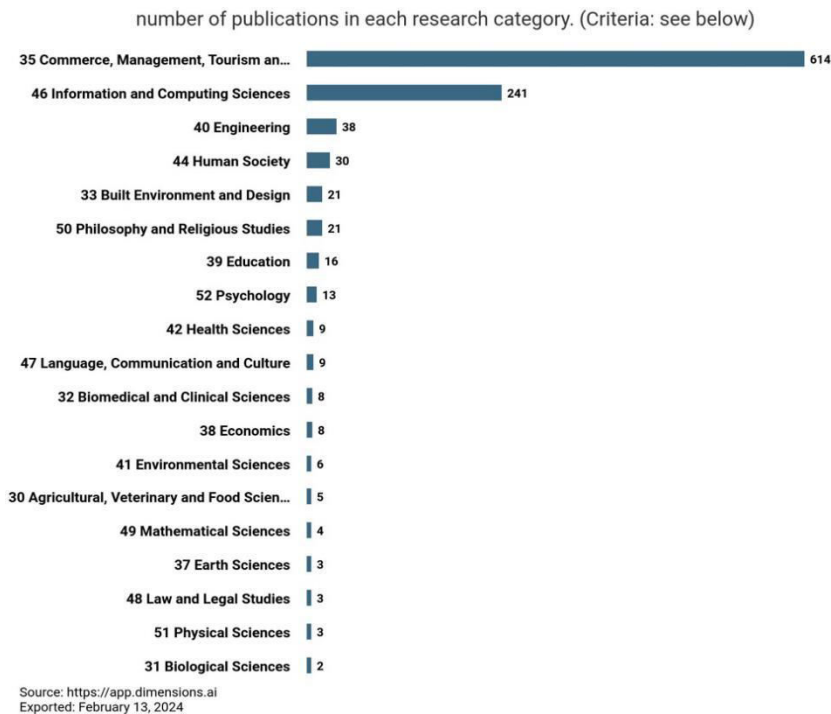


Fig 2: Publications in different subject area

2.4 Types of Publication

- For this analysis main publication types selected are articles, conference proceedings, book chapters and books. Articles being the main source constituted about 656 out of 1054 documents, holding the highest percentage of 62.24. Conference proceedings selected were 289 (28.27%), Book chapters 61 (5.79%) and books 39 (3.70%)

Table2: Different types of selected publication, its numbers and percentage

Publication Types	No:	Percentage
Articles	656	62.239%
Conference Proceedings	298	28.27%
Book Chapters	61	5.787%
Book	39	3.70%

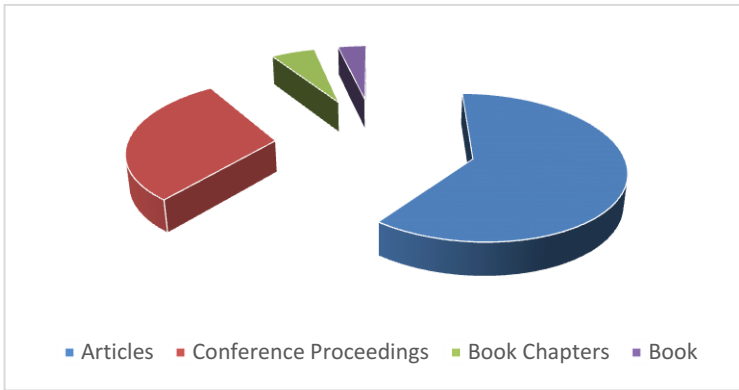


Fig3: Types of selected publication

2.5 Publications – Country Wise

- Area/Country wise analysis was done based on both publication and citation. Network visualization based on publication (Fig 4) and density visualization based on citation (Fig 5) given below. As per analysis, United States have the highest number of publications and United Kingdom tops with maximum citations. Top 10 countries with highest publication and citations are mentioned below, Table 3 & Table 4 respectively.

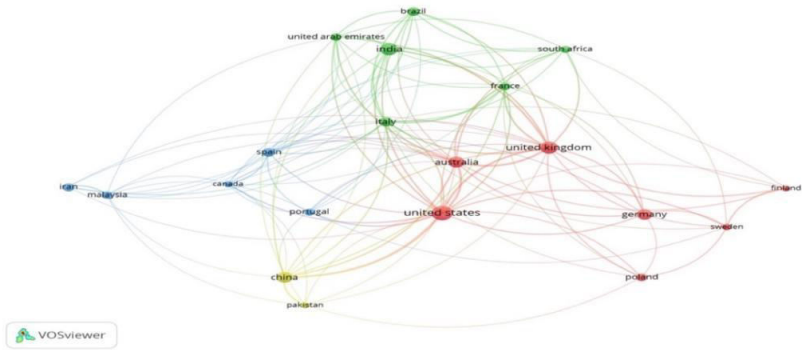


Fig 4: Countries with highest number of publications

Table3: Top 10 Countries, Publication

Country	Documents
United States	107
United Kingdom	81
India	79
Australia	64
China	63
Germany	56
Italy	47
Spain	43
Brazil	41
Iran	37

Table4: Top 10 Countries, citation

Country	Citations
United Kingdom	2899
United States	2732
Italy	1925
China	1792
France	1609
India	1524
Spain	1376
Australia	1355
Germany	1337
Canada	1076

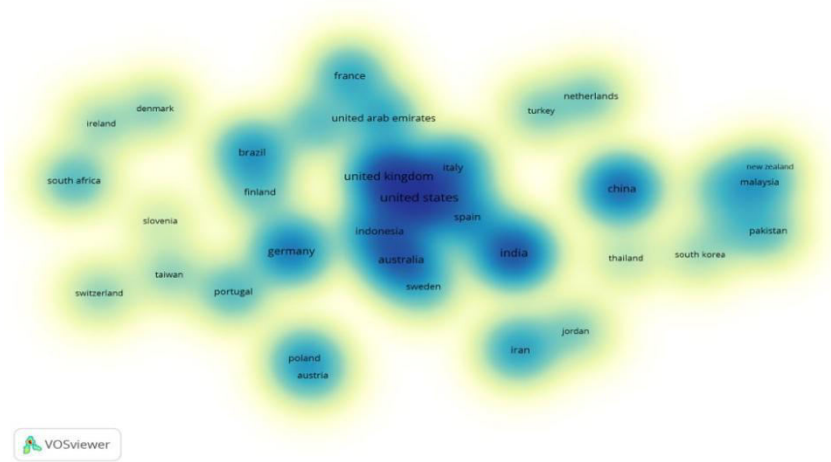


Fig 5: Density Visualization- Citation Analysis, Country wise

2.6 Co Occurrence Analysis of Keywords

- Co-occurrence of keywords shows the co-relation of keywords and it is one of the crucial areas in bibliometric analysis. Complex form of keyword combination helps researchers in filtering out relevant documents from a database. The below networking (Fig 6) shows the inter relationships between different variables or keywords which builds up the search. The table 5 shows the top variables or keywords as per occurrences and their relevance.

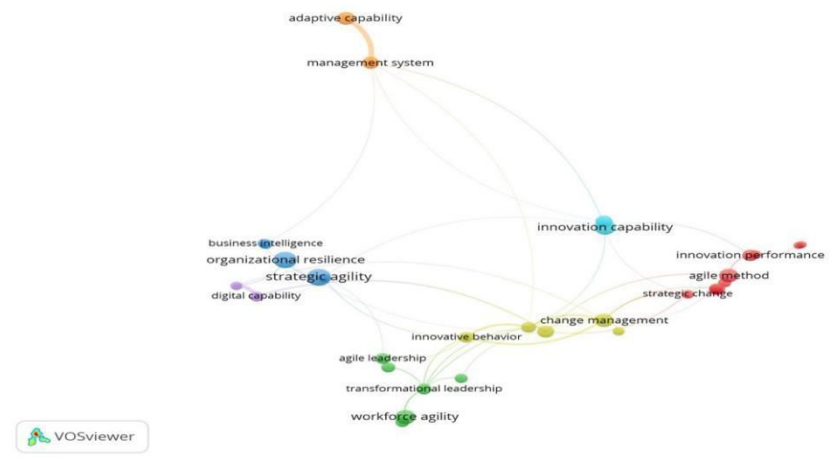


Fig 6: Co-occurrence analysis of keywords

Table 5: Occurrences of Keywords and their relevance

Keywords	Occurrences	Relevance
Strategic Agility	109	2.40
Organizational Resilience	96	2.39
Innovation Capability	87	2.35
Change Management	84	2.33
Innovation Capability	81	2.26
Management System	77	2.11
Adaptive Capability	71	2.08
Change Process	67	2.04
Workforce Agility	64	2.04
Transformational leadership	61	1.91
Agile Method	59	1.90
Innovation performance	57	1.88
Strategic Change	56	1.86

2.7 Author & Co- author Analysis

- Below table (6) shows the top 10 authors based on citations and their link strength from a time spanning between 2014 and 2023. It is noticed that total link strength is not based on citation and below table (6) is put in order as per link strength. Treece, David J tops the list with an impressive 468 citations. The work of authors with highest number of publications and citations plays a vital role in contributing key points to the research, and analysis of their work helps in understanding the research gap for the further studies.

Table 6: Top 10 Citation & Link Strength based Author Analysis

Authors	Citations	Total Link Strength
Treece, David J	468	12239
Gunasekaran, Angappa	318	10841

Dubey, Rameshwar	251	9470
Ringle, Christian M	274	7225
Sarstedt, Marko	268	7225
Wamba, Samuel Fosso	172	6833
Childe, Stephen J	158	6612
Eisenhardt, Kathleen M	272	6106
Helfat, Constance E	169	5312
Akter, Shariar	116	4960

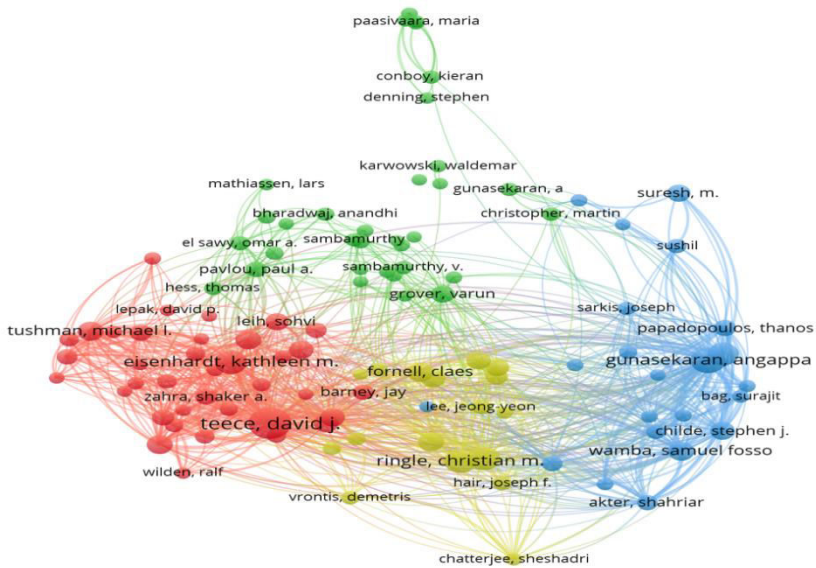


Fig 7: Co- authorship Analysis

2.8. Analysis Based on Journal Source

- For an analysis based on Journal source a peer reviewed scholarly publication with high credentials in publishing authentic and standard studies need to be selected as quality of journals are of high importance. Below table shows the top 10 journals, the number of documents and citations. The number of documents isn't related to the citation level. Sustainability journal scores high with 31 documents but with a citation of 440 whereas Journal of Knowledge Management has 25 publications with the highest score of citation, 1388.

Table 7: Top 10 Journals based on publication and citation

Source	Documents	Citations
Sustainability	31	440
Journal of Knowledge Management	25	1388
Management Decision	21	294
Benchmarking of International Journals	17	328
Journal of Business Research	14	988
Journal of Organizational Change Management	13	187
Information and Management	11	542
International Journal of Information and Management	10	272
International Journal of Organizational Behavior	10	138
Journal of Strategic Information Management	9	264

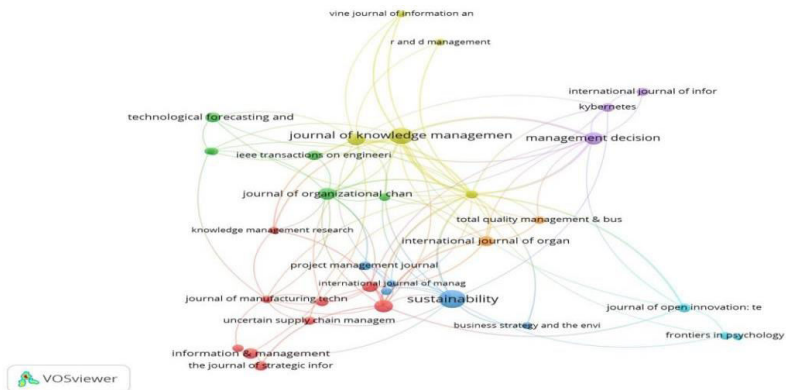


Fig 8: Network Visualization of Journal Source

2.9 Analysis based on Organizations

- The table 10 shows the top 10 organizations with research publications. The Amrita Vishwa Vidyapeethan university has 12 documents, which is highest in number, with a citation of 290. But Sapienza University of Rome with just 7 documents were able to generate 563 citations. So, this shows the number of documents published is not related to the citations in the subject area. Another few organizations with remarkable number of documents and citations are: Universidade de Sao Paulo 12 (320), IIT Delhi 9 (210), University of Wollongong 7 (290), King Abdul Aziz University 9 (256) and Abu Dhabi University 8 (196).
- Fig (9) illustrates the density visualization of organizations with highest number of publications and citations.
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Table 8: Top 10 Organizations based on number of research publications

Organization	Document	Citation
Amrita Vishwa Vidyapeetham University	12	290
Universidade de Sao Paulo	10	320
Indian Institute of Technology, Delhi	9	210
King Abdul Aziz University	9	256
Abu Dhabi University	8	196
Sapienza University of Rome	7	563
University of Wollongong	7	290
University of Seville	7	71
University of Melbourne	7	47
University of Technology, Malaysia	7	73

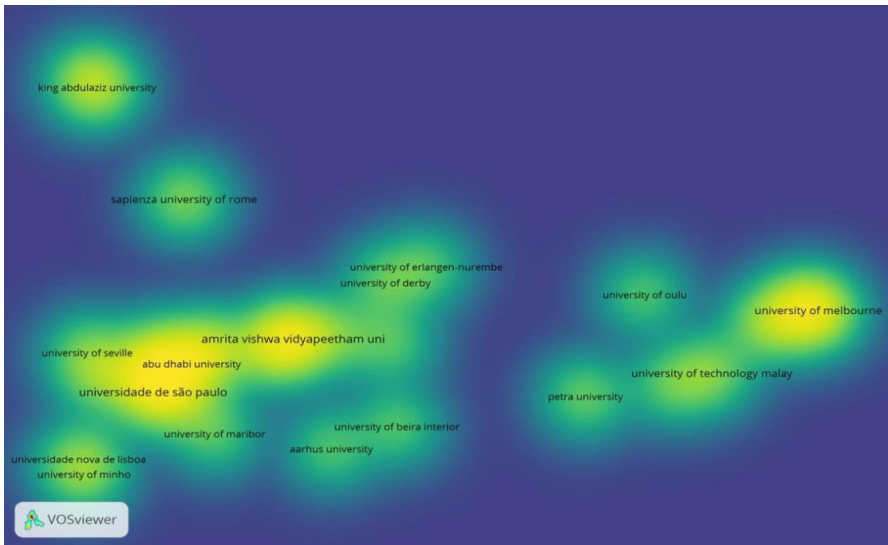


Fig 9: Density Visualization of organization based on number of publications and citations

3. Discussion

- Bibliometric studies form a scientific analysis of research publications in terms of quantitative perspective. This helps in evaluating the development in the knowledge level of a particular subject area and assessing its impact on works and sources (Bouyssou and Marchant, 2011, Daim et al., 2006). The growing requirement and increasing number of publications have created a demand in using quantitative analytical methods for a scientific output.
- **Analysis 1: Evolution & Growth, 2014-2023:** The result shows the evolution and growth of research on technology impact on organizational agility and change management from 2014-2023. It shows a slight dip in 2016 but gaining momentum in 2017 and a rapid growth from 2018 to 2023. This indicates a growing interest on the research topic.
- **Analysis 2: Number of Publications, from 2014-2023:** It shows in 2014 only 21 researched were made in organizational agility and change management, integrated with technology whereas by 2023 it had increased to 244. It shows the research has increased by tenfold, which is exceptionally high for any research topic. This shows the demand and interest in the selected area of research.
- **Analysis 3: Subject Area:** This illustrates the distribution of publication across different disciplines or subject areas. It shows in commerce and management area the studies have conducted more, with 872, which constitutes 83.05% of total pub-

lication. At the same time, it is noticed that research has been done in various fields indicating the relevance of the topic.

- **Analysis 4: Publication Sources:** Mainly four publication sources are considered during selection criteria, i.e., Articles, Conference proceeding, Book Chapters and Books. The main contribution was by articles which constituted 656 out of 1054 documents, holding the highest percentage of 62.48. Conference proceedings selected were 324 (30.86%), Book chapters 61 (5.81%) and books 39 (3.71%)
- **Analysis 5: Research - Country Wise:** In country- wise analysis, it illustrates two different results based on “highest number of publications” and “highest number of citations”. As per the analysis, United States has the highest number of publications and United Kingdom tops with maximum citations
- **Analysis 6: Co-occurrence of keywords:** It shows the occurrence level of each keyword or the complex combination of key words and its relevance. It plays a critical role in selection criteria, identifying variables and conducting research.
- **Analysis 7: Author & Co-author correlation:** Results shows that the total link strength is not based on citation. Treece, David J tops the list with an impressive 468 citations. The work of authors with highest number of publications and citations plays a vital role in contributing key points to the research. Co-author correlation analysis illustrated different clusters with researchers, co-authorships and co-authorship links.
- **Analysis 8: Journal Source:** Sustainability journal scores high with 31 documents with a citation of 440. But Journal of Knowledge Management scored with high citations, 1388 with just 25 publications. This shows the number of documents, and its citation level varies as per the journal source.
- **Analysis 9: Research Organization:** The Results indicated that Amrita Vishwa Vidyapeetham university has the highest number of publications, i.e.,12 with 290 citations, but Sapienza University of Rome with just 7 publications was able produce 563 citations. This analysis shows some major organizations with highest level publication and citations. It also indicates the number of publications and citations are not in comparison to each.
- Through this study, we have tried to analyze the impact of technology adoption in organizational agility and change management. It is found it to be a well- studied but challenging topic. Analysis of the articles published between 2014 and 2023 suggests there have been two stages in this study: a seeding and development stage spanning from 2014 to 2017 and a rapid growth stage between 2017 and 2023. This shows the increasing trends in research on the related topic.

4. Conclusion

- The increase in the publication trend of research topic “technology impact on agile change management” clearly shows the growing interest and demand for the selected subject area, with respect to different disciplines of study, countries, authors, time, organizations, and journals. The topic is noticed to have a sudden growth

from 2014 to 2023, due to its relevance in the current world. By this study we were able to identify the need of adopting technology in the different verticals of strategic management, as it makes an organization and workforce agile. This can increase the resilience of employees bringing down their resistance towards any organizational change. With this analysis we were able to find and evaluate the effect of different variables and its impact on organizational agility and change management. The study holds a great importance in relation to pandemic and post pandemic organizational changes and is expected to widen its areas and possibilities in the future.

Limitations

As “Dimensions” is an open and free database, strict selection criteria have been used for filtering out the documents. Articles with above 10 citations only have been considered and this might have resulted in losing some good research paper with a lower citation. As 10 years’ time frame have been selected resulting in a higher level of publications in depth qualitative analysis was not possible as bibliometric analysis work on the quantitative part.

Implications

By understanding the impact of technology on change management and change agility organizational agility, it can help organizations in understanding the need for techno change. It shows primarily how the technology can improve the agility of organization by improving the speed and quality of work with very less or no error. This can have a great impact on the productivity of organizations, leading to a competitive advantage. Secondly, it can help employees to work more efficiently with ease, making them confident and motivated. This in turn increases the morale and resilience of employees. This can help in subsuming resistance during change management, making it a success.

Recommendations for Future Study

This bibliometric study shows many variables of agile change management in relation to technology, are not taken into consideration, such as dynamic capabilities and transparency of change process. These forms a gap in the study while analyzing employee resistance towards change. Incorporating technology can reduce employee resistance by sensing need for training, continuous upgradations, implementing proper communication channels, increasing speed of execution and being more transparent. This can increase the resilience and confidence in employees, transcending resistance. These key variables and its impact open new areas for future research in relation to change management.

References

1. Bagdasarov, Z., Martin, A., & Buckley, M. R. (2020). Working with robots: Organizational considerations. *Organizational Dynamics*, *49*(2), 100679. <https://doi.org/10.1016/j.orgdyn.2018.09.002>

2. Bouyssou, D. and Marchant, T. (2011), Ranking scientists and departments in a consistent manner. *J. Am. Soc. Inf. Sci.*, 62: 1761-1769. <https://doi.org/10.1002/asi.215443>
3. Choudrie, J., & Dwivedi, Y. K. (2005). Investigating the research approaches for examining technology adoption issues. *Journal of Research Practice*, 1(1), Article D1. Retrieved [Date of Access], from <http://jrp.icaap.org/index.php/jrp/article/view/4/7>
4. Ciara Heavin & Daniel J. Power (2018) Challenges for digital transformation – towards a conceptual decision support guide for managers, *Journal of Decision Systems*, 27:sup1, 38-45, DOI: [10.1080/12460125.2018.1468697](https://doi.org/10.1080/12460125.2018.1468697)
5. Catherine, S., Rani, M. N., & Suresh, N. V. (2024). The Metaverse Economy: Transforming Money With Digital Currency. In *Creator's Economy in Metaverse Platforms: Empowering Stakeholders Through Omnichannel Approach* (pp. 202-209). IGI Global.
6. Catherine, S., Kiruthiga, V., Suresh, N. V., & Gabriel, R. (2024). Effective Brand Building in Metaverse Platform: Consumer-Based Brand Equity in a Virtual World (CBBE). In *Omnichannel Approach to Co-Creating Customer Experiences Through Metaverse Platforms* (pp. 39-48). IGI Global
7. Conner, D. R. (1992). *Managing at the Speed of Change: How Resilient Managers Succeed and Prosper Where Others Fail*. Villard Books.
8. Daim, Tugrul & Rueda, Guillermo & Martin, Hilary & Gerdri, Pisek. (2006). Forecasting emerging technologies: Use of bibliometrics and patent analysis. *Technological Forecasting and Social Change - TECHNOL FORECAST SOC CHANGE*. 73. 981-1012. [10.1016/j.techfore.2006.04.004](https://doi.org/10.1016/j.techfore.2006.04.004).
9. Dery, Kristine; Sebastian, Ina M.; and van der Meulen, Nick (2017) "The Digital Workplace Is Key to Digital Innovation," *MIS Quarterly Executive*: Vol. 16: Iss. 2, Article 4. Available at: <https://aisel.aisnet.org/misqe/vol16/iss2/4>
10. Hess, Thomas & Matt, Christian & Benlian, Alexander & Wiesböck, Florian. (2016). Options for Formulating a Digital Transformation Strategy. *MIS Quarterly Executive*. 15. 123-139.
11. Highsmith, Jim. (2004). *Agile Project Management: Creating Innovative Products*. The Agile Software Development Series.
12. Holsapple, Clyde & Li, Xun. (2008). Understanding Organizational Agility: A Work-Design Perspective.
13. Jeon, M. ". (2017). Emotions and affect in human factors and human-computer interaction. *Academic Press*. <https://doi.org/10.1016/B978-0-12-801851-4.00001-X>
Retrieved from: <https://digitalcommons.mtu.edu/cls-fp/17>
14. Meijerink, Jeroen & Boons, Mark & Keegan, Anne & Marler, Janet. (2021). Algorithmic human resource management: Synthesizing developments and cross-disciplinary insights on digital HRM. *The International Journal of Human Resource Management*. 32. 1-18. [10.1080/09585192.2021.1925326](https://doi.org/10.1080/09585192.2021.1925326).
15. Mosca, M. (2020). *Digitalization of HRM: A study of success factors and consequences in the last decade*. University of Twente.
16. O'Leary, R. S., & Lentz, E. (2020). Technology's impact on the performance management transformation. In E. D. Pulakos & M. Battista (Eds.), *Performance management transformation: Lessons learned and next steps* (pp. 264–288). Oxford University Press; Society for Industrial and Organizational Psychology.
17. Porras, J. I., & Silvers, R. C. (1991). Organization development and transformation. *Annual Review of Psychology*, 42, 51–78. <https://doi.org/10.1146/annurev.ps.42.020191.000411>

18. Rego, Arménio & Sousa, Marlene & Marques, Carla & Cunha, Miguel. (2012). Authentic leadership promoting employees' psychological capital and creativity. *Journal of Business Research*. 65. 429-437. 10.1016/j.jbusres.2011.10.003.
19. Romanelli, E. and Tushman, M.L. (1994) Organizational Transformation as Punctuated Equilibrium: An Empirical Test. *Academy of Management Journal*, 37, 1141-1166. <http://dx.doi.org/10.2307/256669>
20. Schmid, Yvonne & Pscherer, Frederik. (2021). Digital Transformation Affecting Human Resource Activities: A Mixed-Methods Approach. DOI: 10.1007/978-3-030-85540-6_68.
21. Suresh, N., & Bhavadharani, S. (2021). An Empirical Study on the Impact of Passenger Loyalty Program on Passenger Retention with Reference to Air India. *Productivity*, 62(1).
22. Suresh, N. V., & Remy, V. A. M. (2024, February). An Empirical Study on Empowering Women through Self Help Groups. In 3rd International Conference on Reinventing Business Practices, Start-ups and Sustainability (ICRBSS 2023) (pp. 957-964). Atlantis Press.
23. Troise, Ciro & Corvello, Vincenzo & Ghobadian, Abby & O'Regan, Nicholas. (2022). How can SMEs successfully navigate VUCA environment: The role of agility in the digital transformation era. *Technological Forecasting and Social Change*. 174. 121227. 10.1016/j.techfore.2021.121227.
24. Van de Ven, A. H., & Poole, M. S. (1995). Explaining Development and Change in Organizations. *The Academy of Management Review*, 20(3), 510–540. <https://doi.org/10.2307/258786>
25. Zhang, Jie & Chen, Zhisheng. (2023). Exploring Human Resource Management Digital Transformation in the Digital Age. *Journal of the Knowledge Economy*. 1-17. 10.1007/s13132-023-01214-y.

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