AI for Organizational Learning, Innovation and Research: A Bibliometric Perspective

Revina Nida Nafila[1]; Agnesia Candra Sulyani[2]; Prasetyo Raharjo[3];
Muhammad Subhan Iswahyudi[4]

[1,2,3,4]Telkom Corporate University Center (TCUC), Bandung, Indonesia

Publication Date: 2025/02/04

Abstract: AI is increasingly becoming a transformational technology for businesses and organizations. AI may be useful to a business organization for quite wide of areas, particularly regarding organizational learning, innovation, and research. This research perform a systematic literature review of AI in organizational learning, innovation, and research relating to past research, emerging trends, keywords, and research gaps available within the field. The basis for this study has been done through research using 116 articles from Scopus, dated between 2016 and 2024. The results of the study have indicated that AI is a basic technology that enhances processes to learn, innovate, and research. Therefore, there is more automation and personalization in employee training and effectiveness in data analysis for creating innovations. This indicated how much AI intervention contributes to changing the way an enterprise learns, innovates, or simply carries out research. Based on this study, areas concerned with the measurement gaps, the technical perspective, and the ethical point of view involve increased research. Results from this study contribute to a more specific understanding of what drives the evolution of AI in the processes of organizational learning, innovation, and research and, therefore, inform academics and practitioners how to integrate AI technologies into learning, innovation, and research programs.

Keywords: *Artificial Intelligence; Bibliometric Analysis; Learning; Organization; Innovation; Research; Machine Learning; Technology Adoption.*

I. INTRODUCTION

Artificial Intelligence (AI) is a technology to support humans that can be useful in many aspects of life. The use of AI will increase productivity by automatization and personalization [1]. Therefore, humans can pay more attention to more complex tasks and problems. AI is the tool to maximize learning experience [2]. By providing personalized feedback, it will increase the quality of education, more than can be generated by AI. The sample of the usage of AI in education is gamification and personalized learning [3]. Besides, AI can lighten the load for both teachers and learners in the process of learning, but the issues of transformation cost, privacy, and data security, and preference to get feedback only from humans still need to be considered. Instructors must ensure that learners are capable of using AI effectively, and risk mitigation such as cheating and ethical issues [4].

Another potential issue in AI is taking over labor by automatization. While on the other hand, AI can be used to assist in the reskilling of employees to fall in line with the competencies needed by the industry. For this reason, employee development programs are playing an important role in increasing competencies inside the company and within the job market [1]. The use of technology is also becoming very crucial regarding to increasing employees' productivity. AI can converge into L&D through some of the tools which increase flexibility, make learning more interesting and personalized, and specify the training needs of workers based on previous training and create contents suitable for them [5]. Therefore, it is also required that the professionals and learning designers develop better insights into technology implementation that meets employee needs. AI is not only about learning tools but also about augmenting the performance of employees.

L&D development will bring about the following five resultant values: productivity and performance boost, retention of employees, innovation and adaptability, firm branding, and social responsibility and compliance [6]. The L&D incorporation will motivate the working willingness of employees and thereby provoke their competency development, hence may lead to innovations also. This can increase the credibility and image of the firm in the market; thus, it enhances the competitive value of the firm.

AI has a positive effect on open innovation that leads to an increase in business performance [7]. AI may encourage collaboration among the employees by providing a platform to support communication, sharing ideas, idea analysis and supporting decisions to determine high-quality innovations to be implemented. For example, the role of AI in knowledge and big data organization that could optimize the research results after human's creativity is combined with it [8]. However, in some respects, for example, peer review, the human's role is still important.

AI is predicted to make learning more personalized, efficient, and engaging for the learners in 2024 [9]. It can also enhance the intelligence of learning platforms such as LMS by allowing better user interaction and effective content delivery. Applications of AI making learning experiences more interesting include Virtual Reality, for example, which enables the learning process in an innovative and practical way, especially when it comes to technical skills.

The following systematic literature review is a combination of past studies related to the use of AI in organizational learning, innovation, and research. This support will enable the bibliometric analysis concerning main patterns, emerging trends, and potential opportunities that may arise in future research. The backbone for bibliometrics in this paper relies on the articles about the use of AI in learning, innovating, and researching with business or organizational focuses from the period 2016-2024 in the form of journals and proceedings. A wide examination of the Scopus publications will show the trend, key themes, and key contributors on AI in organization learning, innovation, and research.

Figure 1 shows the trend of research papers related to "Artificial Intelligence" from 2016 to 2024. This also corresponds to the report from Human-Centered Artificial Intelligence (2024) explaining that from 88,000 publications on AI in 2010, the number increased drastically to 242,290 publications in the year 2022 [10]. An increase in the number of research implies that technology, especially AI, is perceived as a promising sector both as a solution and for innovation.
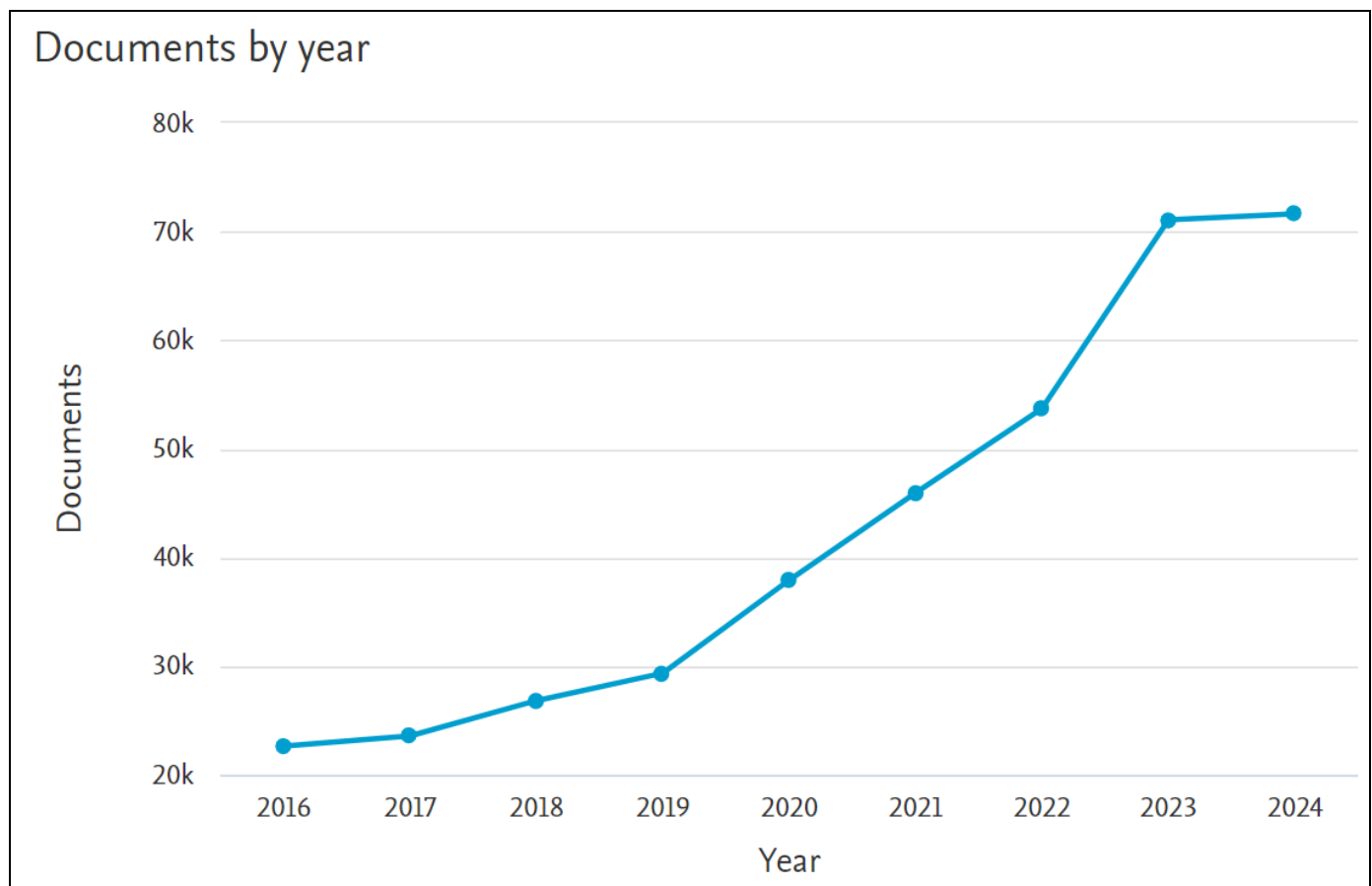

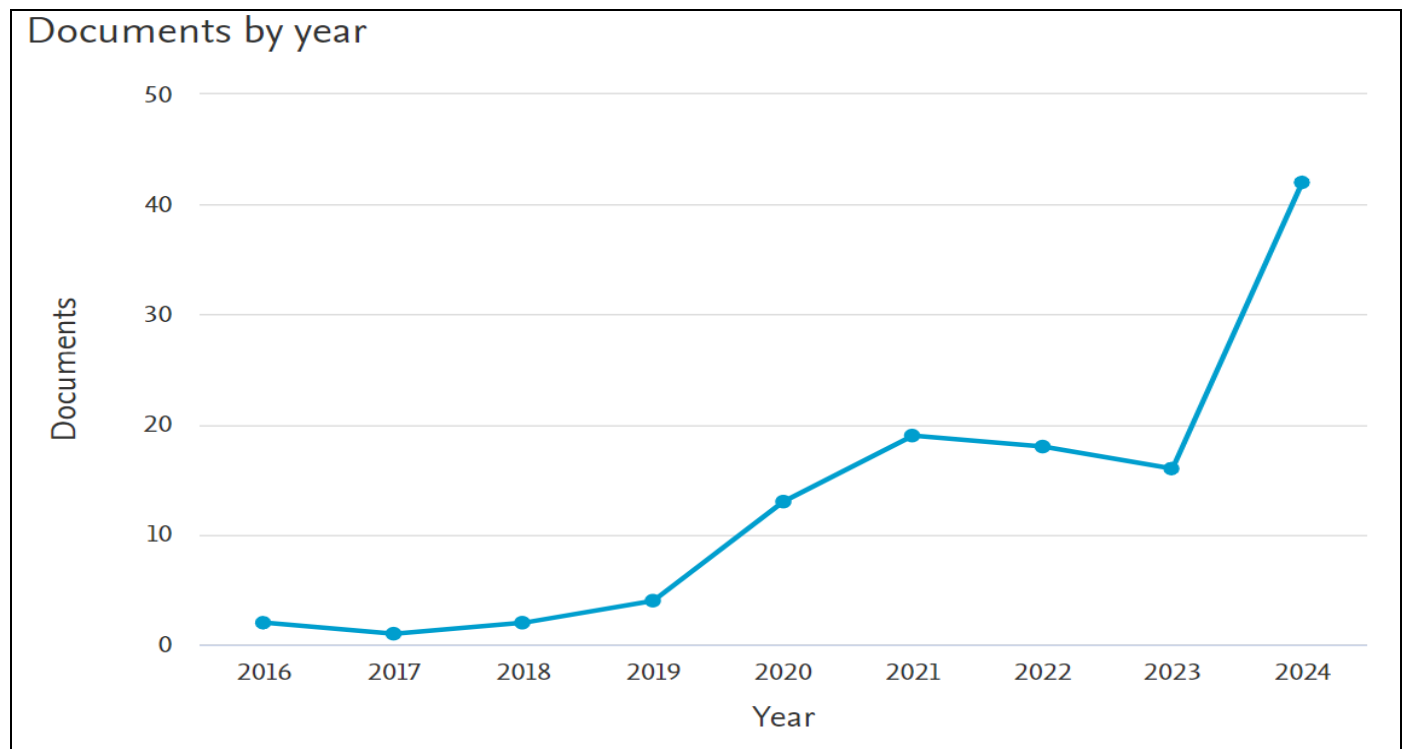Fig 1: Research Trend in Artificial Intelligence

Fig 2: Research Trend in "Artificial Intelligence in Organizational Learning, Innovation, and Research"

AI research in the context of organizational learning, innovation, and research is represented by Figure 2, created based on Scopus research documents between 2016 and 2024 across various subject areas. It has an increasing trend that could be related to broader adoption of technology, a need for more personalized solutions, access to big data, and changes in the requirements of skills in the job market. Given that AI has so many benefits, it would be expected that research in this area is bound to increase.

➢ *This Review Responds to the Research Question through a Bibliometric Analysis of the Literature at Hand.*

- RQ1: What are the significant thematic clusters in the area of AI for organization learning, innovation, and research, and how have these been changing overtime?
- RQ2: What are the most used keywords and topics in publications related to AI for Organization Learning, Innovation, and Research?

The paper also gives an overview of the most relevant terms and topics that have been discussed in the literature, and it allows researchers to understand the main focus of the current research. The current study therefore also points out various research areas and tries to provide guidelines to future researchers. Such findings are bound to be beneficial to researchers and industry professionals alike in the pursuit of further research and leveraging AI for organization learning, innovation, and research, culminating into higher employee productivity and effectiveness in business operations.

II. RELATED WORKS

Literature has also discussed AI in the context of businesses. In the modern competitive world, businesses are more technology-savvy and are increasingly embracing the adoption of AI technology since it is considered one of the key elements for success and to outcompete other competitors with competitive advantage [11]. Also, by the ability of AI, utilizing data and acquiring information, the firms can enhance innovation and manage the process with much ease whereby the speed with which the companies respond to a particular marketplace is greatly increased. Thereby, AI enhances efficiency by cutting costs and smoothing the process of supply chain management and thus assists the companies in adopting new strategies [12]. These studies shows that AI applications in business cannot be stopped but rather act as a strategic advantage in the improvement of business success.

In business, AI also contributes to many fields such as operations, marketing, finance, and human resources. In the context of human resources, AI facilitates HRM activities such as recruitment, performance management, and learning and development, exploring AI innovations, adoptions, benefits, and contributing factors in the learning and development process [13]. It emphasizes six key implications, of which the review shows AI support to all stages of training: need analysis, design, implementation, and evaluation. It solves part of the challenges through improved learner's engagement and increased general effectiveness, measurement of learning processes being at hand, whereas technical and managerial competencies are key to successful implementation for AI. The practitioners can enhance the adoption of AI by mapping learning styles

such as Kolb's. However, the study indicates that the process of AI adoption in L&D requires further research.

Figure 3: Distribution of research documents in Scopus, focused on "AI in Organizational Learning, Innovation, and Research" by subject area. It is observed that the technical and business dimensions are highly represented, while 18.9% of the research has been concentrated in the areas of business management, 18.6% in computer science, and 13.3% in social science. This would mean that the high percentages represent research work in business management. That would underline the importance of AI in managerial strategy and human resource development, while the contribution of computer science signals technological aspects concerning the application of AI in organizational learning, innovation, and research. Besides, from the striking percentage in social science, one can tell that human and social factors, like employee behavior and social effects of technology, have been considered.
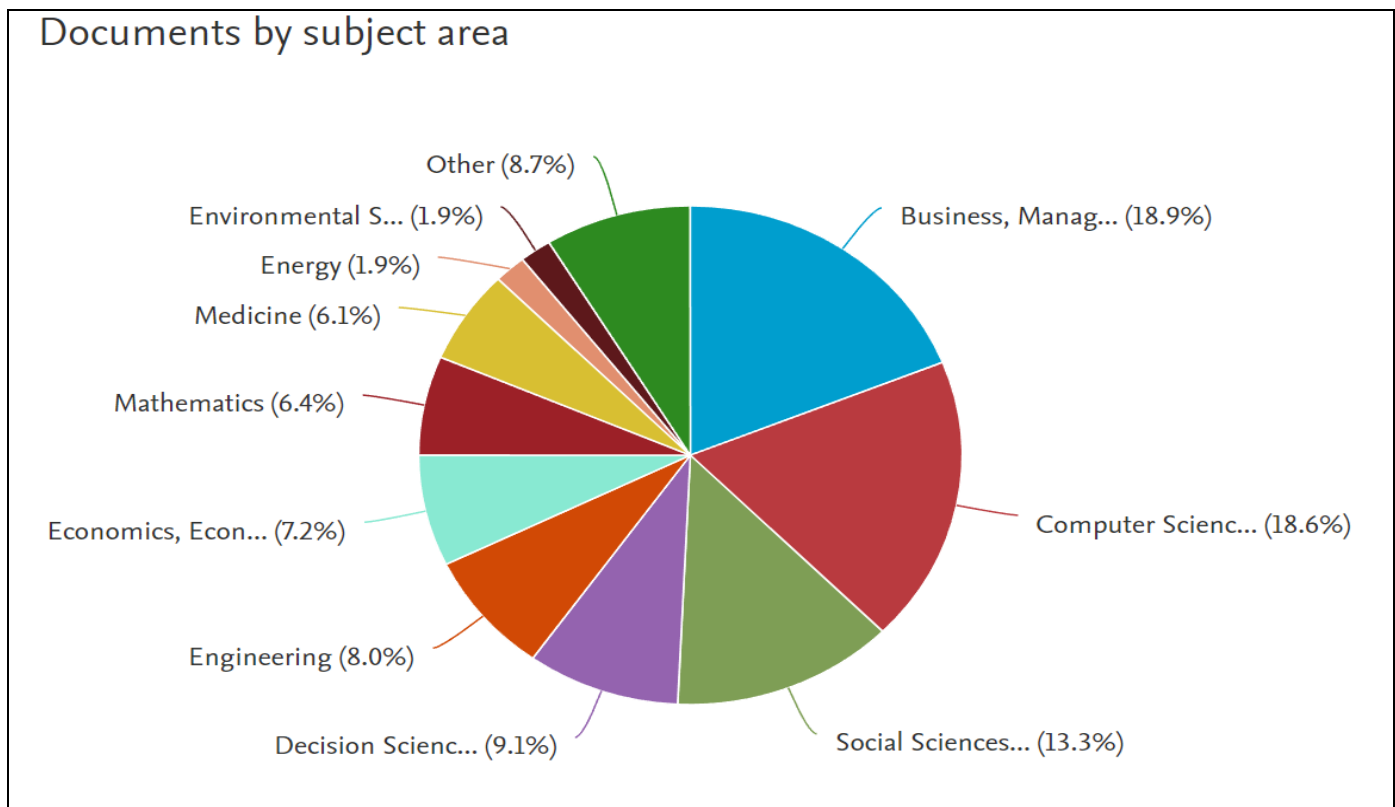

Fig 3: Research Distribution in "Artificial Intelligence in Organizational Learning, Innovation, and Research"

AI brings benefits to education since it enables personalized learning by providing an opportunity for learners to learn at their own pace [14]. AI improves efficiency, specifically on administrative tasks by teachers, so they can give their concentration to more complicated tasks. It increases the learners' engagement by doing various activities that will make learners interested in learning. Another use of AI, besides personalized learning, is through engaging a company's employees. AI is being used in tracking, guiding, and rating employee performance in real time; however, this only works if employees are willing to trust the system and perceive it as fair [15]. Perceived trust in AI would help reduce perceived risks while also enhancing employee engagement. This is also supported by the findings that AI tools are very effective in providing insight into employees' behaviors and preferences [16]. They can also let the employers understand what each employee requires from the organization for career opportunities or advice on professional development. Given the power of AI-driven algorithms, today one can design an HR strategy for individual employees beyond what was conceivable with the limitations faced by traditional HR planning methodologies.

A research study regarding the implementation of AI in the context of L&D indicates that AI in L&D can be done through the application of tools like virtual reality, augmented reality, and chatbots to bring flexibility in learning and create better engagement among learners [5]. AI is also expected to contribute to personalized learning by estimating the needs of the employees based on their training history and the already acquired skills and creating content for the particular needs of each employee.

A qualitative research study conducted among 27 HR/training professionals identified six major focus areas of training and development needs, namely knowledge management, employee engagement, personalized learning, on-the-go learning, continuous updating of training content, and intuitive e-learning interfaces [17]. Knowledge Management and Employee Engagement were the most focused areas for 92.6% of the participants. The need for personalized learning in employee development was in

third position, while the percentage is 63%; on-the-go learning stood a step ahead at a level of 51.9%. That implies knowledge management remains one of the strong reasons behind employee development. Organizations can rely on AI in order to extend employees' field knowledge and enhance skills relevant to that particular field. Whereby technology, particularly AI, can record into the repositories, build personalized learning systems, provide feedback, and make the information available to all the employees. Therefore, technology, especially AI, makes possible the process as a whole of employee learning and development. While learning and development require the measurement of success in developing employees, an effort put into the transformation of the way of using AI inside a company needs to be well-thought to assure appropriate outputs in employees.

Thus, the theoretical framework was explained for current capabilities of AI systems used for the support of innovation processes: It classified many areas according to whether it can overcome barriers that will arise for innovation, such as issues related to information processing limitations or solution discovery [18]. AI assists with information processing in developing large-scale ideas out of a human's capability, for example, proposing the use of machine learning as predictors to provide material for product development. AI is helpful in generating new ideas by processing large volumes of data: for instance, the utilization of algorithms in uncovering business insights leading to identifying innovation opportunities. Third is that it enables searching far away from the conventional area to devise an innovative solution-such generative design facilitated by AI can help produce new solutions by exploiting growth algorithms. Fourth, AI finds ideas that are new, beyond the boundaries of what is currently known, include reinforcement learning that performs creative optimizations. Challenges continue to persist, however, in the use of AI for innovation: limits and capabilities of the technology, issues of skills and competencies, human-technology interface, and finally questions of trust and ethical issues, including bias in decision-making and data security.

AI capabilities are used in research, mainly in the processing of data. AIC plays a very significant role in identifying various sources of data, automating processes, and the implementation of decision support systems, which are important in any organization in enhancing its growth

and performance [19]. It would, therefore, help companies to discover new generations of products, new markets, and the development of new technological fields, with effective customer feedback insight into the latest market trends and activities of competitors. The organizations that are empowered with AIC will be able to leverage the exploratory innovation to find new research avenues, augment creativity in R&D, and pinpoint innovative solutions. This will lead to a enhanced R&D performance since groundbreaking discoveries, new product development, and competitive advantage can be achieved. Also, EXI is found to mediate between AIC and R&D performance since it can assist an organization in optimizing their R&D operations to improve efficiency and refine the existing products. Thus, the R&D results could be better accomplished with less cost, time to market, and quality.

The more AI technologies are integrated into employee training and development, the higher the relevance of the study into AI in organizational learning, innovation, and research from a data-driven bibliometric perspective. This paper performs a bibliometric analysis that reveals the main trends and thematic areas of the existing literature, underlining the gaps in the literature that have to be investigated further, such as ethical implications and long-term efficacy of AI solutions. The identification of such gaps may shape the future direction of research and help organizations refine their strategies related to learning, innovation, and research. Since AI has the potential to influence the process of employee learning, innovation, and research, this study will also provide practical implications for organizational decision-makers. It will be exciting to see how AI overcomes some of the training challenges and shifting dynamics in the workplace. The results will create a foundation for further exploration of specific aspects of AI in learning, innovation, and research.

III. METHODOLOGY

A literature review was conducted through bibliometric analysis. Bibliometric analysis on AI in learning can be conducted by applying the methods of data inclusion and exclusion [20]. This is done by sorting the literature database to attain relevant and state-of-the-art literature. The sorting stage is carried out based on a number of criteria, namely:
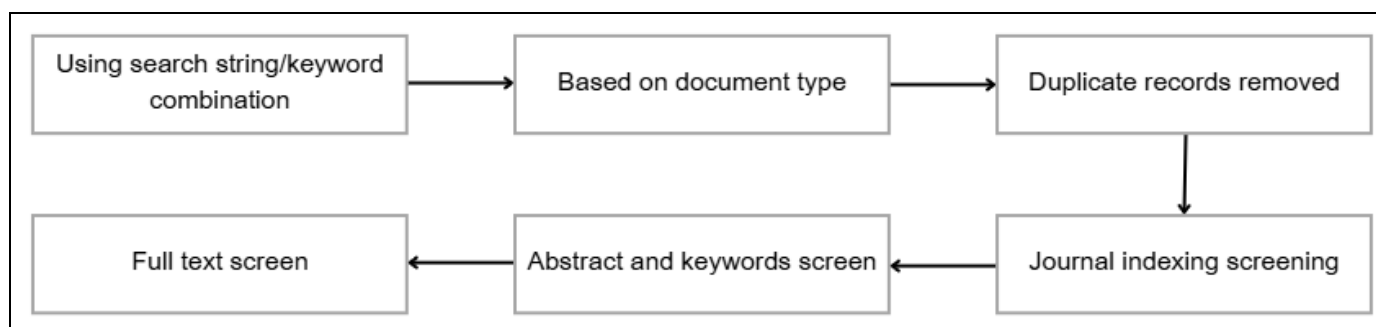
Fig 4: Bibliometric Analysis Step

These keywords were then used by the researchers during the data search phase: "Artificial Intelligence Organizational Learning, Innovation Research". Results of the findings of these keywords were based particularly on AI, Organization, Learning, Research, and Innovation. The documents that were included in this study were a result of journals, articles, conferences, and proceedings papers from various topics, including Technology, Business, and Social Sciences. In the stage of Journal Indexing, Scopus database usage was chosen because Scopus provides more references which are relevant to the subject under study. Based on sorting in this stage, 116 documents were found to be identified as a database for a bibliometric analysis. After the sorting process, metadata analysis has been done by using BiblioShiny. Following is the result of the metadata analysis:

Metadata	Description	Missing Counts	Missing %	Status
AU	Author	0	0.00	Excellent
DT	Document Type	0	0.00	Excellent
SO	Journal	0	0.00	Excellent
LA	Language	0	0.00	Excellent
PY	Publication Year	0	0.00	Excellent
TI	Title	0	0.00	Excellent
TC	Total Citation	0	0.00	Excellent
AB	Abstract	1	0.86	Good
C1	Affiliation	7	6.03	Good
DI	DOI	10	8.62	Good
DE	Keywords	22	18.97	Acceptable
RP	Corresponding Author	29	25.00	Poor
ID	Keywords Plus	59	50.86	Critical
CR	Cited References	116	100.00	Completely missing
WC	Science Categories	116	100.00	Completely missing

Fig 5: Completeness of Metadata

There are different stages of data analysis to answer research questions about trends and most used keywords in research [21]. The following are the stages that can be conducted:

➢ *Stage 1: General Overview*

It maps the general features of the database. In other words, research time span period, number of sources and number of research documents as well as annual growth rate indicating the increases of research trend, authors and co-authorship, references, document average age and average citation.

➢ *Stage 2: Keywords Analysis Using Wordcloud*

It is aimed to use WordCloud for showing the most keywords appeared in the studies.

➢ *Stage 3: Knowledge-Structure-Focus Analysis*

Consist of two methods: First, co-occurrence network & thematic map with the goal to specify main topics and their relationships to each other; Second, thematic evolution map used to depict the identification of evolving research themes over time. The analysis can group keywords by specific periods of time.

Further, this study is complemented by Most Relevant Sources, which can be used to identify sources that produce the most research related to the research topic.

IV. RESULT & ANALYSIS

The web tool developed for bibliometric analysis support, BiblioShiny, was the one used for support with data analysis. It is from BiblioShiny that this paper extracts data concerning research trends, sources of journals in which the research takes place, major topics, and thematic analysis. The results are based on the Scopus database, from 2016 to 2024.

Data used for this systematic literature review was first done through the "Data Summary" analysis. BiblioShiny analysis found that the number of research papers considered for this study was 116, and 372 authors involved within the duration of 8 years. Through the Annual Growth Rate graph, the figure is at 59.55%, thus stating that research on AI in Organizational Learning, Innovation, and Research has been growing very fast every year. Figure 6 gives an illustration of Data Summary.
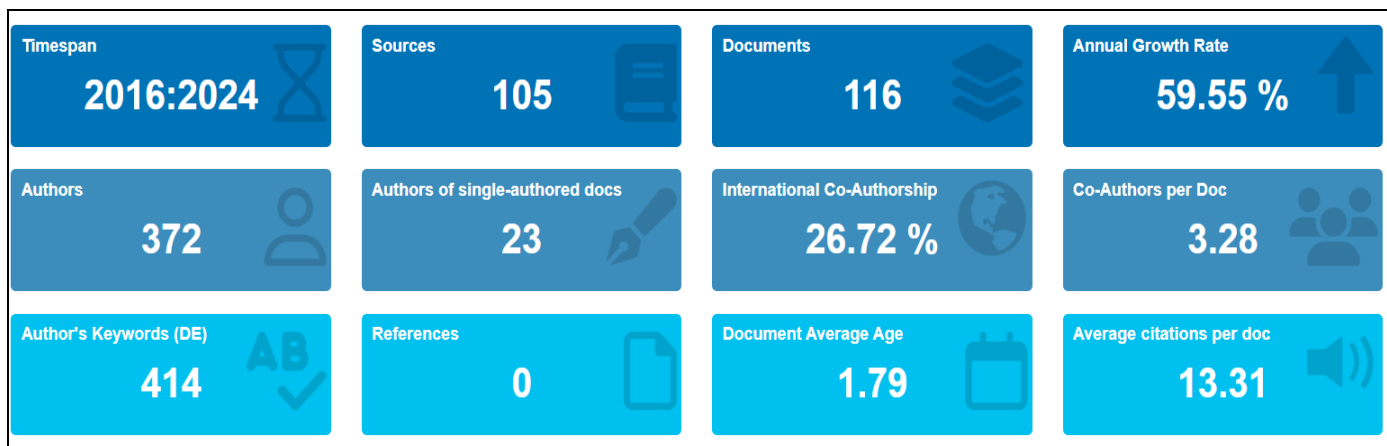
Fig 6: Data Summary for "Artificial Intelligence in Organizational Learning, Innovation, and Research"

It follows the "Most Relevant Source" analysis, which gives evidence of relevance and the impact academic sources have had within a given field. For this research, "AI for Organizational Learning, Innovation, and Research," some of the most prominent sources are Lecture Notes in Computer Sciences and Business Information Processing. Figure 7 presents a sample of the sources that produced the most research on AI in Organizational Learning, Innovation, and Research.
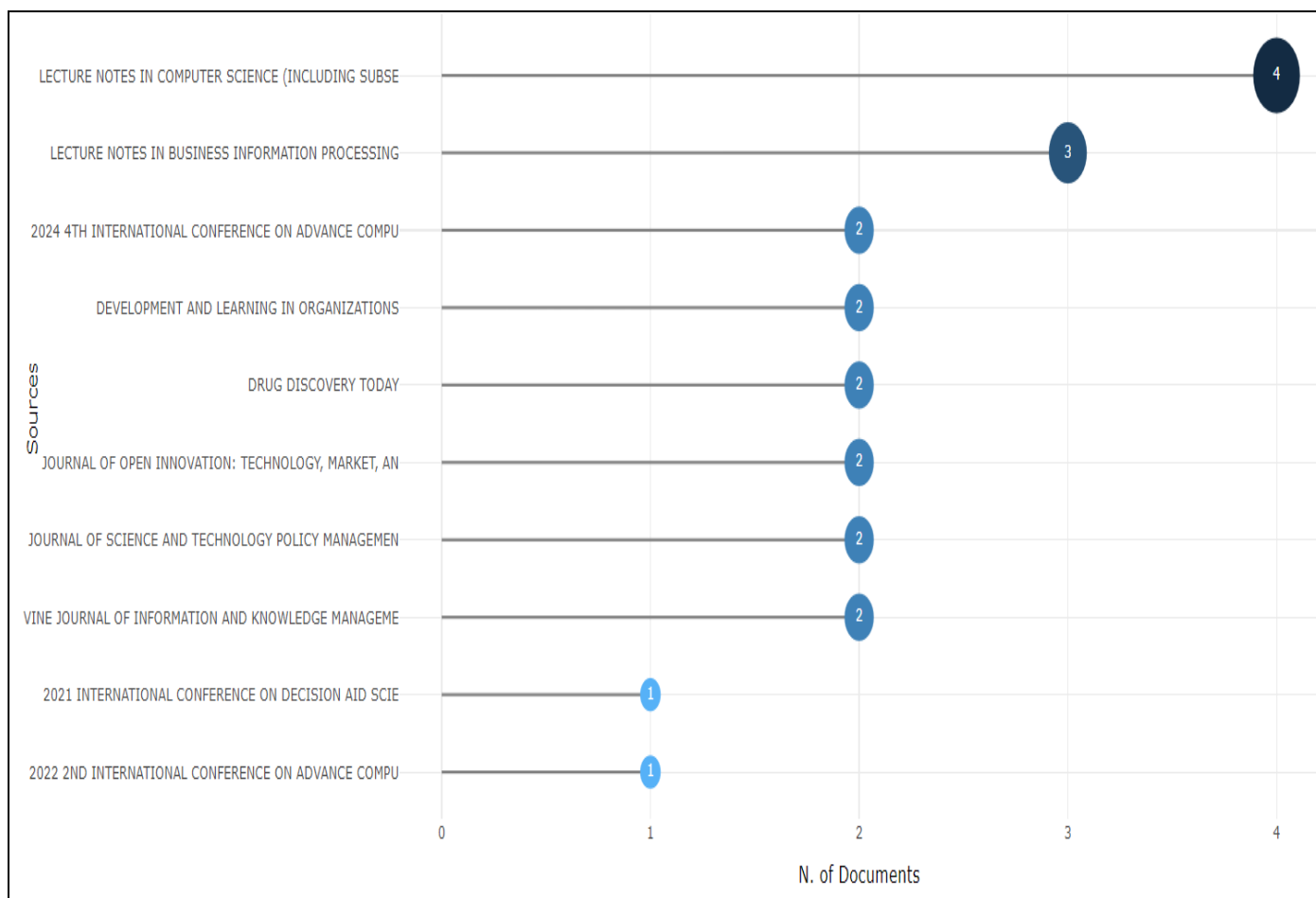

Fig 7: Most Relevant Sources in "Artificial Intelligence for Organizational Learning, Innovation, and Research"

Figure 8 shows the "WordCloud" analysis, which is the presentation of keywords or terms that are most frequent in research on the topic of AI for Organization Learning, Innovation, and Research.
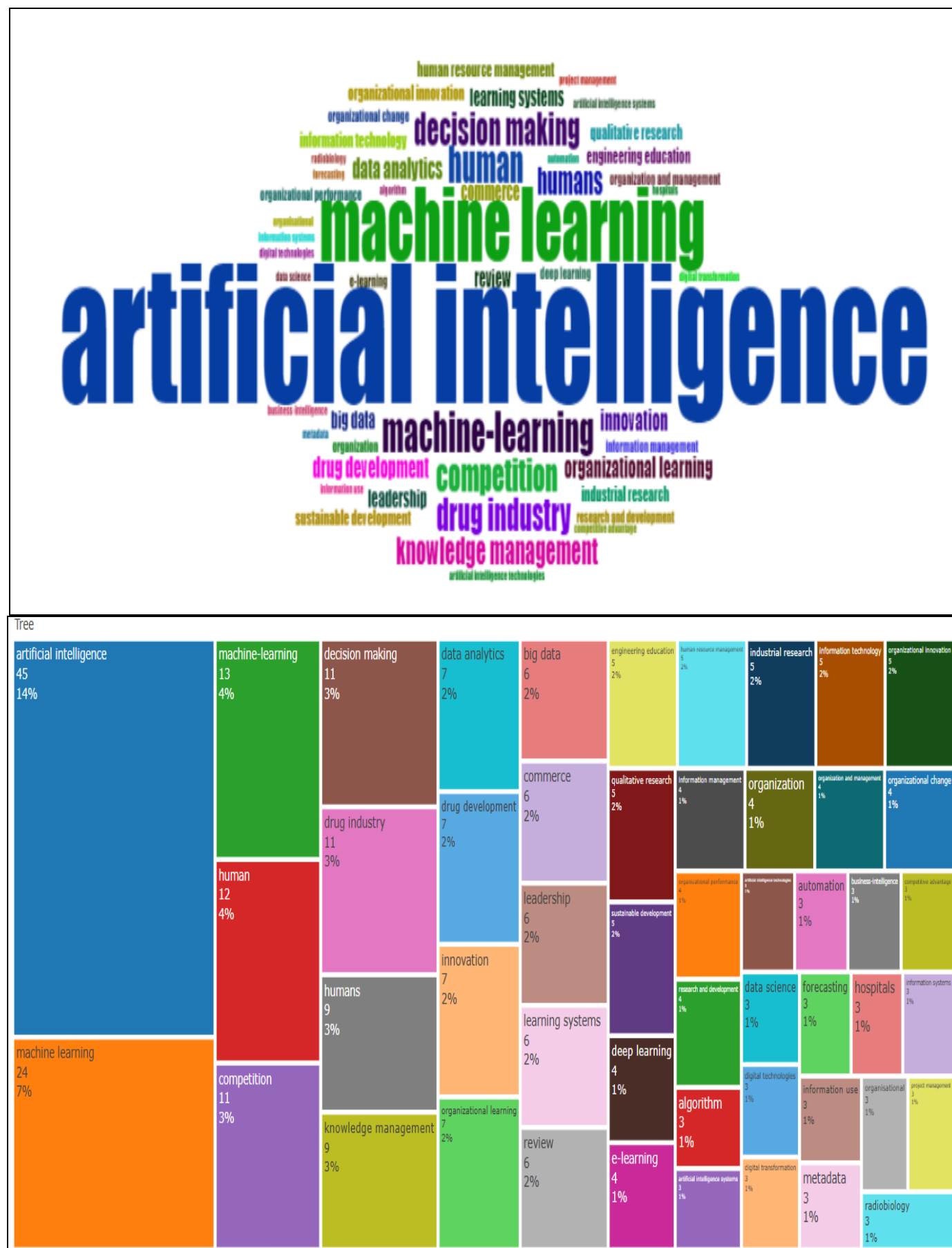
Fig 8: Word Cloud and Tree Map in "Artificial Intelligence in Organizational Learning, Innovation, and Research"

Based on the word cloud and tree map analysis, the terms artificial intelligence, machine learning, and human are among the most frequently mentioned in the context of AI for Organizational Learning, Innovation, and Research. The following is an analysis of how these terms are interconnected with the topic:

➢ *Artificial Intelligence*

Artificial Intelligence (AI) serves as a key term and primary focus within the literature database analyzed (14%). This study will explore the dynamics of AI utilization in the context of organization learning, innovation, and research. A deeper understanding of AI concepts will assist in identifying opportunities for its application, particularly in enhancing operational effectiveness, especially in the area of employee development.

➢ *Machine Learning*

Machine learning is one of the main tools in AI utilization, which is why it appears as one of the most frequently occurring words (11%). Machine learning is related to learning, innovation, and research because it

enables users to personalize learning, support data processing, and generate innovative ideas.

➢ *Human*

Although AI, especially Machine Learning, can drive innovation, optimize learning, and process large amounts of data, humans remain a key component (4%).

These three terms are dominant in the word cloud because they represent the main focus of the research and key concepts related to the implementation of AI for Organizational Learning, Innovation, and Research. The next analysis conducted is "Thematic Evolution", which examines how research topics have developed over time. Figure 9 illustrates the thematic evolution related to AI for Organizational Learning, Innovation, and Research from 2016 to 2024. In the period from 2016 to 2019, the main emerging topic is artificial intelligence. This indicates that AI was still the primary topic. From 2020 to 2023, the connection of AI to technical themes such as artificial intelligence systems began to emerge, along with the appearance of the human aspect. By 2024, the topic of artificial intelligence started to appear in its applications, such as in innovation and competition.
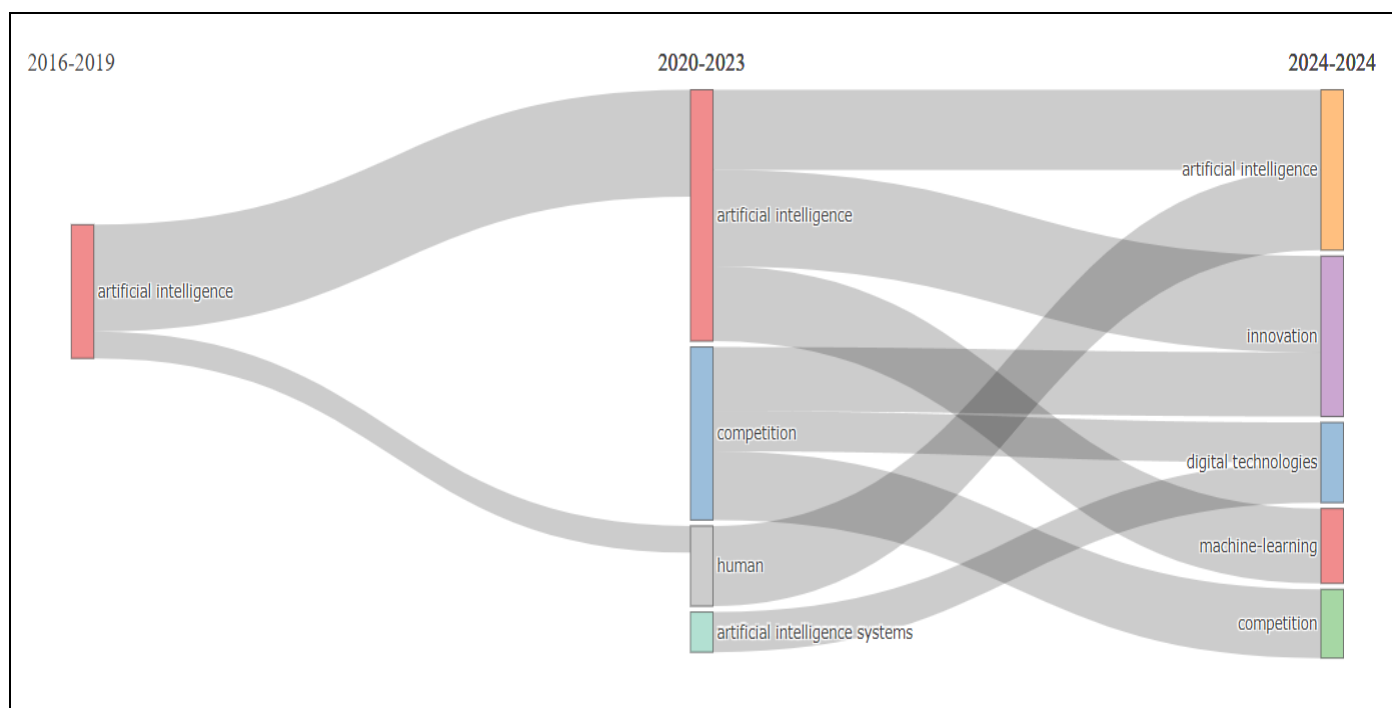

Fig 9: Thematic Evolution in "Artificial Intelligence in Organizational Learning, Innovation, and Research"

The "Thematic Map" is among the methods of analysis developed upon themes or topics of the two aspects: centrality, related to the relevance or importance that a theme may have, and the density, which refers to development about the topic. Artificial intelligence and the analysis of data would be placed on the quadrant "Motor Theme," or well relevant and highly developed in research. The "Basic Theme" quadrant includes topics that are fundamental but which need further development,

positioned in the "Basic Theme" quadrant, and it includes innovation, competition, and commerce. From this relationship between the two quadrants, it can be inferred that though AI and data analytics is a common and prominent research topic, more specific topics—that is, its application within organizational contexts, innovation, and competition—are still not well developed. Figure 10 presents the distribution of themes in this research.
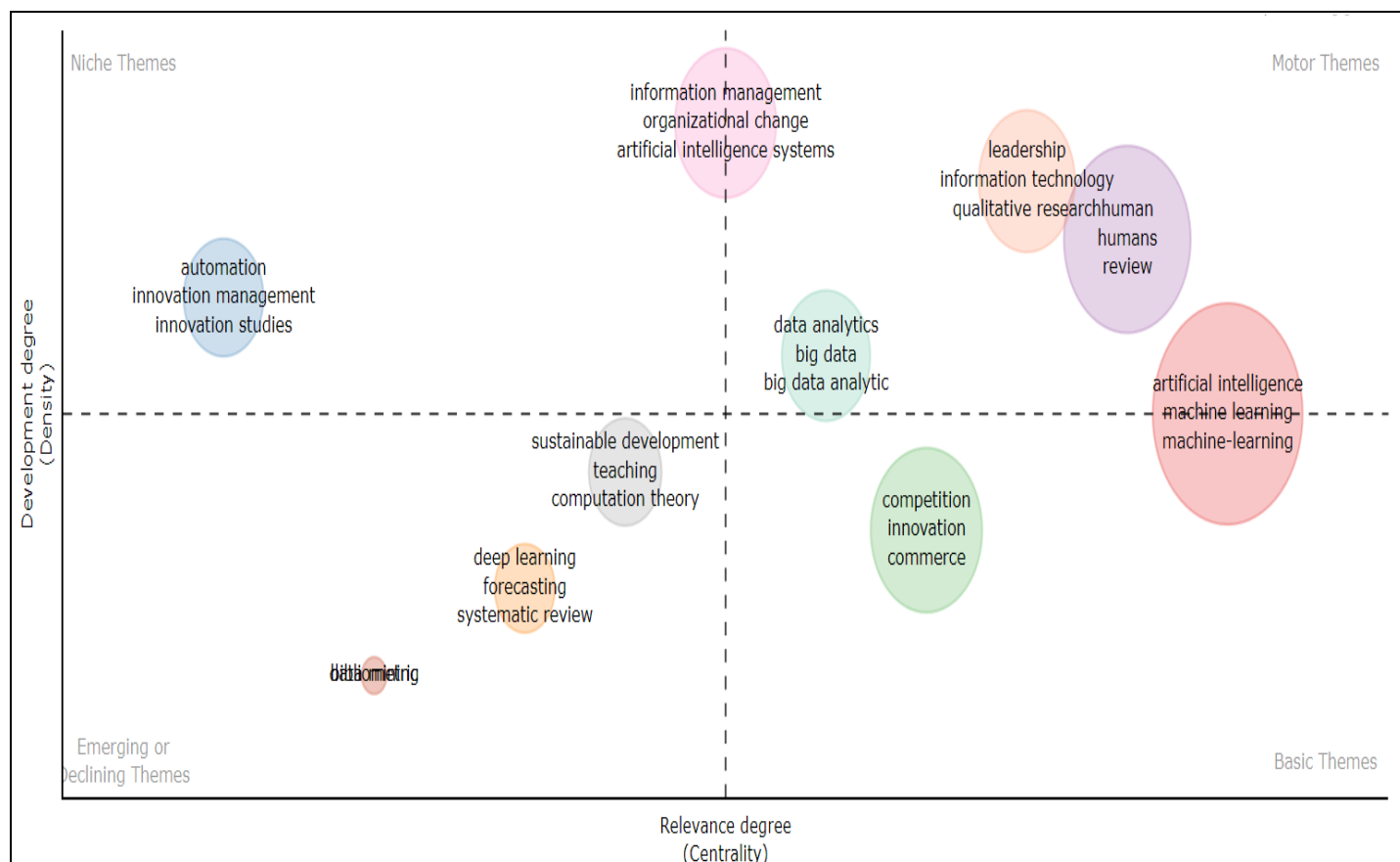
Fig 10: Thematic Map in "Artificial Intelligence in Organizational Learning, Innovation, and Research"

The last one is Co-occurrence network analysis; this technique looks for the study of the relationship or sets between terms or keywords, frequent appearances amongst themselves in researched topics. Figure 11 Co-occurring terms in research regarding AI in organization learning, innovation, and research studies:
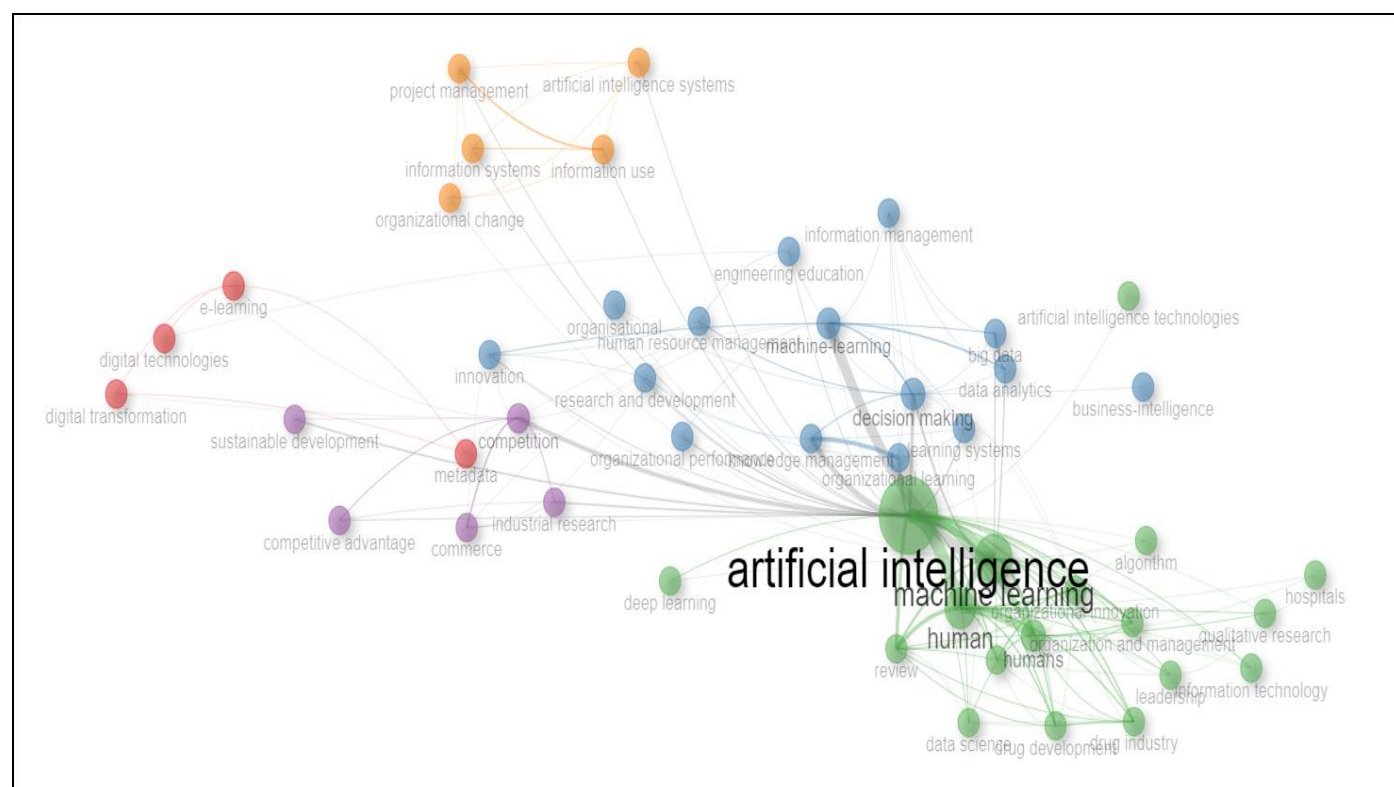

Fig 11: Co-Occurrence Network in "Artificial Intelligence in Organizational Learning, Innovation, and Research"

There are a few main clusters highlighted by colored nodes in the image. Each node is connected with edges, which represent the frequency of terms that co-occur in the literature. The following go to some insights into a few of the main clusters:

➢ *Artificial Intelligence*

"Artificial Intelligence" is the main thematic group in relation to the terms "Organization and Management," "Human," and "Machine Learning." It suggests that AI is hot, and the emphasis on applications is made.

➢ *Machine Learning*

This forms the central thematic group to this being "Machine Learning," representing how machine learning contributes to the attainment of its objectives in strategic learning and Innovation: enhanced adaptive learning and improved development of research and Innovation

➢ *Business Intelligence & Innovation*

Therefore, another cluster was emerging, with two relevant thematic groups: "Artificial Intelligence" and "Machine Learning". This underlined very clearly how much of a relevant role AI plays nowadays in business decision making as well as in technology innovation.

V. CONCLUSION

Based on the findings from the literature review, this study explores the role of AI in an organizational context, mainly in learning, innovation, and research. The study addresses the major thematic clusters within the field of Artificial Intelligence in Organizational Learning, Innovation, and Research, RQ1, that are:

➢ *Artificial Intelligence*

Artificial Intelligence is one of the key technologies within a number of tasks in the organization. It offers personalized learning processes in the area of learning, innovation, and research, and helps in employee engagement. AI can be used for innovation and research in the processing of data for the sake of innovation, thus helping in the making of the right decisions.

➢ *Machine Learning*

Machine Learning, therefore, as a sub-discipline of AI, finds its applications in innovation and research contexts. It can analyze high volumes of data and even make predictions based on historical data; this helps organizations generate research data that will contribute to innovation.

➢ *Business Intelligence & Innovation*

Business Intelligence & Innovation basically refers to the institutionalization of AI and Machine Learning. With AI and Machine Learning helping organizations for better employee learning and efficiency in data processing, innovation has been encouraged, hence leading to business intelligence, which is more about data and information analysis to get strategic business decisions.

From the outcome of RQ1, it will be concluded that AI is the key subject trending in technical applications such as Machine Learning and with impacts on organizational and business contexts, especially on Business Intelligence & Innovation. Publications on Artificial Intelligence in Organizational Learning, Innovation, and Research identified frequently used keywords or topics, as stated under RQ2. Key examples of such keywords in this respect include:

➢ *Artificial Intelligence*

This has evidenced in the analysis results that artificial intelligence is the main keyword and hence AI is the topic that is most central since it forms the basis to implement learning, innovation, and research within an organizational framework. When an organization deploys AI, it enables the organization to function effectively, efficiently, and better realize its potential in creating an idea, innovation, or goal accomplishment.

➢ *Machine Learning*

Apart from AI, Machine Learning is the second most relevant keyword that fits the learning, innovation, and research areas in the organizational context. AI thus is the broader technology area enabling, as a subset of AI, Machine Learning to let machines predict and decide with regards to algorithms. Therefore, especially for data processing when doing research and generating data-driven innovation, Machine Learning becomes an important factor.

➢ *Human*

"Human" is also a prominent keyword since most of the research talks about AI usage in human tasks. This usage of AI does not replace humans but enhances productivity at work so that objectives are met with ease and speed. Therefore, this word "Human" occurs frequently in most AI-related research.

From the RQ2 results, it's possible to establish that all three components are related. AI and Machine Learning represent technologies and tools of learning, innovation, and research; the human component is the main element in the successful implementation of AI in organizations. The section here studies the role of Artificial Intelligence within an organizational framework based on learning, innovation, and research. It identifies crucial thematic clusters such as AI technologies, machine learning, and the applications thereof in the areas of business intelligence and innovation. The findings underline the fact that AI is that very core technology that makes a learning system adaptive and therefore more flexible, automated, and personalized in employee training. This research pointed to the critical contribution of AI in redefining organizational learning strategies and called for further investigation in its application in the area of gaps in measurement, technical considerations, and ethical issues. However, there are some areas of research gaps which may be explored further; the following are a few.

➤ *Measurement:*

Methods for measuring the effectiveness of the usage of AI in employee learning and success of innovation and how effective AI can assist in research.

➤ *Technical Aspects:*

In the future, research could be done to show how technical aspects, like machine learning, can develop appropriate learning technologies to meet the needs of employees in different fields.

➤ *Ethics:*

There are number of ethical issues associated with AI in learning, including data security and cheating. Further research is needed to examine how companies can use AI ethically.

REFERENCES

[1]. Clark, D. (2024). Artificial Intelligence for Learning: Using AI and Generative AI to Support Learner Development (2nd ed). London: Kogan Page

[2]. Otto, F., Kling, N., Schumann, C.A., & Tittmann, C. (2023). A conceptual approach to an AI based adaptive study support system for individualized higher education. *iJAC*, 16(2), 69-80. DOI https://doi.org/10.3991/ijac.v16i2.35699

[3]. Zhai, X., Chu, X., Chai, C.S., Jong, M. S. Y., Istenic, A., Spector, M., Liu, J.B., Yuan, J., & Li, Y (2021). A Review of Artificial Intelligence (AI) in Education from 2010 to 2020. *Complexity*, 2021(6): 1-18. DOI http://dx.doi.org/10.1155/2021/8812542

[4]. Bowen, J.A., & Watson, C. E. (2024). *Teaching with AI: A Practical Guide to a New Era of Human Learning*. Baltimore: Johns Hopkins University Press

[5]. Pavitra, K. H., Agnihorti, A. (2023). Artificial Intelligence in Corporate Learning and Development: Current Trends and Future Possibilities, *2023 Second International Conference On Smart Technologies For Smart Nation (SmartTechCon)*, pp. 688-693. DOI: 10.1109/SmartTechCon57526.2023.10391698

[6]. Deloitte. (2024). *Deloitte Human Capital Trends. Thriving Beyond Boundaries: Human Performance in a Boundaryless World.* Deloitte Insights. Retrieved from https://www2.deloitte.com/us/en/insights/focus/human-capital-trends.html

[7]. Sahoo, S., Kumar, S., Donthu, N., Singh, A. K. (2024). Artificial intelligence capabilities, open innovation, and business performance – Empirical insights from multinational B2B companies. *Industrial Marketing Management*, 117, 28-41. DOI https://doi.org/10.1016/j.indmarman.2023.12.008

[8]. Chubb, J., Cowling, P., & Reed, D. (2021). Exploring the use of AI in the research process. *AI & Society*, 37, 1439-1457. DOI https://doi.org/10.1007/s00146-021-01259-0

[9]. Bersin, J. (2024, March). *The $340 billion corporate learning industry is poised for disruption.* Josh Bersin Insights. Retrieved from https://joshbersin.com/2024/03/the-340-billion-corporate-learning-industry-is-poised-for-disruption/

[10]. Stanford University. (2024). *Human-Centered Artificial Intelligence: Artificial Intelligence Index Report.* https://aiindex.stanford.edu/report/

[11]. Alawamleh, M., Shammas, N., Alawamleh, K., & Ismail, L. (2024). Examining the limitations of AI in business and the need for human insights using Interpretive Structural Modelling. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(3), 1-17. DOI: https://doi.org/10.1016/j.joitmc.2024.100338

[12]. Ahmed, S., Priyadharshini, L., Hosen, M. S., Ng, A., Islam, S., & Manik. J. A. (2024). The Impact Of Artificial Intelligence On Business & Social Values: Benefits, Challenges, And Future Directions. *Educational Administration: Theory and Practice*, 30(6), 3174-3180. DOI: https://doi.org/10.53555/kuey.v30i6.6012

[13]. Bhatt, P., & & Muduli, A. (2022). Artificial intelligence in learning and development: a systematic literature review. *European Journal of Training and Development*, 47(5). DOI: http://dx.doi.org/10.1108/EJTD-09-2021-0143

[14]. Harry, A, & Sayudin. (2023). Role of AI in education. *Injurity: Interdisciplinary Journal and Humanity*, 2(3), 260-268. DOI https://doi.org/10.58631/injurity.v2i3.52

[15]. Hughes, C., Robert, L., Frady, K., Arroyos, A., (2019), Artificial Intelligence, Employee Engagement, Fairness, and Job Outcomes. *Managing Technology and Middle-and Low-skilled Employees (The Changing Context of Managing People)*, Emerald Publishing Limited, pp. 61-68. DOI https://doi.org/10.1108/978-1-78973-077-720191005

[16]. Rao, S., Chitranshi, J., & Punjabi, N. (2020). Role of Artificial Intelligence in Employee Engagement and Retention. *Journal of Applied Management-Jidnyasa*, 12(2), 42–60. http://www.simsjam.net/index.php/Jidnyasa/article/view/156902

[17]. Maity, S. (2019). Identifying opportunities for artificial intelligence in the evolution of training and development practices. *Journal of Management*, 38(8), 651-663. DOI: https://doi.org/10.1108/JMD-03-2019-0069

[18]. Haefner, N., Wincent, J., Parida, V., & Gassmann, O. (2021). Artificial intelligence and innovation management: A review, framework, and research agenda. *Technological Forecasting & Social Change*, 1-10. DOI https://doi.org/10.1016/j.techfore.2020.120392

[19]. Kumar, V., Kumar, S., Chatterjee, S., & Mariani, M. (2024). Artificial Intelligence (AI) capabilities and the R&D performance of organizations: the moderating role of environmental dynamism. *IEEE Transaction on Engineering Management*, 71,

11522-11532. DOI https://doi.org/10.1109/TEM.2024.3423669

[20]. Ezzaim, A., Dahbi, A., Aqqal, A., & Haidine, A. (2024). AI-based learning style detection in adaptive learning systems: a systematic literature review. *Journal of Computers in Education.* DOI https://doi.org/10.1007/s40692-024-00328-9

[21]. Aras, A., & Büyüközkan, G. (2023). Digital Transformation Journey Guidance: A Holistic Digital Maturity Model Based on a Systematic Literature Review *Systems*, *11*(4), 213. DOI https://doi.org/10.3390/systems11040213