HOLISTICA Vol 15, Issue 2, 2024, pp. 1-14 DOI:10.2478/hjbpa-2024-0011

GENERATIVE AI AND LABOUR MARKET RESEARCH INTEREST FRAMEWORK

Adriana GRIGORESCU[1,2]
Florina JOITA[3,*]

Received: October 2024 | Accepted: November 2024 | Published: December 2024
Please cite this paper as: Grigorescu, A., Joita, F. (2024) Generative AI and labour market research interest framework, *Holistica Journal of Business and Public Administration*, Vol. 13, Iss. 2, pp.1-14

Abstract

This study investigates the intersection between generative artificial intelligence (GenAI) and labour market by developing a comprehensive framework to analyse the current state of scientific interest in this emerging topic. The research employs a quantitative methodology, using a comparatively implemented bibliometric analysis, thus examining two major databases, Web of Science and Scopus with the aim to provide a deeper understanding of academic landscape. The research focuses on the database with the largest number of relevant papers, providing insight into the concentration of academic activity in the field, both in terms of evolution over time, trends, countries, keywords and authors with the highest research impact. The research reveals a significant gap in the literature concerning the impact of GenAI in labour market, with only one small percentage of papers addressing this topic. Key findings include a rise in publications post-2018, particularly from the USA, Russia and China, and a lack of developed research networks. This article concludes the further exploration of the implication of GenAI on the labour market is needed, with potential directions for future research.

Keywords: Generative AI; labour market; research interest framework; research networks

1. Introduction

The explosive development of artificial intelligence in recent years is one of the most widely debated topics, both in academia and labour markets, with its impact having a potential that humanity is not yet able to fully anticipate. Ranging from artwork completed with the help of artificial intelligence (Cole, 2024) to administration, biodiversity, geolocation (Brumfiel, 2023), customer services and business (Teja, 2023) to

[1] *National University of Political Studies and Public Administration, Expozitiei Boulevard, 30A, 012104 Bucharest, Romania; adriana.grigorescu@snspa.ro*
[2] *Academy of Romanian Scientists, Ilfov Street 3, 050094 Bucharest, Romania*
[3] *National University of Political Studies and Public Administration, Expozitiei Boulevard, 30A, 012104 Bucharest, Romania; florina.joita@snspa.ro*
** Corresponding author*

warfare (Bergengruen, 2024, pp.30-35), economics (Georgieva, 2024) and education (Bodnick, 2023), the implications of AI are undeniable. There is currently no major industry that is immune to the changes brought about by artificial intelligence, passing through what can be called *the eternal spring of AI* (Thomas, 2023).

While artificial intelligence is currently under the spotlight, the concept is not new. It was introduced in 1956 by John McCarthy at the first conference on the subject, held at Dartmouth College in 1956, just six years after Alan Turing, the father of computer science, asked the question of whether machines can think. He defines artificial intelligence as the science and engineering of machines with the ability to perform intelligent tasks or reasoning processes similar to humans (Rossi, 2016).

The Covid-19 pandemic has accelerated the development of artificial intelligence to expand the ways in which data analytics and technology can be used to combat the virus (Mann et al., 2022). The war in Ukraine has also created a window of opportunity for testing new technologies in real time and under real conditions, particularly by corporations that use the opportunities generated by crises to brand new AI technologies with the tested in Ukraine label, which has become a symbol of reliability (Bergengruen, 2024, pp. 30-35). In this context, generative artificial intelligence has become a refinement of a sphere under constant pressure and necessity, with ChatGPT setting the record for the fastest growing number of users (Hu, 2023).

Generative Artificial Intelligence (GenAI) specifically refers to AI models designed to generate content in various forms, e.g. text, audio, images, videos, code, but also other, less conventional, products such as molecules or 3D renderings, both unimodal pattern-based (generating the same type of output as the input, e.g. text-to-text) and multi-modal (generating outputs of different format, text-to-picture, etc.) (Banh & Strobel, 2023).

The ability to effectively assimilate generative artificial intelligence technologies while exploring new possibilities for growth and differentiation is an influential variable on which future business success will depend (Kanbach et al., 2024). Through the symbiosis between human and machine, it unequivocally surpasses the results generated by human intelligence alone or by artificial intelligence alone taken separately (Broussard, 2018). It is clear that the development of this direction will bring paradigm shifts in the way many industries operate, stimulating innovation. It remains to be investigated just at what pace and to what extent this will occur. According to an Elsevier study, 95% researchers and clinicians think AI will help accelerate knowledge discovery and, unlike the technological revolution of the past, GenAI will have a greater impact on knowledge work, tasks involving creativity and decision making, rather than physical labour (Elsevier, 2024).

The possibility to create quality digital content has facilitated the doubling of artificial intelligence adoption by businesses in recent years. A McKinsey & Company study (2022) shows that while only 20% of respondents were using this type of technology in 2017, by 2022 the percentage had already reached to 50%. OpenAI exceeded user expectations with the launch of ChatGPT, which quickly generated impressive results (OpenAI, 2023). This was followed by competing products such as Google's Gemini, Microsoft's Copilot

and Adobe's suite (Adobe Firefly), as well as expanding to image generators (DALL-E, Stable Diffusion, Midjourney), videos (Runway Gen-2) and coding tools (GitHub Copilot), these are just some of the most popular tools based on generative AI that are being used by professionals and amateurs.

Of course, beyond the obvious advantages, the expansion of the industry has also come with a number of challenges, both in terms of practical, economic and educational limitations in adoption by organizations (IMB Corporation, 2022), as well as relating to legal (Bertolini, 2020), ethical (Floridi, 2023) and security regulations in the face of deepfake (Chen & Magramo, 2024). Concerns have also been raised about the carbon footprint generated by AI industries; a single search in ChatGPT can consume 100 times more energy than a Google search, with data center emissions already exceeding those from the aviation industry (Cho, 2023).

The top four largest companies in the world are information technology companies (Apple, Microsoft, Nvidia, Alphabet), followed by Amazon, (Consumer Discretionary), Saudi Aramco (Energy), Meta Platforms (IT), Berkshire Hathaway (Financials), Eli Lilly (Healthcare) and Taiwan Semiconductor (IT), which provides insight into the actual focus in terms of the current labour market and financial interest (Ventura, 2024). Accelerating progress in AI and automation technologies is creating automatic disruptions in the labour market and, while it may increase productivity in some spheres, on the other hand it raises concerns about mass technological unemployment and the need to reshape skill requirements, career opportunities and the distribution of workers across industries. (Frank et.al, 2019). Moreover, automation directly correlates with employment stability for existing workers taking on new tasks of higher quality (Dauth et.al., 2021).

In China, the development of the digital economy has a positive influence on the green economy through the technological innovation of the industrial structure, insight that can lead to the acceleration of the development of the green economy. (Wang et.al., 2024) On the other hand, the US is refining its preference towards the growth of Gig economy which operates on the principle that gig firms are based on a triangulation between the worker, the customer seeking services and the algorithm, thus embracing technology and increasingly changing the traditional concept of labour market, bringing more flexibility, autonomy, but also more instability (Baber, 2024).

In this context, the present research seeks to explore the intersection of the dimensions of *artificial intelligence* and *generative artificial intelligence* with the *labour market,* in terms of research.

The research questions are:

Q1: How much attention has been given to the field of artificial intelligence, Gen AI, labour market and their intersection in quantitative terms on two of the largest databases: Web of Science and Scopus?

Q2: What is the evolution over time in the fields studied and what was the point of intersection?

Q3: What is the typology of articles and publications?

Q4: What is the geographical distribution of research and clusters of interest and collaboration?

Q5: What is the profile of authors in relation to international collaborations and research networks?

Answering these questions will provide a scenario of the current state of research in the field of Artificial Intelligence, GenAI and labour market contributing to an overview of the areas already researched, but also of areas that need further investigation.

2. Methodology framework

The bibliometric analysis uses research indexed in Web of Science (WoS) and Scopus, in the fields of artificial intelligence, GenAI and labour market, and the intersection between them. The research framework is built on a two-step model involving data collection and data analysis.

In the first step, the data collection stage, an advanced search will be performed within each database using keywords and relevant terms in the field. It also involves filtering and downloading of articles and their bibliometric information in the field of AI, GenAI and labour market, as well as those at the intersection of AI and labour market and GenAI and labour market.

The data analysis will first be done at a comparative level between the two databases, then we will continue with the one with the most entries and use an in-depth analysis utilizing VOSviwer to identify trends, co-occurrences, authorship, geographical presence and research networks, types of relevant papers, citations, etc.

VOSview is a software tool designed for building maps based on network data and for visualizing and exploring these maps both in the overview and in depth. VOSview can be used in building networks related to scientific publications, journals, researchers, organizations, countries, keywords that can be linked and grouped into clusters of interest. The application also provides three types of visualizations: network, overlap and density visualizations (Van Eck & Waltman, 2023).

3. Results

Data extraction was done on a comparative level between WoS and Scopus. Even though the papers identified by the keywords *artificial intelligence, Generative AI* and *labour market* are similar in the two databases, the intersection of the two concepts with labour market is significantly more pronounced in Scopus. Searching by the keywords *artificial intelligence* and *labour market* returned 147 entries in WoS, compared to four times as many hits in Scopus (623) which led to the decision to continue the in-depth search in this database. Another aspect that we can observe is that artificial intelligence is an area of particular interest, with the number of searches available being around 600 thousand in each database. GenAI and labour market are of similar interest as independent fields, but the papers that have addressed both topics are surprisingly low. Only 2 contributions in

WoS and 15 in Scopus. We can thus conclude, as we can see in Table 1, that the impact that the use of GenAI technology has on the labour market is under-investigated, which may represent a possible future research direction.

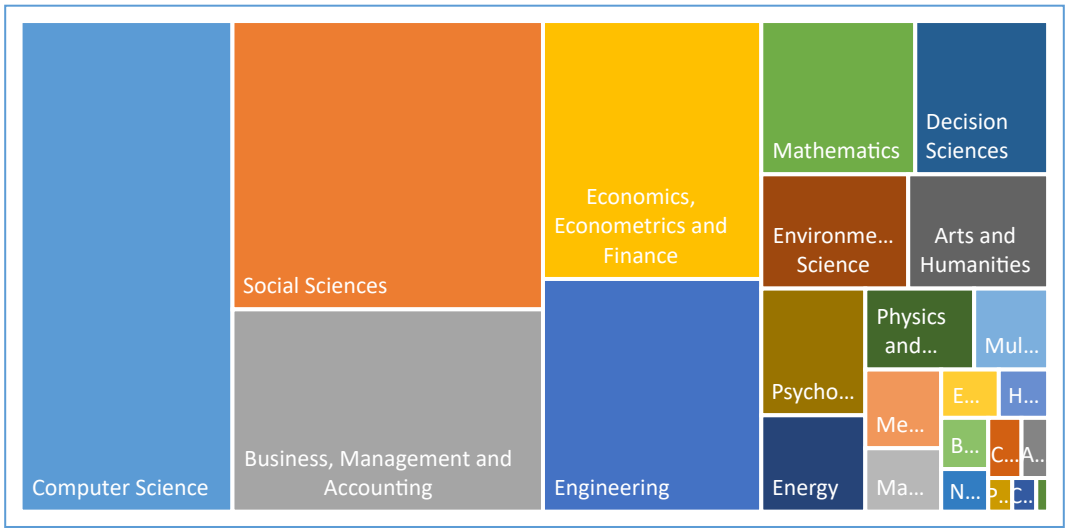
Table 1 Number of articles indlexed in WoS and Scopus

Keywords	WoS	Scopus
Artificial Intelligence	580,875	623,164
Generative AI	12,469	12,384
Labour market	101,918	112,744
”Artificial Intelligence” and ”Labour market”	147	623
”Generative AI” and ”Labour market”	2	15

Source: WoS and Scopus, data extracted by authors

In the following, we analyse the 623 papers that resulted from the search of the keywords *artificial intelligence* and *labour market*. The main subject areas are computer science (260 papers), followed by social sciences (224 papers); business, management and accounting (157 papers); engineering (141 papers); economics, econometrics and finance (127 papers). Mathematics, environmental science, psychology and energy have a smaller share (Figure 1).

Figure 1 Subject area for artificial intelligence & labour market

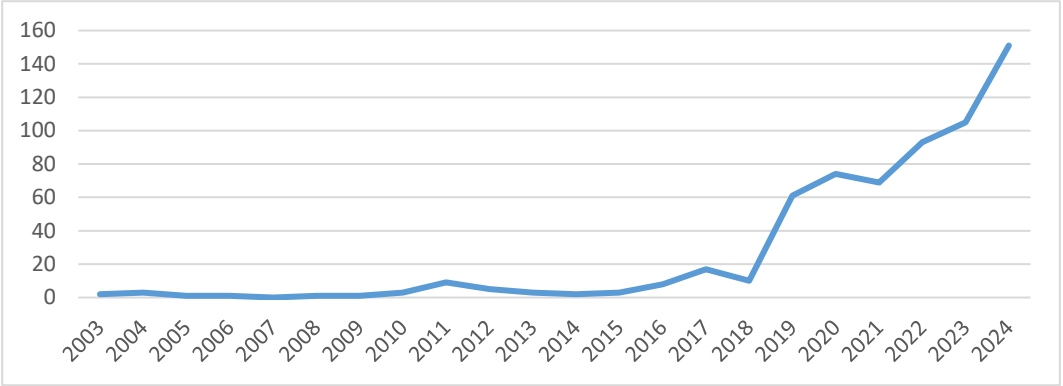


Source: authors representation, 2024

Next, we studied the evolution of the topic over time. The first paper was published in 2003. By 2018 their frequency is close to zero. Starting with the year 2016 there is a slight

increase, the frequency of articles accelerating only from 2019. Also, in the last two years the number of articles has doubled, still following a strong upward curve. (Figure 2)

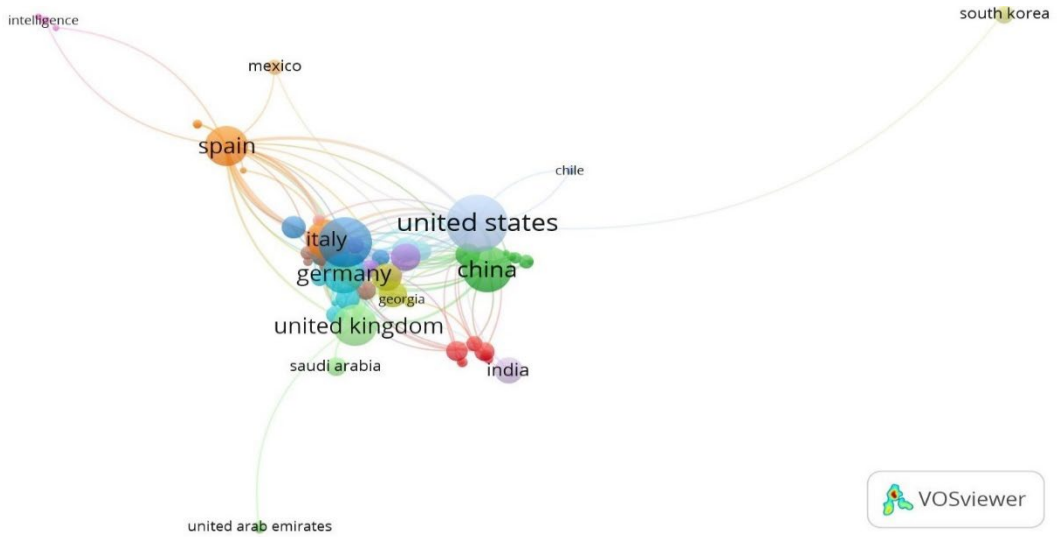
Figure 2 Publication over time for artificial intelligence & labour market



Source: authors representation, 2024

In terms of geographical representation of the research, there are 95 countries represented in the results. For each of the 95 countries, the total strength of the co-authorship links with other countries was calculated. Some of the 95 items in our network are not connected to each other. Of these, only 77 countries are interconnected, as can be seen in Figure 3. The country with the highest presence in the research is the USA (86 papers), followed by the Russian Federation (66 papers), China (55 papers), UK (45 papers), Spain and Germany (each 43 papers).

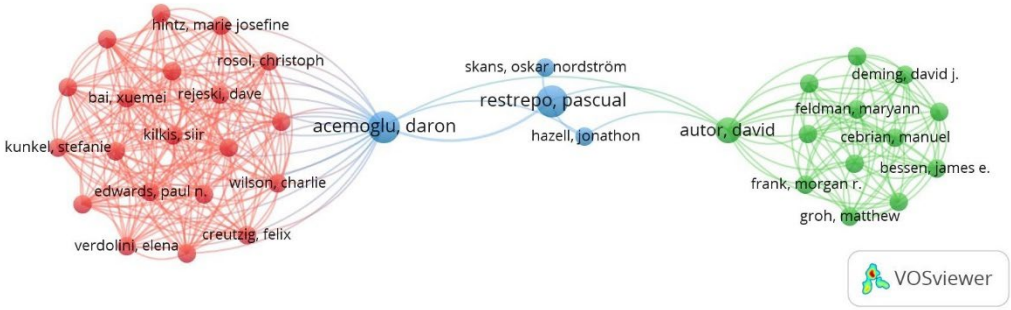
Figure 3 Countries for artificial intelligence & labour market



Source: authors extraction from VOSviewer, 2024

From the current research, we identified a total of 1722 authors. Of these, two have 7 publications each (Fabio Mercorio and Mario Mezzanzanica). However, they are not the most cited researchers in the field. The researcher with the highest number of citations (411 items) is Autor David, who has only two published articles. Of all researchers, three authors have 4 papers published in this field, and 13 authors have 3 papers published. The very small number of authors with a co-occurrence of a minimum of three is leading us to the conclusion that they accidentally approached this topic in addition to their primary area of research. Out of a total of 1722 researchers, only 38 are grouped together and form three clusters. (Figure 4)

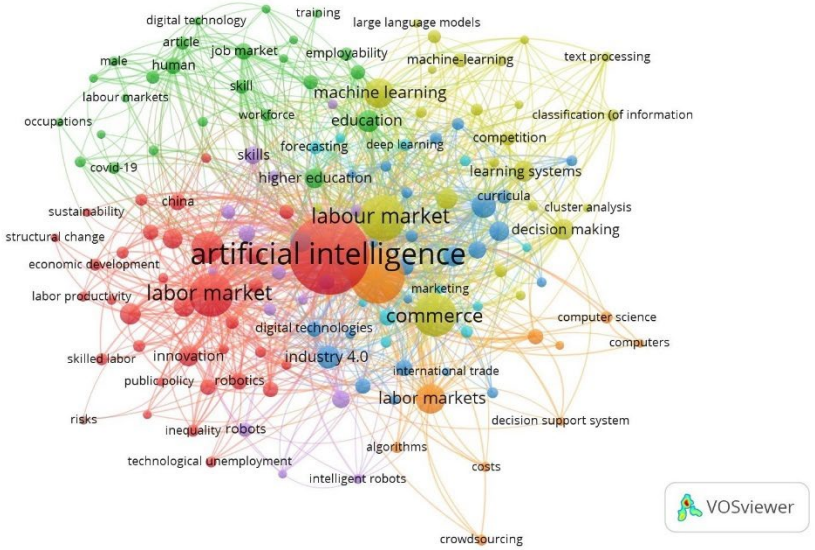
Figure 4 Authors for artificial intelligence & labour market



Source: authors extraction from VOSviewer, 2024

In terms of keywords, there are a total of 3278 inputs. Figure 5 shows a selection of 145 keywords that meet the frequency criterion of at least 5 occurrences and how they were interlinked.

Figure 5 Keywords for artificial intelligence & labour market

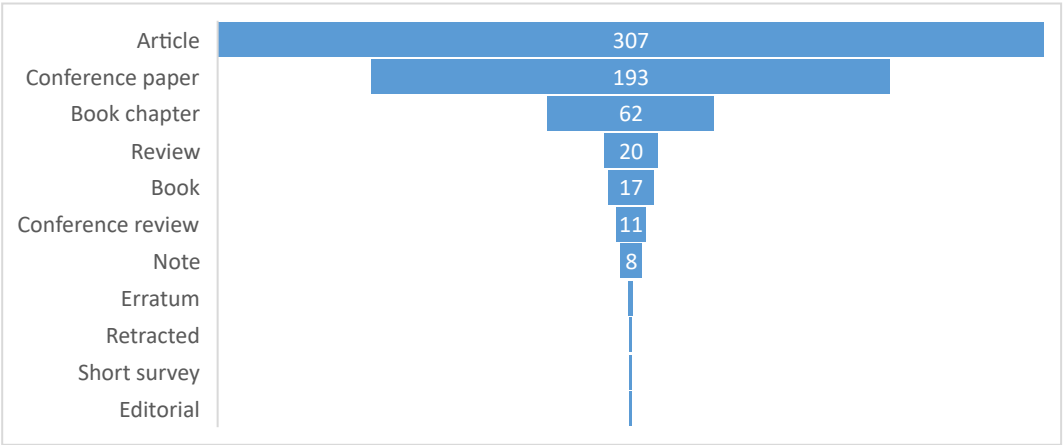


Source: authors extraction from VOSviewer, 2024

The most frequent keyword is, as expected, *artificial intelligence* (341 occurrences), followed by *labour market* and *labor market* which total 220 occurrences. Next, the keywords employment (162), commerce (99) and automation (53) give us an insight into the topics on which the researchers have focused their attention. We can see from the analysis of the keyword clusters that China's labour market is a topic of interest and is closely related to economic and social impacts, innovation and digital technologies. The Covid-19 pandemic is also closely related to the fields of AI and labour market.

Of the 623 papers found at the intersection of *artificial intelligence* and *labour market*, almost half are articles (307 items), 193 are conference papers, 62 are book chapters, 20 are reviews, and 17 are books. A very small percentage are other types of papers, such as conference review, notes, erratum, retracted, short survey, and editorial. (Figure 5)

Figure 6 Keywords for artificial intelligence & labour market



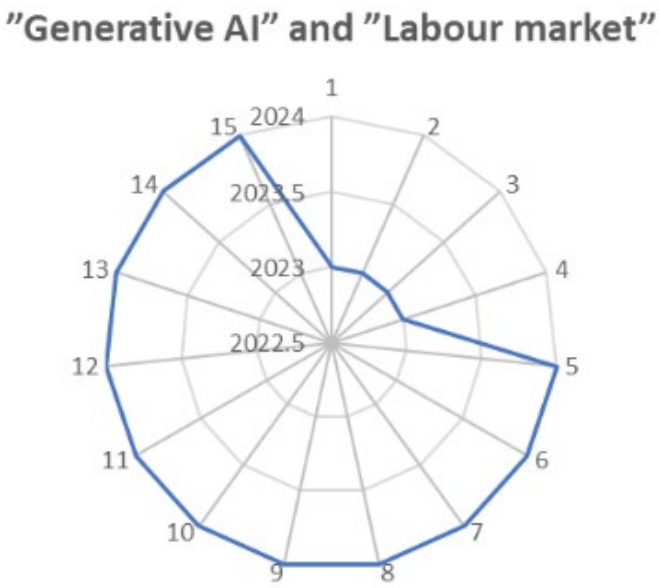
Source: authors representation, 2024

The overwhelming majority of the language in which these researches are published is English (587 papers), followed by Russian (15 papers), Spanish (9 papers) and German (4 papers). Despite the fact that China is among the top countries in terms of number of publications, only one research is published in Chinese, which leads us to conclude that they prefer to publish in English, for more visibility, but also because of the networks they are involved in.

Nevertheless, we tracked the availability of papers and identified 228 all open access publications, which are directly accessible without restrictions, and 124 Gold publications, which imply that authors or their organizations pay publication fees. In the Green version there are 57 papers, which means that the final publication is available via paid access, but authors can provide a free version on a public server. Hybrid gold covers 48 papers that can be offered for free to the public, while the rest of the papers in the journal are paywall protected. Finally, only 21 articles are available for a limited time in the Bronze version.

In order to deepen our understanding, we continued by refining the same criteria but changing the keywords to *Generative AI* and *labour market*. As we have already mentioned, there are only 15 papers that fit the criteria. Of these, 4 were published in 2023 and 11 in 2024 by the time of this analysis (Figure 7).

Figure 7 Timeline for generative AI & labour market



Source: authors representation, 2024

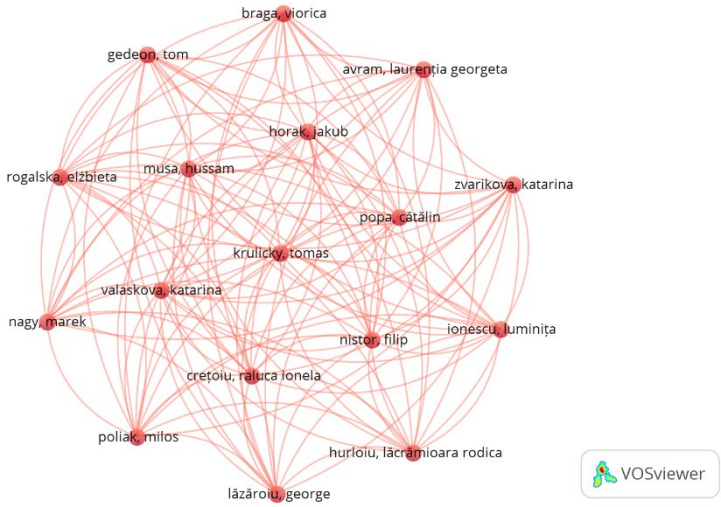
We also identified 19 countries that showed interest in the topic. The country with the highest number of research papers is the UK (4 papers) followed by Australia (3 papers). Countries with the highest number of citations are: Australia, USA and Spain (65 citations each). Of the 19 countries, only 14 are interconnected, as can be seen from Figure 8. We can observe that the top countries do not maintain their order compared to the previous research.

Figure 8 Countries for generative AI & labour market

Source: authors extraction from VOSviewer, 2024

Due to the low number of articles, author networks are also underdeveloped. There is only one cluster of researchers. A total of 63 researchers were identified. Of these, only 17 are interconnected. (Figure 9)

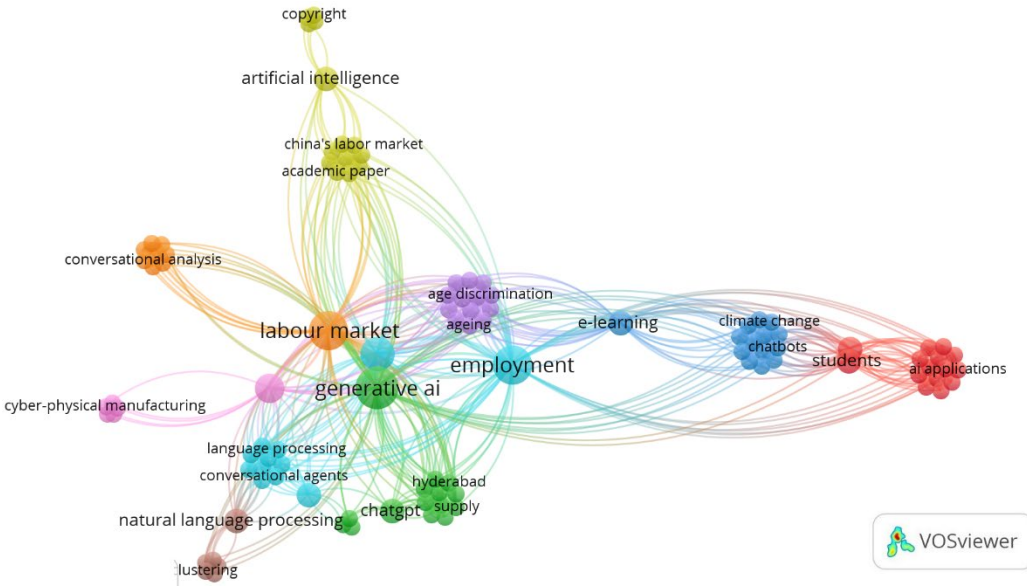
Figure 9 Authors for generative AI & labour market



Source: authors extraction from VOSviewer, 2024

We identified 116 keywords among which we observe a particular connection between *copyright, artificial intelligence* and *china's labor market*. Further, these issues are of interest to researchers. Also, the launch of generative AI is closely related to discussions on employment. Climate change, e-learning and supply are also topics of discussion. Of all the GenAI platforms it can be observed that the only one that is visibly under discussion is ChatGPT.

Figure 10 Keywords for generative AI & labour market



Source: authors extraction from VOSviewer, 2024

Out of the total papers, 6 are articles, 6 are conference papers, one is a book, one is a book chapter and one is a review. All papers are written in English. The main areas of interest are computer science, social sciences, business, management and accounting, engineering, arts and humanities. Finally, only four of the total papers are all open access.

4. Discussion, and Conclusions

The present research explored the junctions between the dimensions of artificial intelligence / generative artificial intelligence and the labour market and identified a surprising gap in research on the impact that the development of new technologies has on the demand and supply of jobs. Only about 0.1% of all papers on Artificial Intelligence are related to the labour market. The percentage related to Generative AI is even lower.

The increase in the number of publications coincides with the development of significant advances in the fields of process automation (Sumit et.al., 2019), edge intelligence (Zhi et.al., 2019), machine learning (Dunjko & Briegel, 2018), data analytics and face recognition (Cremer & Loebbecke, 2019), behaviour prediction (Roy et. al., 2020) and others. Also, the boom period corresponds with the development of Deep Neural Networks (Deep Learning) that have been widely deployed, changing the way companies conduct research and development activities (Wu et.al., 2020). The emergence of new technologies has changed the demands on the labour market, increasing the demand for technical skills such as programming, data analysis, computer science and IT infrastructure management. Moreover, the period overlaps with the rise of cloud computing technologies, Internet of Things (IoT) and the deployment of 5G technologies enabling much faster internet speeds which has been an important step towards digital transformation in many industries (Stergiou et.al., 2018).

Regarding the geographical representation of the research, what is interesting to note is the link between Spain and the Russian Federation. We also note that, apart from China, the presence of Asia and Africa in the research is insignificant. China aims to become the main competitor in the field of artificial intelligence by 2030 and the steps taken in this direction place it in a favourable perspective (Roberts, 2020). However, the other Asian countries with a strong presence in the industry are not as present in research and publication as we would have expected.

The United States is by far the leader in knowledge production. San Francisco is the epicentre of large tech companies and startups attracted by the industry. (DiFeliciantonio, 2023). Major development firms in artificial intelligence are investing billions of dollars into data centers throughout the U.S. which has a big impact on both jobs and demand for skilled workers, as well as the entire economy, with projects requiring energy resources and other infrastructural needs (Montie, 2024).

On the other hand, the second major player in the competition for innovation, the Russian Federation declared in 2017 through President Putin its entry into the race for technology development and global supremacy (Petrella et.al., 2021), which was considerably slowed down with the outbreak of the war in Ukraine that generated the migration of IT workers

and the suspension of companies' activities, as well as the embargo on the export of technological production imposed on the country (Nadibaidze, 2024).

The almost inexistence of research networks shows that complex studies on artificial intelligence and labour market are still underdeveloped. Also, another possible research area is generative artificial intelligence which is still emerging and is dependent on the quality of available data (Rashidi et.al., 2024).

The limitations of the study consist in searching documents indexed in only two major databases Wos and Scopus. Expansion to the other databases may provide a more accurate perspective. Also, the research was done only on bibliometric data, not in depth text mining, due to the small number of resulting articles. Further research can gather articles from all international databases and text mining in depth to identify trends in terms of topic and nature of discourse used.

References

Baber, A. (2024). Labour Market Engineers: Reconceptualising Labour Market Intermediaries with the Rise of the Gig Economy in the United States. *Work, Employment and Society*, 38(3), 723-743. https://0z11psy6d-y-https-doi-org.z.e-nformation.ro/10.1177/09500170221150087

Banh, L., & Strobel, G. (2023). Generative artificial intelligence. *Electronic Markets* Volume 33, article number 63. https://link.springer.com/article/10.1007/s12525-023-00680-1#ref-CR57

Bergengruen, V. (2024). How Tech Giants Turned Ukraine into an AI war lab, The first AI war, *Times.* https://time.com/6691662/ai-ukraine-war-palantir/

Bertolini, A. (2020). Artificial Intelligence and Civil Liability (PE 621.926). Policy Department for Citizens' Rights and Constitutional Affairs Directorate-General for Internal Policies. https://www.europarl.europa.eu/RegData/etudes/STUD/2020/621926/IPOL_STU(2020)621926_EN.pdf

Bodnick, M. (2023, September 1). GPT-4 Can Already Pass Freshman Year at Harvard. Profesor need to adapt to their students' new reality – fast. *The Cronicle of Higher Education,* 34-37.

Broussard, M. (2018). *Artificial Unintelligence. How computers Misunderstand the world.* The MIT Press

Brumfiel, G. (2023, December 19). Artificial intelligence can find your location in photos, worrying privacy experts, *NPR.* https://www.npr.org/2023/12/19/1219984002/artificial-intelligence-can-find-your-location-in-photos-worrying-privacy-expert

Chen, H., & Magramo, K. (2024, February 4). Finance worker pays out $25 million after video call with deepfake 'chief financial officer'. *CNN* https://edition.cnn.com/2024/02/04/asia/deepfake-cfo-scam-hong-kong-intl-hnk/index.html

Cho, R. (2023). AI's Growing Carbon Footprint. *Columbia Climate School.* https://news.climate.columbia.edu/2023/06/09/ais-growing-carbon-footprint/

Cole, M. (2024, January 16). AI "completes" Keith Haring's Intentionally Unfinished last Artwork, Sparks Controversy, *My Modert Met.* https://mymodernmet.com/artificial-intelligence-finishes-keith-harings-unfinished-painting/

Cremer, S., & Loebbecke, C. (2019). Artificial Intelligence Imagery Analysis Fostering Big Data Analytics. *Future Internet,* 11(8), 178. https://doi.org/10.3390/fi11080178

Dauth, W., Findeisen, S., Suedekum, J., & Woessner,N. (2021). The Adjustment of Labor Markets to Robots. *Journal of the European Economic Association*, Volume 19, Issue 6, December 2021, 3104–3153. *https://doi.org/10.1093/jeea/jvab012*

DiFeliciantonio, C. (2023). S.F. is home of the AI revolution. Map shows where OpenAI, other major companies are located. *San Francisco Chronicle*. https://www.sfchronicle.com/projects/2023/sf-ai-companies/

Dunjko, V., & Briegel, H. (2018). Machine learning & artificial intelligence in the quantum domain: A review of recent progress. *Reports on Progress in Physics*, Volume 81, Issue 719 June 2018 https://iopscience.iop.org/article/10.1088/1361-6633/aab406

Elsevier. (2024). Insights 2024: Attitudes toward AI. https://www.elsevier.com/insights/attitudes-toward-ai

Floridi, L. (2023). *The Ethics of Artificial intelligence.* Principles, Challenges, and opportunities. Oxford

Frank, M.R., Autor, D., Bessen, J.E., Brynjolfsson, E., Cebrian, M., Deming, D.J., Feldman, M., Groh, M., Lobo, J., Moro, E., Wang, D., Youn, H., & Rahwan. I. (2019). Toward understanding the impact of artificial intelligence on labor. *Proc. Natl. Acad. Sci.* U.S.A.116 (14) 6531-6539, https://doi.org/10.1073/pnas.1900949116

Georgieva, K. (2024, January 14). AI will transform the global economy. Let's make sure it benefits humanity, *IMF.* https://www.imf.org/en/Blogs/Articles/2024/01/14/ai-will-transform-the-global-economy-lets-make-sure-it-benefits-humanity

Hu, K. (2023, February 2). ChatGPT sets record for fastest-growing user base - analyst note. *Reuters.* https://www.reuters.com/technology/chatgpt-sets-record-fastest-growing-user-base-analyst-note-2023-02-01/

IBM Corporation. (2022). IBM Global AI Adoption Index 2022. https://www.ibm.com/downloads/cas/GVAGA3JP

Kanbach, D., Heiduk, L., Blueher, G., Schreiter, M., & Lahmann, A. (2024). The GenAI is out of the bottle: generative artificial intelligence from a business model innovation perspective. *Review of Managerial Science* Volume 18, 1189–1220. https://link.springer.com/article/10.1007/s11846-023-00696-z

Mann, S., Berdahl, C.T., Baker, L., & Girosi, F. (2022). Artificial intelligence applications used in the clinical response to COVID-19: A scoping review. *PLOS Digit Health* 1(10): e0000132. https://doi.org/10.1371/journal.pdig.0000132

McKinsey&Company. (2022). The state of AI in 2022-and a half decade in review https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2022-and-a-half-decade-in-review#/

Montie, E. (2024). Elon Musk's xAI Announces New Data Center: Where Do A.I. Giants Store Their Data? Where Google, Amazon, Meta and OpenAI process and store their data. *Observer.* https://observer.com/2024/06/elon-musk-xai-big-tech-data-center-location/

Nadibaidze, A. (2024). Technology in the quest for status: the Russian leadership's artificial intelligence narrative. *Journal of International Relations and Development,* 117–142. https://doi.org/10.1057/s41268-023-00322-1

OpenAI. (2023). GPT-4 Technical Report. https://arxiv.org/pdf/2303.08774

Petrella, S., Miller, C., Cooper,B. (2021). Russia's Artificial Intelligence Strategy: The Role of State-Owned Firms. *Orbis*, Volume 65, Issue 1, 75-100. https://doi.org/10.1016/j.orbis.2020.11.004.

Rashidi, H.H., Hu, B., Pantanowitz, J., Tran, N., Liu, S., Chamanzar, A., Gur, M., Chang, C.C.H., Wang, Y., Tafti, A., Pantanowitz, L., & Hanna, M.G. (2024). Statistics of Generative AI & Non-Generative Predictive Analytics Machine Learning in Medicine. *Modern Pathology,* 100663. https://doi.org/10.1016/j.modpat.2024.100663.

Roberts, H., Cowls, J., Morley, J., Taddeo, M., Wang, V., & Floridi, L. (2021). The Chinese approach to artificial intelligence: an analysis of policy, ethics, and regulation. *AI & Soc* 36, 59–77. https://doi.org/10.1007/s00146-020-00992-2

Rossi, F. (2016). Artificial Intelligence: Potential Benefits and Ethical Considerations (Briefing PE 571.380). *European Parliament.* https://www.europarl.europa.eu/RegData/etudes/BRIE/2016/571380/IPOL_BRI%282016%29571380_EN.pdf

Roy, A., Nikolitch, K., McGinn, R., Jinah, S., & Klement, W. (2020). A machine learning approach predicts future risk to suicidal ideation from social media data*. npj Digit. Med.* **3**, 78. https://www.nature.com/articles/s41746-020-0287-6

Stergiou, C., Psannis, K.E., Kim, B-G., & Gupta, B. (2018*).* Secure integration of IoT and Cloud Computing*.* Future Generation Computer Systems**,** Volume 78, 964 – 975 https://doi.org/10.1016/j.future.2016.11.031

Sumit, M., Sree Devi, K.K., & Badri Narayanan, M.K. (2019). People & process dimensions of automation in business process management industry. *Blue Eyes Intelligence Engineering and Sciences Publication* https://www.ijeat.org/portfolio-item/F8555088619/

Teja, P.B. (2023, September 14). 16 Leading Companies Using Chatbots for Curtomer Service, *SiteGPT*. https://sitegpt.ai/blog/companies-using-chatbots-for-customer-service

Thomas, M. (2023, March 3). The future of AI: How artificial intelligence will change the world. *Builtin.* https://builtin.com/artificial-intelligence/artificial-intelligence-future

Van Eck, N.J.,& Waltman, L. (31 Octombrie 2023) Manual Manual for VOSviewer version 1.6.17, Centre for Science and Technology, Leiden University, The Netherland. Disponibil la VOSviewer - Visualizing scientific landscapes

Ventura, L. (2024). World's largest Companies in 2024. *Global Finance.* https://gfmag.com/data/biggest-company-in-the-world/

Wang, C., Liu, T., Du, D., Zhu, Y., Zheng, Z., & Li, H. (2024). Impact of the Digital Economy on the Green Economy: Evidence from China. *Sustainability*, *16*(21), 9217. https://doi.org/10.3390/su16219217

Wu, X., Sahoo, D., & Hoi, S.C.H. (2020). Recent advances in deep learning for object detection. *Neurocomputing,* Volume 396, 39-64. https://doi.org/10.1016/j.neucom.2020.01.085

Zhi. Z., Xu C., En, L., Liekang, Z., Ke, L., & Junshab, Z. (2019). Edge Intelligence: Paving the Last Mile of Artificial Intelligence With Edge Computing. *Proceedings of the IEEE,* Volume 107, Issue 8, 1738 – 1762. https://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=8736011&utm_source=scopus&getft_integrator=scopus