SDGS STUDIES REVIEW
e-ISSN: 2966-0548 | DOI: https://doi.org/10.37497/sdgs.v6istudies.45

Check for updates

RESEARCH ARTICLE

Artificial Intelligence: Profile and Behavior in the Brazilian Academy

Henrique César Melo Ribeiro
Universidade Federal do Delta do Parnaíba (UFDPar), Piauí (Brazil).

ABSTRACT | Purpose: To investigate the profile and behavior of scientific production and social network structures on the topic of artificial intelligence published in Brazilian academic journals from the SPELL database perspective between 1988 and 2023. **Design/Methodology/Approach:** A bibliometric and sociometric survey of 89 Brazilian articles was used. **Findings:** A growing trend for the topic of artificial intelligence in the national academic panel; the Journal of Information Systems and Technology Management and Revista Gestão & Tecnologia were the most productive journals; the Federal University of Rio Grande do Norte, the Federal University of Uberlândia, and the University of São Paulo were the most productive institutions. The actors' social networks were all measured with low density. Regarding the social networks of the keywords, the terms that stood out were: artificial intelligence, digital transformation, technology, machine learning, neural networks, Industry 4.0, artificial neural networks, and COVID-19. **Practical implications:** The most relevant conceptual approaches to AI may prove useful, as they will be more widely recognized in the administration and decision-making of business managers and public policymakers. **Originality/Value:** This research presents the state of the art on AI in the Brazilian academic literature context from the perspective of SPELL and sociobibliometrics, thus providing contemporary data, information, and knowledge on AI for researchers, especially those new to this field.

Keywords | Artificial intelligence, Scientific production, Brazilian journals, Bibliometrics, Sociometry. SPELL database (ANPAD).

Received: 20 May 2025
Revised: 24 August 2025
Accepted: 30 August 2025
e-ISSN: 2966-0548

Corresponding Author: Henrique César Melo Ribeiro – E-mail: hcmribeiro@gmail.com

Editor in chief: Dr. Altieres Silva – ALUMNI IN (EUA).

How to cite this article: Ribeiro, H. C. M. (2025). Artificial Intelligence: Profile and Behavior in the Brazilian Academy. *SDGs Studies Review* , *6*(studies), e045. https://doi.org/10.37497/sdgs.v6istudies.45

1. INTRODUCTION

Industry 4.0 is characterized as the Fourth Industrial Revolution, and Artificial Intelligence (AI) is integrated into this process (Atamanczuk & Siatkowski, 2019), the term AI was first introduced in 1956 by John McCarthy and has since been recognized as a disruptive technology developed throughout the 20th century (Cabrera, 2023). In this context, digital transformation is highlighted, defined as the adoption of innovative digital technologies, among which AI stands out (Borges, Leroy, Carvalho, Lima & Oliveira, 2020; Rocha & Kissimoto, 2022). That said, AI has undergone an evolution, aiming to support solutions to complex problems within organizations and, consequently, in the business world (Piccolo, Pereira, Katahira, Vidotti & Rodas, 2021; Ruiz-Real, Uribe-Toril, Torres & De Pablo, 2021; Dwivedi, Nerur & Balijepally, 2023).

With the development of *big data,* computer science, cloud computing, the internet of things, robotics, *blockchain,* autonomous vehicles, 3D printing, nanotechnology, synthetic biology, biomimetics, energy storage, neural networks, *machine learning, deep learning*, and other technologies (Mendonça, Andrade & Sousa Neto, 2018), the term AI has appeared with increasing frequency and, consequently, has gradually become integrated into all aspects of social life (Hu, Wang & Deng, 2020), that is, it emerges as the main source of advancement and technology for the market (Neves, Silva & Carvalho, 2019; Barcelos & Santos, 2023), directly impacting the increase in the number of publications across diverse fields of knowledge (Gontijo & Ferreira de Araújo, 2019).

National and international longitudinal studies, as state-of-the-art research on the topic of AI, have already been published in scientific journal (Gontijo & Ferreira de Araújo, 2019; Hu, Wang & Deng, 2020; Cavalcanti, Tavares & Castro Júnior, 2021; Gontijo & Ferreira de Araújo, 2021; Kirtil & Aşkun, 2021; Piccolo *et al.*, 2021; Ruiz-Real *et al.*, 2021; Anayat & Rasool, 2022; Carvalho, Gouveia & Ramos, 2022; Groenner, Faria, Perissini & Gracioso, 2022; Pinheiro & Oliveira, 2022; Sofyan, Abdullah, Hammood & Roslan, 2022; Ullrich, Vladova, Eigelshoven & Renz, 2022; Yang, Zhao, Du & Yang, 2024). These studies specifically focused on various fields of knowledge, namely: Information Science, Economics, Education, Sports, and Health. Consequently, it is evident that the pursuit of AI has impacted numerous areas of knowledge (Bickley, Chan & Torgler, 2022). At this point, it should be noted that the most commonly used databases by the authors for searches on AI studies in the international scientific context were *Web of Science and Scopus*; while in the national context, brazilian journals indexed in the CAPES database were utilized.

Therefore, this fact, contributed to AI emerging as an interdisciplinary topic, since its theoretical approach is related to and simultaneously present in various fields of knowledge. In this way, its applications have provided significant contributions to the areas of knowledge to which AI is devoted (Gontijo & Ferreira de Araújo, 2021). Thus, it is observed that academic interest in the topic of AI has been growing since the mid-20th century (Gontijo & Ferreira de Araújo, 2021), with the academic influence of its scientific output potentially assessed through bibliometric studies (Cajazeira & Silva, 2021). In this context, it emerges and is emphasized that bibliometric research substantially contributes to the mapping of science. This contribution has been demonstrated through studies that depict trends, areas of thematic concentration, research fronts, networks of scientific collaboration among actors, elite researchers, core scientific journals in a given field of knowledge, among others (Oliveira & Ferreira de Araújo, 2020).

Having said that, the research question guiding this study is highlighted: What is the profile and behavior of the scientific production and social network structures on the topic of Artificial Intelligence published in Brazilian academic journals from the perspective of SPELL? The objective was: To investigate the profile and behavior of the scientific production and social network structures on the topic of Artificial Intelligence published in Brazilian academic journals from the perspective of SPELL.

Thus, the relevance of this study lies in: (i) the fact that AI has become one of the most recent and important concerns for researchers and faculty studying in the field of administration and related areas (Yang *et al.*, 2024);

and (ii) its novelty, as no studies were found in the global academic literature that focused on investigating AI in the field of Administration, while also emphasizing the SPELL electronic library (*Scientific Periodicals Electronic Library*) prominently. In view of this, the aforementioned research question, as well as the objective that underpins it, aims to confirm and strengthen, as well as generate state of the art knowledge on the topic of AI in the national scientific context, contributing to mapping its evolution in the mentioned landscape and providing guidance for future scientific studies (Di Vito & Trottier, 2022).

To address the research question and, simultaneously, achieve the study's objective, bibliometric research techniques were employed (Ferreira, Baidya & Dalbem, 2018; Pereira & Cezar, 2022), and sociometry, also known as Social Network Analysis (SNA) (Walter, Bach & Barbosa, 2012; Machado Junior, Souza & Parisotto, 2014), contributing to systematizing the publication profile and characterizing the structures of the actors' collaboration networks (Dal Vesco & Beuren, 2012) involved in the process of generating academic knowledge within the brazilian scholarly literature on the topic of AI.

In summary, the bibliometric procedures (Urbizagástegui-Alvarado, 2022), and sociometry were applied together (Ribeiro, Costa, Ferreira & Serra, 2014) they are used in quantitative studies (Bufrem & Prates, 2005) and are essential for enhancing the context, deepening the discussion and the investigated content, while also promoting the visibility of studies aimed at exploring the scientific production on a given topic (Ferreira & Silva, 2019), as is the case with AI.

The motivation for choosing SPELL to conduct this study lies in the fact that it is an electronic, open-access database that encompasses and selects scientific production (Durante, Veloso, Machado, Cabral & Santos, 2019), in the fields of Administration, Accounting, and Tourism in Brazil (Ferreira, Baidya & Dalbem, 2018; Neves, Nascimento, Felix Jr., Silva & Andrade, 2018). Consequently, it is impossible to deny the relevance of SPELL in promoting fairer conditions for Brazilian scientific journals, as all of them have the same level of visibility, with access primarily determined by content rather than the *status* of the academic jornal (Rossoni, 2018), thus justifying its preference and use in this study.

Another factor reinforcing the choice of SPELL as the database for this research is that SPELL ranks among the *TOP Five* databases most frequently used by researchers in academic studies focusing on bibliometric and or sociometric research techniques in the national scientific literature. This statement is complemented by noting that the other platforms within the top five most used by academics are: *Web of Science*, CAPES Journals, *Scopus*, and ANPAD (Ribeiro & Corrêa, 2022).

This study may contribute to promoting a greater understanding of the topic of AI in the fields of Administration, Accounting, and Tourism, aiming to influence the increased participation of scholars in these areas of knowledge regarding the topic under investigation, in doing so, it creates opportunities to improve the themes that underpin and guide AI in academia, consequently impacting its publication dynamics, proliferation, dissemination, and socialization within the brazilian academic literature.

Finally, within the context of bibliometric and sociometric indicators, this scientific investigation demonstrates academic contributions by focusing on its actors (researchers and their respective home institutions), who are essential for generating knowledge through the creation of studies on the topic under investigation in Brazilian academia, as reflected in the scientific journals indexed in SPELL.

2. ARTIFICIAL INTELLIGENCE

Digital technologies have led to tremendous and rapid changes in nearly all areas of life (Kureljusic & Karger, 2023). Thus, the inclusion of digital technologies, such as ubiquitous data collection and *big data* analytics, cloud computing, and AI (Silva Neto, Bonacelli & Pacheco, 2020), is transforming organizations (Dwivedi, Nerur &

Balijepally, 2023) through their business, social, and educational processes, influencing the dynamics, application, development, and advancement of technologies (Cavalcanti, Tavares & Castro Júnior, 2021; Ullrich *et al.*, 2022). It is further emphasized that among the digital technologies comprising Industry 4.0, AI has been extensively investigated, possibly due to its great importance in the economic and social spheres (Groenner *et al.*, 2022), as well as being the hallmark of the Fourth Industrial Revolution, developing day by day on a global scale (Yang *et al.*, 2024).

Thus, the advantages derived from AI strongly contribute to the processing of large volumes of information in the digital environment, as it enables the uniform handling of different documents within short periods of time. In this context, *machine learning* is highlighted as a subcategory of AI, which has proven to be promising as a resource that allows computers to develop pattern recognition, learn systematically, make predictions based on data, and even adjust their behavior without requiring new programming (Nascimento, Martins & Albuquerque, 2023).

Some global events, such as the Covid-19 pandemic, have also impacted the implementation, execution, and improvement of AI, creating a new urgent situation for organizations and forcing a shift for companies to become more technological (Ullrich *et al.*, 2022). In general, AI compelled organizations to rethink their strategies while simultaneously presenting opportunities to outperform their competitors (Dwivedi, Nerur & Balijepally, 2023). It is further noted that Covid-19 influenced the scientific production on the topic of AI at a global level (Hernández, Díaz & Salvador, 2024).

In Brazil, the adoption of AI technology by brazilian companies and the availability of scientists and machine learning specialists are in line with european countries. It is also noteworthy that adoption by governmental organizations is significant. With regard to research on the topic of AI, it is observed that the United States and China are leading this competition, that is, in terms of scientific production in AI, with Brazil lagging behind most developed nations (Kubota & Rosa, 2023).

It is further highlighted that AI can be characterized into three types: Narrow AI, which consists of specific algorithms designed to solve problems in a particular area; General AI, which refers to algorithms developed to be as capable as humans by employing machine learning techniques; and Superintelligent AI, which focuses on algorithms that are significantly more capable than humans in almost all tasks. In this regard, the development of AI generates major opportunities for academic studies across many fields of knowledge, contributing to the dissemination and consolidation of greater representativeness of AI within scientific research (Ludermir, 2021).

Consequently, the amount of scientific literature on AI has been rapidly increasing since its emergence, enhancing both theoretical understanding and practical application. Thus, AI has been increasingly occupying a prominent role in the landscape of technological evolution, with significant contributions across various fields of knowledge, thereby influencing a marked growth in the number of scientific studies in recent years (Gontijo & Ferreira de Araújo, 2019; Ullrich *et al.*, 2022).

As a result, researchers have been publishing longitudinal studies on the topic of AI (Gontijo & Ferreira de Araújo, 2019; Cavalcanti, Tavares & Castro Júnior, 2021; Gontijo & Ferreira de Araújo, 2021; Piccolo *et al.*, 2021; Carvalho, Gouveia & Ramos, 2022; Groenner *et al.*, 2022; Pinheiro & Oliveira, 2022) in order to better understand the different nuances of the term AI. Thus, the following section presents the research question and or objective, along with their respective findings, of some of these contemporary scientific studies published in national academic journals.

Cavalcanti, Tavares, and Castro Júnior (2021) presented the state of the art of research on AI applications in Higher Education. The authors found that *Intelligent Support for Collaborative Learning* and *Intelligent Tutoring Systems* were the most commonly used interventions, aiming to improve learning processes, provide *feedback*, or create models to help predict possible student failure or even course dropout. Gontijo and Ferreira de Araújo

(2021) analyzed the scientific production on AI in open-access scientific articles in the field of health. The authors observed a growing temporal distribution of studies on AI, with 2019 showing the highest concentration of articles within the period from 2014 to 2019.

Piccolo *et al.* (2021) they presented a systematic literature review on the topic of user experience in the context of AI. The researchers observed that there are still few published studies addressing issues related to user experience in the AI context. Carvalho, Gouveia, and Ramos (2022) mapped scientific research within dissertations and theses conducted in graduate programs related to AI. These scholars concluded that researchers and their respective research groups on AI in Brazil have apparently experienced a period of growth.

Groenner *et al.* (2022) they conducted a survey on AI research in Brazil. The authors found that Brazil holds a peripheral yet growing position in relation to publications on AI, with public institutions playing a fundamental role in this process. Pinheiro and Oliveira (2022) analyzed the last 20 years of Brazilian scientific production on AI. The authors concluded that, despite the increase in the volume of publications in recent years on AI, scientific production on AI applications in Information Science remains low and indicates a trend toward further studies in "information organization and representation" and *"machine learning."*

Upon reviewing the highlighted studies, it is evident that these works present findings that enable a better understanding of the nuances underlying and guiding the information and knowledge addressed in the scientific literature on AI, thereby explaining and affirming its relevance in academia within the field of Administration and related areas moreover, they emphasize the need to continue improving scientific research on this topic in future studies, given the growing interest in this subject within the Brazilian academic context (Gontijo & Ferreira de Araújo, 2019; Gontijo & Ferreira de Araújo, 2021).

However, none of these academic studies published in national scientific journals aimed to investigate the scientific production on AI and the characteristics of the collaboration network structures of the actors involved in its process of constructing scientific knowledge within the Brazilian academic context from the perspective of SPELL. Therefore, this is the purpose of the present study, which will support the consolidation of information and knowledge on the topic under investigation in the Brazilian academic environment and, in doing so, will contribute to diagnosing its evolution within this framework while outlining pathways for future academic research (Di Vito & Trottier, 2022).

3. METHODOLOGICAL PROCEDURES

The objective of this research was to investigate the profile and behavior of the scientific production and social network structures on the topic of Artificial Intelligence published in Brazilian academic journals from the perspective of SPELL. To achieve this objective, this study was grounded in documentary research (Vecchia, Mazzioni, Poli & Moura, 2018), which involves the collection of edited material, such as studies published in scientific journals.

Bibliometrics was also employed, focusing on the quantitative aspects of disseminated and published scientific production, as well as sociometry (SNA), which explores the interactions of actors involved in the process of constructing scientific knowledge through relationship matrices (Nascimento & Beuren, 2011). It is worth emphasizing here that social network theory is also used to study how the social ties among actors within a given social network may affect the *performance* of an institution (Balestrin, Verschoore & Reyes Junior, 2010).

From this perspective, sociometry contributes to the process of identifying research groups, the most central actors, preferred themes, among other possibilities. In this sense, studies that apply bibliometric and SNA techniques (Schmidt & Tolotti, 2019) are organized under the concept of socio-bibliometric maps (Machado Junior, Souza & Parisotto, 2014), highlighting and reinforcing the importance of the complementarity of these

two techniques (Walter & Bach, 2013; Pereira, Faria, Lamenza & Pereira, 2014) for the investigation of scientific production on academic themes (Ribeiro, 2023).

Returning to the focus on bibliometrics, it is emphasized that this technique is grounded in three main laws (Machado Junior, Souza, Parisotto & Palmisano, 2016), namely: *Lotka's* Law, or the Inverse Square Law, which identifies and measures author productivity, highlighting the most prolific scholars in specific academic fields; and *Bradford's* Law, or the Law of Dispersion, which examines and assesses the productivity of scientific journals by establishing core sets of periodicals on defined scientific subjects (Maia & Bezerra, 2020).

Zipf's Law, or the Law of Least Effort, calculates the frequency of word occurrences in scientific texts, generating a list of terms related to a specific topic under investigation (Vanti, 2002; Fonseca & Gomes, 2020). Also derived from *Lotka's* Law is *Price's* Law, which measures and highlights the elite of researchers (Peleias, Wahlmann, Parisi & Antunes, 2010) within the scientific production of a given academic field (Pessoa Araújo, Mendes, Gomes, Coelho, Vinícius & Brito, 2017).

It now extends to Social Network Analysis (SNA), which is one of the fundamental methods used in bibliometrics (Varandas Junior, Miguel, Carvalho & Zancul, 2015). Accordingly, in SNA there are important elements to better understand it (Parreiras, Silva, Matheus & Brandão, 2006), that is, ways of examining the structure and connections of a social network, among which the following stand out: graph, giant component, nodes, ties, small-world, structural holes, density, and centrality (Rossoni, Hocayen-da-Silva & Ferreira Júnior, 2008; Rossoni & Guarido Filho, 2009; Nascimento, Pereira & Toledo Filho, 2010; Bordin, Gonçalves & Todesco, 2014; Welter, Souza, Trajano & Behr, 2021).

It is complemented, by stating, that the interactions carried out by the actors allow the elaboration of sociograms, as well as calculations of parameters such as degrees of density and centralities (Quandt, 2012). Here it is added by informing that density shows that the more consistent the social network is, the closer its measurement will be to 1.0, that is, the more standardized are the contacts among the actors. Therefore, a low density has a measurement lower than 0.2, indicating a spread social network with low internal connection (Williams dos Santos & Farias Filho, 2016).

When considering centralities, which allow identifying the most central actors (Ouro Filho, Olave & Barreto, 2020), in reference to the general structure of social networks, *degree* centrality stands out, which is the property that reflects an actor's knowledge exchange activity, by measuring the number of connections of each of these actors in a graph, impacting their influence, level of prestige, and relevance within the social network (Balestrin, Verschoore & Reyes Junior, 2010; Ribeiro & Corrêa, 2022).

And *betweenness* centrality, which is the characteristic that highlights each actor's ability to mediate, by measuring how a given actor acts as a foundation and guide, contributing to stimulating interactions and the flow of information and knowledge among the various actors in the collaboration network (Favaretto & Francisco, 2017). It is added by stating that these highlighted centrality measures are usually the most commonly used in scientific research focusing on SNA (Cunha & Piccoli, 2017; Ribeiro, 2023).

The research universe highlighted studies published in journals indexed on the SPELL electronic platform. It is reiterated that the choice of SPELL in this study was due to it being an innovative scientific database, as it was specifically developed to index Brazilian academic journals in the fields of Administration, Accounting, and Tourism, possessing its own journal impact indicators, with the prominence of these indicators for future classification of academic journals being emphasized in the CAPES Evaluation Report itself (Rosa & Romani-Dias, 2019).

It is further reinforced that the choice of SPELL is due to its alignment with the objective of this study, considering that the aforementioned data platform has a large volume of indexed scientific journals and,

simultaneously, academic works published in Brazil, particularly in the field of Applied Social Sciences and, specifically, the scientific production in the areas of Administration, Accounting, and Tourism (Anjo, Brito & Brito, 2022). Thus, recent studies have already been published in journals using the SPELL database for longitudinal research (Atamanczuk & Siatkowski, 2019; Anjo, Brito & Brito, 2022; Ribeiro, 2022), reinforcing and establishing the legitimacy of this data platform for these types of scientific research within the national scientific context.

The procedure for selecting the sample of studies on the topic of AI occurred as follows: a) entering the keywords in the "*drop down boxes*" search filter on the SPELL homepage (*http://www.spell.org.br/*); b) searching for the keywords in the titles, abstracts, and keywords of the studies; c) selecting and choosing the scientific studies in the SPELL database; d) defining the sample through the reading of the titles and/or abstracts of each study. It is noteworthy that, in the SPELL database, a filter was applied with keywords in Portuguese, English, and Spanish, respectively, as follows: "inteligência artificial"; "*artificial intelligence*"; "*inteligencia artificial*." These keywords were searched in the title, abstract, and keywords of each study asynchronously, thus encompassing all scientific studies supporting the topic of AI in this research.

It should be noted that the start and end dates for the search of studies were from 07/12/2023 to 07/15/2023. Thus, the sample consisted of 89 articles, within a time frame from 1988 to 2023, that is, 36 years. It is further emphasized that this time frame is directly conditioned and connected to the scientific texts published in the SPELL database, meaning that the first study on the topic under investigation was found only in 1988. Therefore, the years considered ranged from 1988 to 2023. The analyses of these 89 studies were conducted according to bibliometric and sociometric indicators: (i) periods; (ii) journals; (iii) researchers; (iv) co-authorship networks; (v) institutions; (vi) institutional collaboration networks; (vii) keywords; and (viii) social networks of keywords.

It should be noted that the aforementioned data and information were extracted from the selected articles, and subsequently, the procedures for calculating the symmetric matrices and the graphical visualization of the respective social networks of the actors (authors, institutions, and keywords) were initiated (Ribeiro, 2023). It is emphasized that the start date for tabulating the bibliometric and sociometric indicators, as well as for constructing the symmetric matrices of the actors' collaboration networks and their respective graphical visualizations, was 07/18/2023, and the process was completed on 08/01/2023.

The bibliometric data and information were measured using *software Microsoft Excel*; and the SNA indicators were assessed using *UCINET software*, while the graphical visualization of the networks was performed using NetDraw software. It is emphasized that, to create the keyword cloud (Momo, Melati, Muniz & Behr, 2021), the *software WordArt.com* was used (Nascimento, Santos, Meireles, Melo, Servilha & Panhoca, 2022). Figure 1 provides a summary of the methodological pathway of this study.

Methodological Pathway
=> search for articles on the SPELL website => keywords used for the search of the studies: "inteligência artificial"*; "artificial intelligence"; "inteligencia artificial"* => entering the keywords in the SPELL "drop down boxes" search filter => search for the keywords in: "article title"; "article abstract"; "article keywords" => selection and choice of articles in the SPELL database => definition of the sample through reading the titles and/or abstracts of each article => *download* of the 89 identified articles => tabulation and spreadsheet processing of the 89 articles => calculation of bibliometric indicators => calculation of sociometric indicators => creation of social network matrices => graphical visualization of the social network matrices.

Figure 1. Methodological Pathway

Source: Research data (2023)

4. ANALYSIS AND DISCUSSION OF RESULTS

This section addressed the analysis and discussion of the results regarding the 89 articles identified in this research on the topic of AI in the Brazilian academic context from the perspective of journals indexed in SPELL. Figure 2 highlights the periods in which publications on the topic of AI appeared in the national scientific literature.

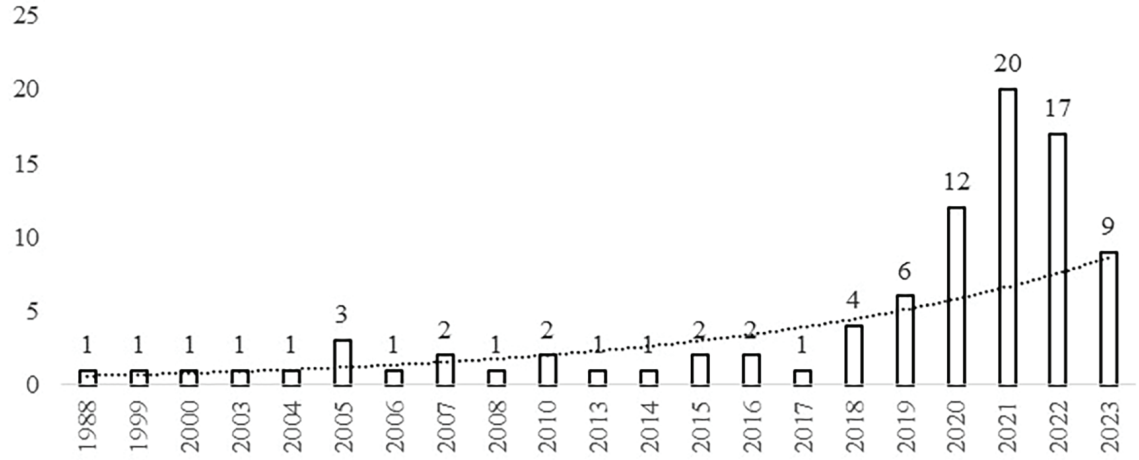

Figure 2. Periods

Source: Research data (2023)

Observing Figure 2, a growth trend of the AI topic in the Brazilian academic context can be noted, from the perspective of academic journals indexed in SPELL, reaching its peak in 2021, even though the volume of Brazilian scientific production is not as significant compared to other countries worldwide, such as the United States and China (Kubota & Rosa, 2023). It is noteworthy that the evolution of this topic occurred particularly from 2020 onward, possibly due to COVID-19, which, in general, influenced initiatives and the development of innovative technologies, such as AI (Ullrich *et al.*, 2022).

This finding is similarly corroborated by research analogous to this study (Gontijo & Ferreira de Araújo, 2019; Gontijo & Ferreira de Araújo, 2021; Carvalho, Gouveia & Ramos, 2022; Pinheiro & Oliveira, 2022; Ullrich *et al.*, 2022), thus demonstrating that the topic under investigation is a term with growing prominence in scientific research (Nascimento, Martins & Albuquerque, 2023), drawing the attention of scholars from different fields of knowledge (Bickley, Chan & Torgler, 2022) to the aforementioned and highlighted subject (Gontijo & Ferreira de Araújo, 2021).

It is reiterated that, for this study, the focus was on the fields of Administration, Accounting, and Tourism, which underpin and guide the articles published in SPELL, which is "[...] a system for indexing, searching, and providing scientific production, linked to the National Association of Graduate Studies and Research in Administration (ANPAD)" (Ferreira, Baidya & Dalbem, 2018, p. 926), focusing on Brazilian scientific journals and, consequently, the scientific production on the topic of AI.

Thus, to examine the evolution of academic production, it was also considered essential to identify the scientific journals in which the articles on the topic under investigation were published (Durante *et al.*, 2019). Accordingly, Figure 3 highlights the scientific journals detected in this study, emphasizing the seven most productive ones.

Scientific journals	Acronym	Qualis (2017-2020)	Publishing institution	Published articles
Journal of Information Systems and Technology Management	JISTEM	A3	Universidade de São Paulo	6
Revista Gestão & Tecnologia	G&T	A4	Fundação Pedro Leopoldo	6
Revista Eletrônica de Sistemas de Informação	RESI	B1	Instituto Brasileiro de Estudos e Pesquisas Sociais	4
Revista Inteligência Competitiva	RIC	B2	Editora Alumni in	4
RAUSP Management Journal	RAUSP	A2	Universidade de São Paulo	3
Revista de Administração Mackenzie	RAM	A2	Universidade Presbiteriana Mackenzie	3
Teoria e Prática em Administração	TPA	A4	Universidade Federal da Paraíba	3
14 scientific journals published 2 articles			Cadernos EBAPE.BR, Future Studies Research Journal: Trends and Strategies, Gestão e Sociedade, GESTÃO.Org - Revista Eletrônica de Gestão Organizacional, International Journal of Business & Marketing, International Journal of Professional Business Review, Perspectivas em Gestão & Conhecimento, Revista da CGU, Revista de Administração da UFSM, Revista de Administração FACES Journal, Revista de Administração, Sociedade e Inovação, Revista de Contabilidade e Organizações, Revista de Gestão e Revista de Gestão e Secretariado	
32 scientific journals published 1 article			BASE - Revista de Administração e Contabilidade da UNISINOS, Cadernos Gestão Pública e Cidadania, Contabilidade, Gestão e Governança, Contexto - Revista do Programa de Pós-Graduação em Controladoria e Contabilidade da UFRGS, Desafio Online, Desenvolvimento em Questão, Estudos de Administração e Sociedade, REGEPE Entrepreneurship and Small Business, Revista Acadêmica do Observatório de Inovação do Turismo, Revista ADM.MADE, Revista Brasileira de Gestão de Negócios, Revista Brasileira de Gestão e Inovação, Revista Brasileira de Inovação, Revista Brasileira de Marketing, Revista Capital Científico – Eletrônica, Revista Catarinense da Ciência Contábil, Revista de Administração Contemporânea, Revista de Administração da Unimep, Revista de Administração de Empresas, Revista de Administração Pública, Revista de Contabilidade do Mestrado em Ciências Contábeis da UERJ, Revista de Gestão Ambiental e Sustentabilidade, Revista de Gestão em Sistemas de Saúde, Revista de Tecnologia Aplicada, Revista do Serviço Público, Revista Economia & Gestão, Revista Gestão Organizacional, Revista Interdisciplinar de Marketing, Revista Organizações em Contexto, Revista Pensamento Contemporâneo em Administração, Sociedade, Contabilidade e Gestão e Turismo em Análise	

Figure 3. Journals

Source: Research data (2023)

Thus, the journals that stood out were: JISTEM, G&T, RESI, RIC, RAUSP, RAM, and TPA. With regard to the JISTEM journal, it is also highlighted in studies similar to this one, particularly for emphasizing the theme of Industry 4.0, which is directly related to the subject under investigation in this research (Atamanczuk & Siatkowski, 2019). According to *Bradford's* Law, which measures the productivity of journals (Vanti, 2002), it was found that seven scientific journals published between three and six articles; 14 academic journals published two articles; and 32 journals published only a single study, thus confirming that many scientific journals still produce very little on the subject under analysis (Maia & Bezerra, 2020).

In other words, from the perspective of *Bradford's* Law, Figure 3 illustrates the existence of a small core of scientific journals that address the subject under investigation more robustly, alongside a broad peripheral region divided into two zones. In these two zones, there is an increase in the number of academic journals, which simultaneously corresponds to a decrease in the productivity of studies published on the topic under analysis (Machado Junior *et al.*, 2016).

It is interesting to observe that the seven academic journals highlighted in Figure 3 are native to the field of Administration, and the first three are more extensively linked to the domain of Technology. Furthermore, it is noted that, among the 53 journals identified in this research (Figure 3), 43 are linked to Administration, eight to Accounting Sciences, and only two are native to the field of Tourism. This finding demonstrates a predisposition of researchers to publish their articles on the topic of AI in scientific journals that have adherence, scope, and

focus on the field of Administration, particularly with ramifications in the technological area. On a broader scale, it can be understood that AI has positively influenced various fields of knowledge, such as Computer Science, Business, Management, and Accounting (Hernández, Díaz & Salvador, 2024).

Still regarding the topic of AI and Accounting, from the perspective of journals indexed in the SPELL database and that are related to this field of knowledge, it is observed that most of these studies are recent, that is, published in the last five years, thus highlighting the importance that AI has for Accounting Sciences, its impact extends not only to the academic sphere, but also to its influence on technologies and on the training and practices of accountants, due to the automation of accounting processes, such as in the case of the internal audit sector of companies, which is fundamental for mitigating possible accounting fraud (Neves, Silva & Carvalho, 2019; Borges *et al.*, 2020).

It is also emphasized the focus on accounting information systems, which are mainly rule-based, with data generally being available and well-structured. However, many accounting systems have not yet been able to keep pace with the current evolution and technological development. Thus, AI in accounting is often applied only in pilot projects. In this sense, it is observed that the use of AI-based forecasts in accounting enables proactive management and detailed analyses. Nevertheless, there is still limited knowledge about AI in the accounting field (Kureljusic & Karger, 2023).

Therefore, it is advisable and necessary that further academic research be conducted and subsequently published regarding its results and contributions, aiming, for instance, at understanding the behavior of accounting professionals, thus highlighting their paradigm shifts and new ways of practicing accounting through emerging technologies, such as AI. In summary, this reinforces the importance of conducting more research on AI in the accounting field, fostering potential benefits in its applicability within this domain, which is extremely necessary and relevant for decision-making processes and business management, and consequently contributing to the growth of scientific production on AI within the field of Accounting (Momo *et al.*, 2021).

Given the above, it is important to highlight the relevance of identifying the researchers who contribute the most to a specific field of knowledge and, simultaneously, to the development of the scientific literature on a given topic (Schmidt & Tolotti, 2019). That being said, Figure 4 presents the researchers identified in this study, emphasizing the eight most prolific ones, with their respective years of publication shown in parentheses.

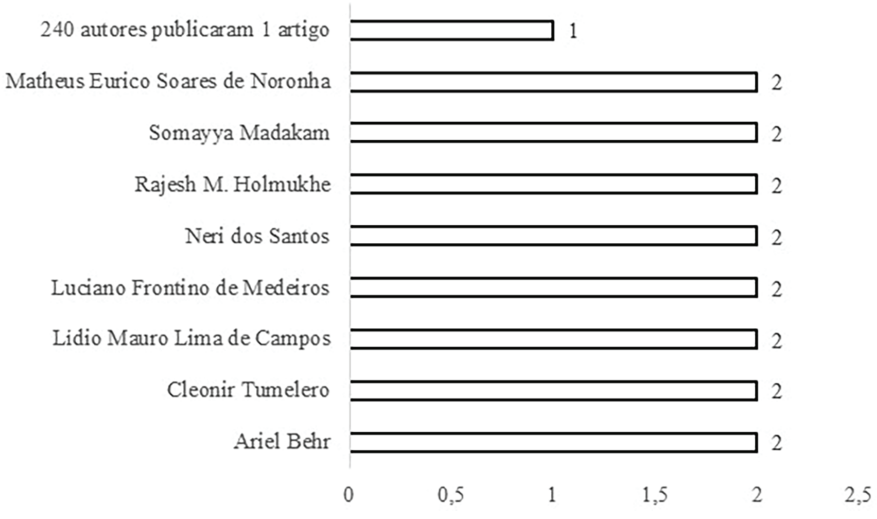

Figure 4. Researchers

Source: Research data (2023)

Thus, the following scholars stand out: Ariel Behr (2021 and 2022), Cleonir Tumelero (2022 and 2023), Lídio Mauro Lima de Campos (2020 and 2021), Luciano Frontino de Medeiros (2008 and 2015), Neri dos Santos (2008 and 2015), Rajesh M. Holmukhe (2019 and 2022), Somayya Madakam (2019 and 2022), and Matheus Eurico Soares de Noronha (2022 and 2023), each with two publications. Regarding the years of publication of the most prolific authors, it is observed that the vast majority began publishing on the topic of AI in Brazilian academia only recently, which can be understood as an opportunity to disseminate a contemporary subject in Brazilian scientific literature.

In general, it is observed that, under the prism of *Lotka's* and *Price's* Laws, the productivity of researchers (Bufrem & Prates, 2005) on the topic of AI in Brazil is revealed, and that there is an "elite" of scholars dedicated to this subject (Pessoa Araújo *et al.*, 2017), this demonstrates that knowledge on the aforementioned topic is more consistently concentrated among the eight most prolific authors identified in this study (Peleias *et al.*, 2010).

In summary, eight researchers published two articles on the topic of AI in Brazilian academia, while 240 published only one article each, corresponding to approximately 97% of the total number of authors. In this context, the existence of occasional scholars—those who publish only a single study on a given subject within a defined research group—and permanent researcher**s**—those who have produced more than one publication on the same topic within an already established research group—becomes evident (Parreiras *et al.*, 2006).

Consequently, understanding co-authorship networks makes it possible to analyze how researchers on the subject under investigation establish partnerships and with whom they collaborate (Ribeiro *et al.*, 2014). Accordingly, Figure 5 illustrates the co-authorship networks of this study, which are composed of 248 nodes and 646 ties, with a measured density of 0.0106, corresponding to 1.06% of the interactions effectively established among the authors. It is also noted that this social network highlights the betweenness centrality of the 248 researchers identified in this study.

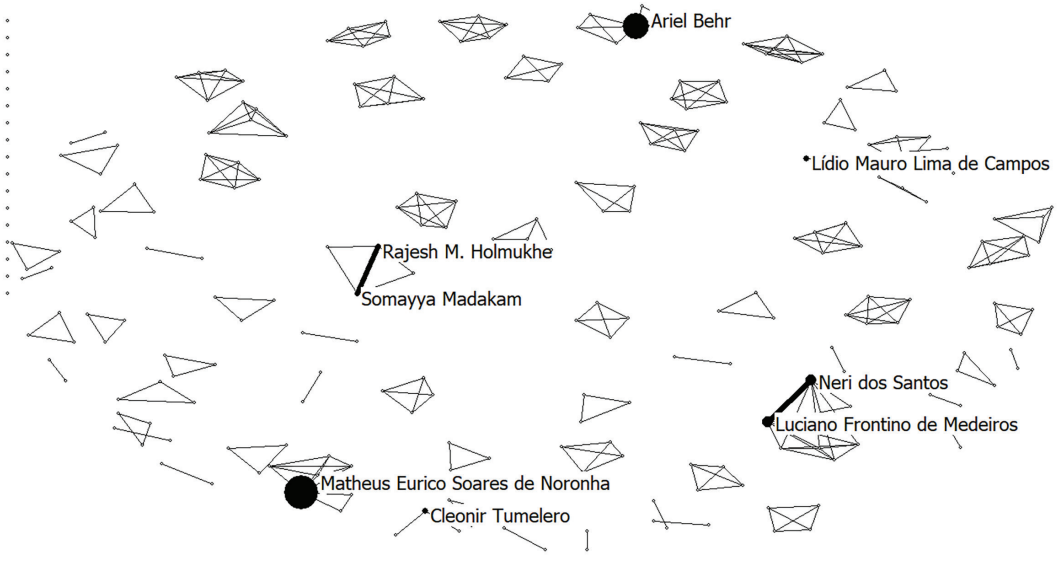

Figure 5. Co-authorship networks

Source: Research data (2023)

Regarding the density value of the co-authorship networks in this study, it reveals that the mentioned collaboration network among researchers is dispersed and has low internal cohesion (Williams dos Santos &

Farias Filho, 2016). This can be explained by the predominance of publications with only one co-author, which simultaneously reduces interactions and, consequently, the exchange of information and knowledge among authors.

Thus, Figure 5 presents a dispersed collaboration network, with many "weak ties," that is, a predominance of only one connection between the nodes (Cajazeira & Silva, 2021). Therefore, it is feasible to state that such a fact may lead to difficulties in the spontaneity of the flow of information and knowledge, while simultaneously hindering the structuring of scientific studies (Vecchia et al., 2018) on the subject of AI. Consequently, this highlights the so-called "structural holes," which reveal the existence of gaps in the flow of information and knowledge (Rossoni & Guarido Filho, 2009) in Figure 5, influencing, at the same time, the development of the topic under investigation in Brazilian scientific literature.

In the case of the most central authors, the following stand out: Ariel Behr, Cleonir Tumelero, Lídio Mauro Lima de Campos, Luciano Frontino de Medeiros, Neri dos Santos, Rajesh M. Holmukhe, Somayya Madakam, and Matheus Eurico Soares de Noronha. It is worth emphasizing that all of these scholars also appear among the most productive in this research; however, only Neri dos Santos, Luciano Frontino de Medeiros, and Matheus Eurico Soares de Noronha stood out with the highest *degree*, showing themselves, in this study, to be the most influential authors in terms of value, as well as the most traditional in the field of AI, since they remained consistent and representative in publications on this subject within the Brazilian scientific literature (Balestrin, Verschoore & Reyes Junior, 2010; Walter & Bach, 2013).

It is also possible to understand that the researchers with greater centrality reflect their respective importance for both the intermediation and the scientific production on the theme of AI within the Brazilian academic context. Thus, in the case of this study, centrality is observed and reinforced when the authors establish interactions with several other scholars; however, they still present many structural holes among themselves, which hinders the sharing of information with other research institutions. Therefore, the authors highlighted in Figure 5 became central because they are responsible for the existence of several weak ties within their respective research group (Nascimento, Pereira & Toledo Filho, 2010; Walter & Bach, 2013).

Given the observations, it is considered paramount to identify the institutions that the authors were affiliated with when publishing their respective articles, also aiming to determine which institutions concentrate publications related to AI within the Brazilian academic landscape (Pereira & Cezar, 2022). Accordingly, Figure 6 highlights the institutions identified in this research, emphasizing the 10 most productive ones.

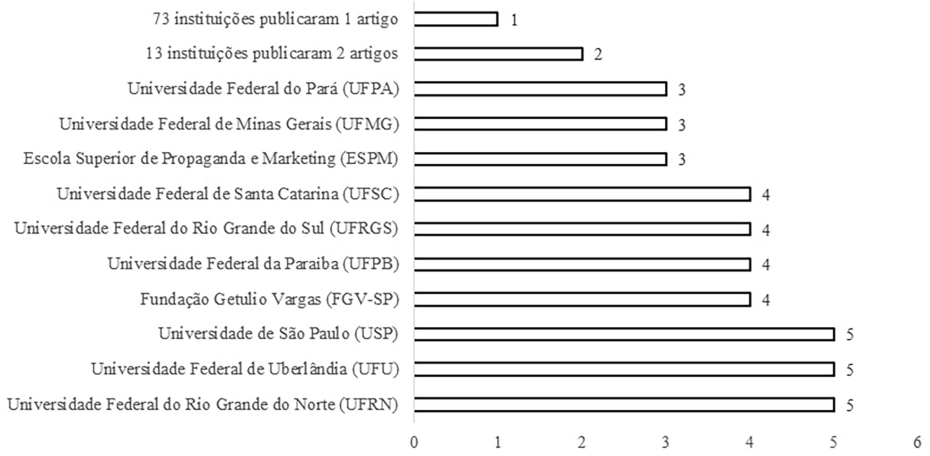

Figure 6. Institutions

Source: Research data (2023)

That said, the Higher Education Institutions (HEIs) UFRN, UFU, USP, FGV (SP), UFPB, UFRGS, UFSC, ESPM, UFMG, and UFPA stand out as the most productive in publications on the topic of AI within the Brazilian academic context, based on journals indexed in SPELL. It is noteworthy that many of these institutions also excel in other topics related to the field of Management in Brazil (Balestrin, Verschoore & Reyes Junior, 2010), directly influencing their Graduate Programs (PPGs) — particularly the *Stricto Sensu* programs — as well as their respective research groups and, in parallel, their cooperation networks with other HEIs (Welter *et al.*, 2021).

In this regard, Figure 7 graphically portrays the social networks of the institutions in this study, which is composed of 148 ties and 96 nodes, with its density calculated at 0.0162, corresponding to 1.6% of the connections among the HEIs identified. It is emphasized that this collaboration network highlights the betweenness centrality. In light of this, it becomes relevant to understand the social networks of institutions in order to better comprehend how authors interact to produce scientific research on the topic under investigation, contributing to the identification of the dynamics of the HEIs' network, which emerges through the connections between Graduate Programs (PPGs) and their respective research groups (Welter *et al.*, 2021).

Thus, the HEIs highlighted in Figure 7 were: UFRN, USP, ESPM, Federal Institute of Paraíba (IFPB), Federal University of Lavras (UFLA), and University of Brasília (UnB). Regarding centrality, even though not emphasized in Figure 7, the institutions UFU and UFSC are also noteworthy. Therefore, among the ten most productive institutions, five are among the most central in this research, namely: UFRN, USP, ESPM, UFU, and UFSC.

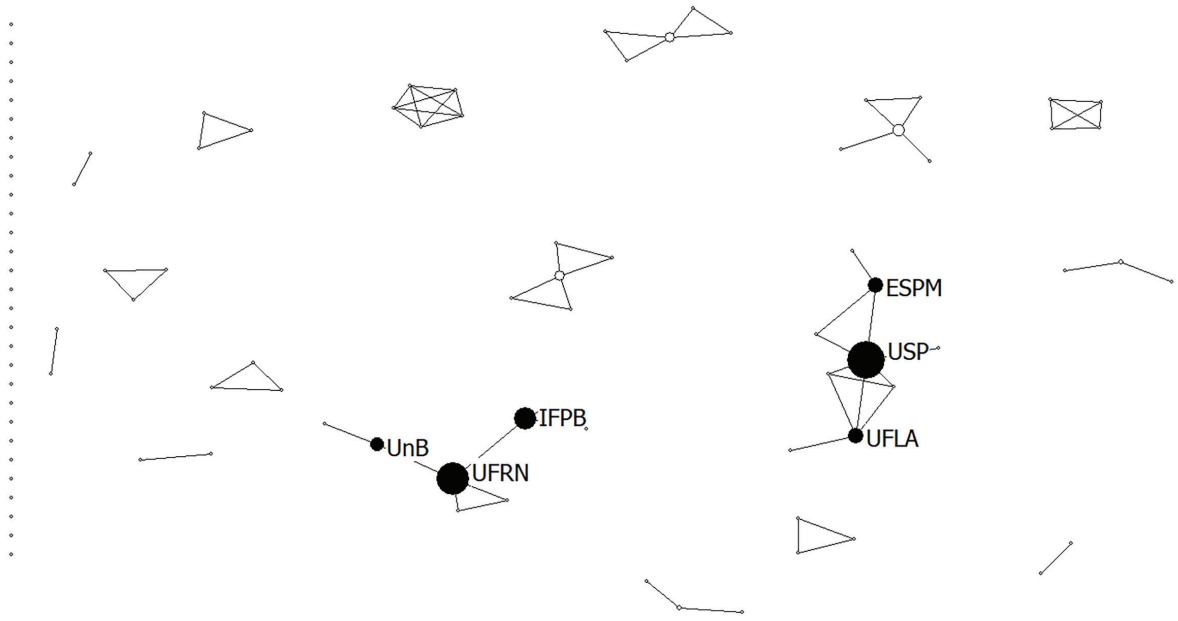

Figure 7. Collaboration networks of the institutions

Source: Research data (2023)

Still analyzing Figure 7 of the collaboration networks among HEIs, the emergence of *small-world* structures can be observed, in which institutions are more consistently connected locally, however, these institutions do not establish ties outside their respective research groups, preventing a more cohesive interconnection with other institutions, this hinders the rapid interaction of these various local research groups (Rossoni, Hocayen-da-Silva & Ferreira Júnior, 2008), thereby influencing the flow of information and knowledge on the subject under investigation.

It is also possible to once again detect the social network phenomenon known as structural holes, since the absence of relationships between institutions mitigates the exchange of knowledge among them (HEIs), however, when these "missing ties" among the research groups of the institutions, as shown in Figure 7, are filled, greater dynamism in the flow of information and knowledge may occur and, consequently, be promoted to the benefit of research groups, in terms of productivity and scientific synergy (Pereira *et al.*, 2014), in this case regarding the topic of AI in the national scientific literature.

Returning to the focus on the most central HEIs, it is observed that the findings of this section show that partnerships, through their respective native researchers, are paramount in determining the influence and importance of these HEIs as "bridges" and "paths" (Balestrin, Verschoore & Reyes Junior, 2010; Cunha & Piccoli, 2017; Favaretto & Francisco, 2017; Ribeiro & Corrêa, 2022) for the scientific production on the AI topic, subsequently impacting its dissemination, socialization, and growth within the Brazilian academic context.

This fact is underpinned by terms and themes that are researched and published by authors, which are harmonious from the perspective of the AI topic, influencing the creation of scientific value and, simultaneously, the construction of academic knowledge on the aforementioned subject within academia (Ribeiro, 2023).

In consideration of this, it is essential to highlight the relevance of identifying the most frequently used keywords to address a given topic, as determined by *Zipf's* Law, since they are employed in the indexing of studies, thereby expanding the possibilities of the article being found in future research (Fonseca & Gomes, 2020). It is also worth noting that:

One of the functions performed by keywords is to serve as a central element in the formulation of research questions and problems, delimiting the scope of the study. Moreover, it is through them that the search for existing knowledge in the scientific literature is carried out, in order to build a theoretical framework that supports the proposed investigation. Therefore, the definition of the words, their spelling, and the language used are essential in selecting the studies and, consequently, the authors who will be chosen for the dialogue between the existing literature and the ongoing research (Fonseca & Gomes, 2020, p. 672).

Therefore, Figure 8 shows the keyword cloud of the 89 articles identified in this study.

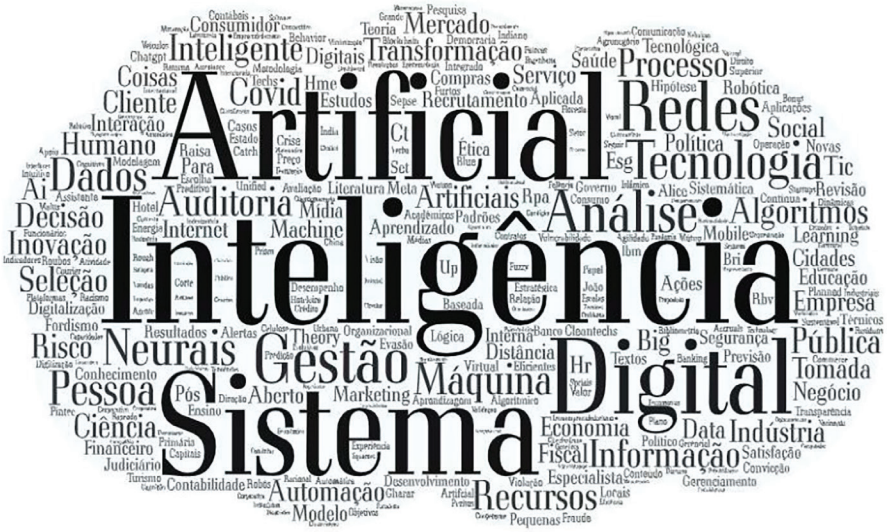

Figure 8. Keywords

Source: Research data (2023)

It is reinforced that *Zipf's* Law allows observing the frequency of the most commonly used words in a given set of texts, where the same word can be used multiple times, and, consequently, the iteration of the terms can validate the theme under investigation (Nascimento *et al.*, 2022). Therefore, the keyword cloud shown in Figure 8 was composed of 293 keywords, with the most prominent being: intelligence, artificial, system, digital, networks, neural, management, analysis, technology, machine, person, resources, information, algorithms, process, data, covid, intelligent, and audit.

In view of the above, it is observed that the word cloud shows a strong concentration around words related to the theme under analysis, in line with what is emphasized by *Zipf's* Law (Vanti, 2002), which focuses on establishing, from the set of keywords, the central theme addressed and published in the articles investigated in this study.

Figure 9 complements Figure 8 by depicting the social networks of the keywords in this research. However, it should be noted that the keyword social network observed from left to right is composed of 1.416 links and 293 nodes; and the highlighted keyword network (detected from right to left) consists of 1.164 links and 211 nodes. This social network emphasizes degree centrality. It is worth clarifying that the 89 studies investigated contained, in total, 293 occurrences of unique keywords, "[...] maintaining only the criterion of not differentiating between uppercase and lowercase letters – singular and plural words were kept distinct" (Favaretto & Francisco, 2017, p. 376).

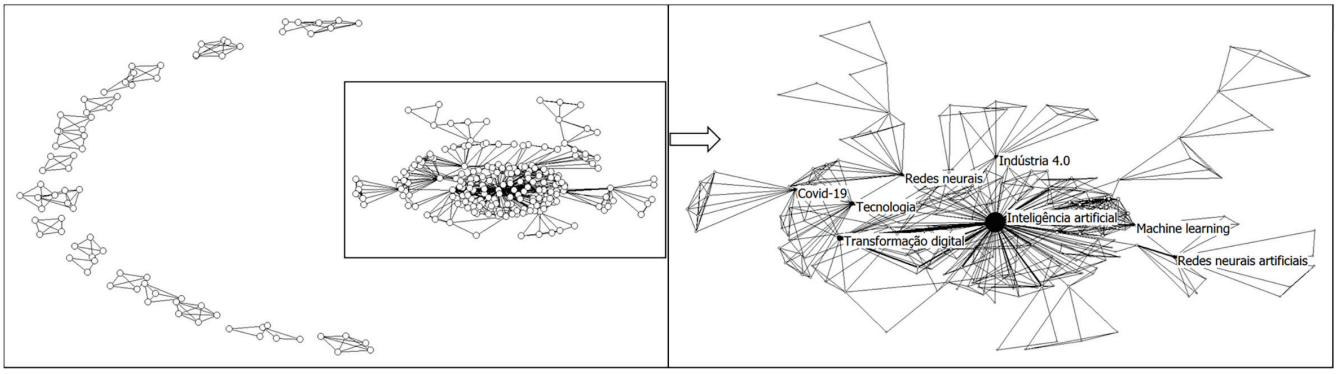

Figure 9. Keyword social networks

Source: Research data (2023)

That said, it is established that centrality is a measure that expresses the relationships of a set with other sets, indicating the extent to which a subject is influential and central in the research field under investigation. Consequently, if a group of keywords has a high centrality measure, it means that this group of keywords has a strong influence over the other analyzed themes (Urbizagástegui-Alvarado, 2022).

Still observing Figure 9, it is possible to notice the existence of a giant component (seen from left to right), understood as the largest component (*cluster*) of a social network, symbolizing a greater body of scientific research on the theme under investigation, carried out through the collaboration among the keywords (Bordin, Gonçalves & Todesco, 2014; Favaretto & Francisco, 2017). This component is more robustly highlighted through Figure 9 (observed from left to right), which emphasizes degree centralities.

In view of this, the keywords that stood out in terms of degree centrality were: artificial intelligence, digital transformation, technology, *machine learning*, neural networks, Industry 4.0, artificial neural networks, and covid-19. It is worth emphasizing that these focused keywords were able to stand out due to the number of

direct and indirect partnerships (Francisco, 2011). Thus, it is possible to measure that these prominent keywords represent those that were cited most frequently and, at the same time, exert the greatest influence in the referred keyword social network (Ouro Filho, Olave & Barreto, 2020).

In general, the keyword social network highlighted the high-frequency terms, and thus those considered most important from the perspective of degree centrality (Favaretto & Francisco, 2017), discussed in the sample of the 89 articles of this study. Therefore, it is possible to understand that these prominent keywords represent the concepts contained in the textual *corpus* of the 89 articles identified and investigated in this research, allowing the deduction of the probable existing, consolidated, legitimized, and or emerging lines of scientific research (Urbizagástegui-Alvarado, 2022) on the topic of AI in light of the journals indexed in SPELL.

Further examining Figure 9, regarding its density, it was measured at 0.0169, equivalent to 1.69% of the interactions that actually exist between the keywords in the network out of the total possible links (Varandas Junior et al., 2015). It is thus understood that, since the mentioned social network has low density (Williams dos Santos & Farias Filho, 2016), this means that these words interact with many aspects of the AI theme, but these terms (words) are not well developed, as they are general, unstructured, and transversal to the investigated theme, nonetheless, they (the words) have the potential to become the central focus of scientific study on the subject under investigation (Urbizagástegui-Alvarado, 2022) of this research.

5. CONCLUSION

The objective of this research was to investigate the profile and behavior of scientific production and the social network structures on the topic of artificial intelligence published in Brazilian academic journals from the SPELL perspective between 1988 and 2023. Methodologically, it was an exploratory, quantitative study, based on documentary research and guided by bibliometric and sociometric investigation techniques, which revealed that research on AI is still in an initial phase, researchers have not yet formed more cohesive study groups capable of robustly exploring the interdisciplinary research potential of the AI topic (Yang *et al.*, 2024) within the Brazilian academic context.

The main findings emphasize that: there is a growth trend of the AI topic in the fields of Administration, Accounting, and Tourism, according to the conceptions of the scientific journals indexed in SPELL; JISTEM, G&T, RESI, RIC, RAUSP, RAM, and TPA were the most productive academic journals; Neri dos Santos, Luciano Frontino de Medeiros, and Matheus Eurico Soares de Noronha stood out in productivity and as the most central authors (*degree* and *betweenness*) in this study; UFRN, UFU, and USP were prominent in terms of productivity and as the institutions with the highest degree and betweenness centrality.

Artificial intelligence, digital transformation, technology, *machine learning*, neural networks, Industry 4.0, artificial neural networks, and covid-19 were the most central keywords in this research, in line with what is observed in the scientific literature on the AI topic at the national level (Gontijo & Ferreira de Araújo, 2019; Cavalcanti, Tavares & Castro Júnior, 2021; Gontijo & Ferreira de Araújo, 2021; Piccolo *et al.*, 2021; Carvalho, Gouveia & Ramos, 2022; Groenner *et al.*, 2022; Pinheiro & Oliveira, 2022).

Regarding the social networks of the actors (researchers, institutions, and keywords), all were measured with low density, influencing the dynamics of the flow of information and knowledge on the AI topic. However, this result may be due to the fact that their academic production appears to be minimally multidisciplinary (Carvalho, Gouveia & Ramos, 2022), especially concerning the fields of Administration, Accounting, and Tourism in Brazil.

It is also worth noting that this result may represent an opportunity for a greater proliferation of studies on the investigated subject, as it could mitigate the "structural holes" in the actors social networks, directly

influencing the maximization of "small worlds", subsequently leading to a higher density in the mentioned social networks and contributing to greater accessibility of information and knowledge on the AI topic in the national academic literature.

In general, the investigation of social networks confirmed the existence of few co-authorship networks, as well as networks of collaboration among institutions researching the AI topic, impacting and contributing to the number of publications on this subject in the national academic literature in light of the scientific journals indexed in SPELL. The research agenda of this study focused on contributing by investigating the state of the art of academic production and the social network structures of the actors (researchers, institutions, and keywords) involved in the creation of scientific knowledge on the AI topic in the Brazilian academic scenario, aiming to mitigate *gaps* and establish pathways for greater expansion, strengthening, and understanding of the subject in the national scientific literature, consequently contributing to the development of its debate, dissemination, and socialization as a relevant topic in the field of Technology.

This research has theoretical and practical implications, as it provides *insights* for scholars on the theoretical evolution and the intellectual structure to guide future research in this field, regarding the AI topic in the national scientific context in light of the scientific journals indexed in SPELL. Secondly, it clarifies the identification of the actors (researchers and HEIs) engaged in the creation, dissemination, and socialization of the AI topic within the Brazilian academic context, thus contributing to a greater understanding of the investigated subject in academia, additionally, the identification of keywords, and consequently the most important conceptual approaches on the AI topic, may prove crucial, as they will be more prominently known, aiding management and decision-making for business managers and public policy makers.

The limitation of this study was the search and selection of academic works on the AI topic using the SPELL database. Therefore, for future studies, it is recommended to improve this research by using other national and international data platforms, such as CAPES Journals, ANPCONT Journals, *SciELO, Web of Science, Scopus, EBSCO*. Regarding databases, conference or scientific event repositories can also be used to identify gray literature studies that have been published in academia. It is advisable to use other fields of knowledge, such as Information Science and Technology. It is also suggested to extend the bibliometric indicators, and especially the SNA, emphasizing other network indicators, such as clustering coefficients, closeness centrality, co-citation analysis, and geodesic analysis. Another recommendation is to conduct a systematic literature review of the studies identified in this research, developing an evaluation of these investigations and highlighting guidance points and gaps regarding the AI topic.

REFERENCES

Anayat, S., & Rasool, G. (2022). Artificial intelligence marketing (AIM): connecting-the-dots using bibliometrics. *Journal of Marketing Theory and Practice*, 114-135. https://doi.org/10.1080/10696679.2022.2103435

Anjo, J. E. da S., Brito, V. da G. P., & Brito, M. J. de. (2022). Estética organizacional nos estudos organizacionais brasileiros: revisão sistemática na base Spell. *Teoria e Prática em Administração, 12*(2), 1-13.

Atamanczuk, M. J., & Siatkowski, A. (2019). Indústria 4.0: o panorama da publicação sobre a quarta revolução industrial no scientific periodicals electronic library – SPELL. *Future Studies Research Journal, 11*(3), 281-304. http://dx.doi.org/10.24023/FutureJournal/2175-5825/2019.v11i3.459

Balestrin, A., Verschoore, J. R., & Reyes Junior, E. (2010). O campo de estudo sobre redes de cooperação interorganizacional no Brasil. *Revista de Administração Contemporânea, 14*(3), 458-477. https://doi.org/10.1590/S1415-65552010000300005

Barcelos, V. A., & Santos, A. M. dos. (2023). Transformação digital e seguro: uma revisão sistemática da literatura. *Revista Gestão e Secretariado, 14*(6), 8849-8874. http://doi.org/10.7769/gesec.v14i6.2269

Bickley, S. J., Chan, H. F., & Torgler, B. (2022). Artificial intelligence in the field of economics. *Scientometrics*, *127*, 2055-2084. https://doi.org/10.1007/s11192-022-04294-w

Bordin, A. S., Gonçalves, A. L., & Todesco, J. L. (2014). Análise da colaboração científica departamental através de redes de coautoria. *Perspectivas em Ciência da Informação*, *19*(2), 37-52. http://dx.doi.org/10.1590/1981-5344/1796

Borges, W. G., Leroy, R. S. D., Carvalho, L. F., Lima, N. C., & Oliveira, J. M. de. (2020). Implicações da inteligência artificial na auditoria interna no Brasil: análise sob a percepção de profissionais. *Sociedade, Contabilidade e Gestão*, *15*(1), 23-40. https://doi.org/10.21446/scg_ufrj.v0i0.25284

Bufrem, L., & Prates, Y. (2005). O saber científico registrado e as práticas de mensuração da informação. *Ciência da Informação*, *34*(2), 9-25. https://doi.org/10.1590/S0100-19652005000200002

Cabrera, B. A. G. (2023). Inteligencia artificial y economía. *Revista Ciencias Económicas*, *1*(1), 31-36. https://doi.org/10.5281/zenodo.10627186

Cajazeira, P. E. S. L., & Silva, H. A. (2021). As publicações em coautoria e colaboração científica em Comunicação na Universidade Federal do Piauí. *Ciência da Informação*, *50*(1), 143-160. https://doi.org/10.18225/ci.inf.v50i1.5209

Carvalho, P. R., Gouveia, F. C., & Ramos, M. G. (2022). Inteligência artificial: análise bibliométrica de pesquisas acadêmicas, currículos lattes e grupos de pesquisa do conselho nacional de desenvolvimento científico e tecnológico. *Informação & Informação*, *27*(3), 55-85. https://doi.org/10.5433/1981-8920.2022v27x3p55

Cavalcanti, W., Tavares, E., & Castro Júnior, J. de L. P. (2021). Aplicação da inteligência artificial no ensino superior: áreas e características. *Revista ADM.MADE*, *25*(1), 40-61. http://dx.doi.org/10.21714/2237-51392021v25n1p040061

Cunha, P. R. da, & Piccoli, M. R. (2017). Influência do board interlocking no gerenciamento de resultados. *Revista Contabilidade & Finanças*, *28*(74), 179-196. https://doi.org/10.1590/1808-057x201701980

Dal Vesco, D. G., & Beuren, I. M. (2012). Teoria da estrutura de propriedade: redes sociais em periódicos internacionais de alto impacto. *Revista Facultad de Ciencias Económicas: Investigación y Reflexión*, *20*(1), 123-141.

Di Vito, J., & Trottier, K. (2022). A literature review on corporate governance mechanisms: past, present, and future. *Accounting Perspectives*, *21*(2), 207-235. https://doi.org/10.1111/1911-3838.12279

Durante, D. G., Veloso, F. R., Machado, D. Q., Cabral, A. C. A., & Santos, S. M. (2019). Aprendizagem organizacional na abordagem dos estudos baseados em prática: revisão da produção científica. *Revista de Administração Mackenzie*, *20*(2), 1-28. https://doi.org/10.1590/1678-6971/eRAMG190131

Dwivedi, R., Nerur, S., & Balijepally, V. (2023). Exploring artificial intelligence and big data scholarship in information systems: A citation, bibliographic coupling, and co-word analysis. *International Journal of Information Management Data Insights*, *3*(2). https://doi.org/10.1016/j.jjimei.2023.100185

Favaretto, J. E. R., & Francisco, E. de R. (2017). Exploração do acervo da RAE-Revista de Administração de Empresas (de 1961 a 2016) à luz da bibliometria, text mining, rede social e geoanálise. *Revista de Administração de Empresas*, *57*(4), 365-390. http://dx.doi.org/10.1590/S0034-759020170407

Ferreira, D., Baidya, T. K., & Dalbem, M. C. (2018). Governança corporativa (GC) nas instituições de ensino superior: um mapeamento sistemático da produção científica nacional. *Revista de Administração da UFSM*, *11*(4), 921-941. http://dx.doi.org/10.5902/19834659 14195

Ferreira, J. B., & Silva, L. de A. M. (2019). O uso da bibliometria e sociometria como diferencial em pesquisas de revisão. *Revista Brasileira de Biblioteconomia e Documentação*, *15*(2), 448-464.

Fonseca, J. L. da, & Gomes, C. L. (2020). O turismo induzido por filmes no contexto latinoamericano: uma revisão sistemática de literatura. *Revista Rosa dos Ventos – Turismo e Hospitalidade*, *12*(3), 657-682. http://dx.doi.org/10.18226/21789061.v12i3p657

Francisco, E. de R. (2011). RAE-eletrônica: exploração do acervo à luz da bibliometria, geoanálise e redes sociais. *Revista de Administração de Empresas*, *51*(3), 280-306. https://doi.org/10.1590/S0034-75902011000300008

Gomes, C. H. P. (2017). *Redes sociais de coautoria científica*: reflexões sobre inovação na docência da educação superior. Tese (Doutorado em Educação Matemática e Tecnológica). Centro de Educação - Programa de Pós-Graduação em Educação Matemática e Tecnológica, Universidade Federal de Pernambuco, Pernambuco, 2017. Recuperado em: < https://repositorio.ufpe.br/bitstream/123456789/28391/1/TESE%20Carlos%20Henryque%20Pompeu%20Gomes.pdf>

Gontijo, M. C. A., & Ferreira de Araújo, R. F. de. (2019). Dados bibliométricos e altmétricos de artigos científicos sobre inteligência artificial. *Multíplos Olhares em Ciência da Informação, 9*(2), 1-11.

Gontijo, M. C. A., & Ferreira de Araújo, R. (2021). Impacto acadêmico e atenção on-line de pesquisas sobre inteligência artificial na área da saúde: análise de dados bibliométricos e altmétricos. *Encontros Bibli: Revista Eletrônica de Biblioteconomia e Ciência da Informação, 26*, 01-21. https://doi.org/10.5007/1518-2924.2021.e76249

Gontijo, M. C. A., & Ferreira de Araújo, R. (2021). Inteligência artificial: impacto acadêmico e social de sua produção científica. Ciência da Informação Express, *2*(4), 1-6.

Gontijo, M. C. A., & Ferreira de Araújo, R. (2019). Métricas alternativas e dados de citação de publicações em acesso aberto sobre inteligência artificial no campo da saúde. *Ciência da Informação, 48*(3), 451-452.

Groenner, L. C., Faria, L. I. L. de, Perissini, R. C., & Gracioso, L. de S. (2022). Um estudo bibliométrico sobre a pesquisa em inteligência artificial no Brasil. *Brazilian Journal of Information Science: Research Trends, 16*(e02147). https://doi.org/10.36311/1981-1640.2022.v16.e02147

Hernández, J. J. G., Díaz, G. M., & Salvador, J. L. G. (2024). Artificial intelligence applied to human resources management: a bibliometric analysis. In: Rocha, Á., Ferrás, C., Hochstetter Diez, J., Diéguez Rebolledo, M. (eds) Information Technology and Systems. ICITS 2024. Lecture Notes in Networks and Systems, *932*. Springer, Cham. https://doi.org/10.1007/978-3-031-54235-0_25

Hu, H., Wang, D., & Deng, S. (2020). Global collaboration in artificial intelligence: bibliometrics and network analysis from 1985 to 2019. *Journal of Data and Information Science, 5*(4), 86-115. https://doi.org/10.2478/jdis-2020-0027

Ludermir, T. B. (2021). Inteligência artificial e aprendizado de máquina: estado atual e tendências. *Estudos Avançados, 35*(101), 85-94. https://doi.org/10.1590/s0103-4014.2021.35101.007

Kirtil, I. G., & Aşkun, V. (2021). Artificial intelligence in tourism: a review and bibliometrics research. *Advances in hospitality and tourism research, 9*(1), 205-233. https://doi.org/10.30519/ahtr.801690

Kubota, L. C., & Rosa, M. B. (2023). Inteligência artificial no Brasil: adoção, produção científica e regulamentação. Recuperado em: < https://www.researchgate.net/profile/Luis-Kubota/publication/377481605_Inteligencia_artificial_no_brasil_adocao_producao_cientifica_e_regulamentacao/links/65ac3570ee1e1951fbd59750/Inteligencia-artificial-no-brasil-adocao-producao-cientifica-e-regulamentacao.pdf>

Kureljusic, M., & Karger, E. (2023). Forecasting in financial accounting with artificial intelligence – a systematic literature review and future research agenda. *Journal of Applied Accounting Research, 25*(1), 81-104. https://doi.org/10.1108/JAAR-06-2022-0146

Machado Junior, C., Souza, M. T. S. de, & Parisotto, I. R. dos S. (2014). Institucionalização do conhecimento em sustentabilidade ambiental pelos programas de pós-graduação stricto sensu em administração. *Revista de Administração Contemporânea, 18*(6), 854-873. https://doi.org/10.1590/1982-7849rac20141809

Machado Junior, C., Souza, M. T. S. de, Parisotto, I. R. dos S., & Palmisano, A. (2016). As leis da bibliometria em diferentes bases de dados científicos. *Revista de Ciências da Administração, 18*(44), 111-123. http://dx.doi.org/10.5007/2175-8077.2016v18n44p111

Maia, M., & Bezerra, C. A. (2020). Análise bibliométrica dos artigos científicos de jurimetria publicados no Brasil. *Revista Digital de Biblioteconomia e Ciência da Informação, 18*, 1-28. https://doi.org/10.20396/rdbci.v18i0.8658889

Mendonça, C. M. C., Andrade, A. M. V. de, & Sousa Neto, M. V. de. (2018). Uso da iot, big data e inteligência artificial nas capacidades dinâmicas. *Revista Pensamento Contemporâneo em Administração, 12*(1), 131-151. http://dx.doi.org/10.12712/rpca.v12i1.1120

Momo, F. da S., Melati, C., Muniz, R. J., & Behr, A. (2021). Relationships between accounting and intelligence: research paths. *Journal of Accounting, Management and Governance, 24*(3), 274-292. http://dx.doi.org/10.513411984-3925_2021v24n3a2

Nascimento, G. D. do, Martins, G. K., & Albuquerque, M. E. B. C. de. (2023). Automação da indexação: evidências e tendências da produção científica indexada na BRAPCI. *Encontros Bibli: Revista Eletrônica de Biblioteconomia e Ciência da Informação, 28*, 1-20. https://doi.org/10.5007/1518-2924.2023.e91956

Nascimento, N. L. do, Santos, J. S. C. dos, Meireles, S. S. de, Melo, S. A. B. X. de, Servilha, G. O. A., & Panhoca, L. (2022). Comitê de pronunciamentos contábeis: um estudo bibliométrico e de redes sociais de 2008 a 2020. *Revista Catarinense da Ciência Contábil, 21*, 1-21. https://doi.org/10.16930/2237-7662202232631

Nascimento, S. do, & Beuren, I. M. (2011). Redes sociais na produção científica dos programas de pós-graduação de ciências contábeis do Brasil. *Revista de Administração Contemporânea*, *15*(1), 47-66. https://doi.org/10.1590/S1415-65552011000100004

Nascimento, S. do, Pereira, A. M., & Toledo Filho, J. R. de. (2010). Produção científica em periódicos de contabilidade relacionada ao mercado de capitais. *Contabilidade, Gestão e Governança*, *13*(1), 32-43.

Neves, D. R., Nascimento, R. P., Felix Jr., M. S., Silva, F. A. da, & Andrade, R. O. B. de. (2018). Sentido e significado do trabalho: uma análise dos artigos publicados em periódicos associados à Scientific Periodicals Electronic Library. *Cadernos EBAPE.BR*, *16*(2), 318-330. http://dx.doi.org/10.1590/1679-395159388

Neves, F. R., Silva, P. B. da, & Carvalho, H. L. M. de. (2019). Artificial ladies against corruption: searching for legitimacy at the brazilian supreme audit institution. *Revista de Contabilidade e Organizações*, 31-50. http://dx.doi.org/10.11606/issn.1982-6486.rco.2019.158530

Oliveira, D. A. de, & Ferreira de Araújo, R. (2020). A contribuição das métricas para o campo da ciência da informação. *Perspectivas em Ciência da Informação*, *25*(número especial), 300-318. http://dx.doi.org/10.1590/1981-5344/4309

Ouro Filho, A. M. do, Olave, M. E. L., & Barreto, I. D. de C. (2020). Aprendizagem interorganizacional em redes de micro e pequenas empresas: um olhar integrativo da literatura. *Cadernos EBAPE.BR*, *18*(1), 74-90. http://dx.doi.org/10.1590/1679-395177660

Parreiras, F. S., Silva, A. B. de O., Matheus, R. F., & Brandão, W. C. (2006). RedeCI: colaboração e produção científica em ciência da informação no Brasil. *Perspectivas em Ciência da Informação*, *11*(3), 302-317. https://doi.org/10.1590/S1413-99362006000300002

Peleias, I. R., Wahlmann, G. C., Parisi, C., & Antunes, M. T. P. (2010). Dez anos de pesquisa científica em controladoria no brasil (1997 – 2006). *Revista de Administração e Inovação*, *7*(1), 193-217.

Pereira, A. C. D., & Cezar, L. C. (2022). Comércio justo: um panorama da produção científica brasileira. *Amazônia, Organizações e Sustentabilidade*, *11*(2), 14-32. http://dx.doi.org/10.17648/aos.v11i2.2660

Pereira, A. N., Faria, A. C. de, Lamenza, A., & Pereira, R. S. (2014). Rede de pesquisadores de créditos de carbono no Brasil entre 2006 e 2012: um estudo bibliométrico e sociométrico. *Revista de Administração, Contabilidade e Sustentabilidade*, *4*(3), 1-19.

Pessoa Araújo, U., Mendes, M. de L., Gomes, P. A., Coelho, S. de C. P., Vinícius, W., & Brito, M. J. de. (2017). Trajetória e estado corrente da sociometria brasileira. *Revista Hispana para el Análisis de Redes Sociales*, *28*(2), 97-128. http://dx.doi.org/10.5565/rev/redes.706

Piccolo, D. M., Pereira, C. M., Katahira, I., Vidotti, S. A. B. G., & Rodas, C. M. (2021). User experience no contexto da inteligência artificial: uma revisão sistemática da literatura. *Informação & Informação*, *26*(3), 302-326. https://doi.org/10.5433/1981-8920.2021v26n3p302

Pinheiro, M., & Oliveira, H. (2022). Inteligência artificial: estudos e usos na ciência da informação no Brasil. *Revista Ibero-Americana de Ciência da Informação*, *15*(3), 950-968. https://doi.org/10.26512/rici.v15.n3.2022.42767

Quandt, C. O. (2012). Redes de cooperação e inovação localizada: estudo de caso de um arranjo produtivo local. *Revista de Administração e Inovação*, *9*(1), 141-166. http://dx.doi.org/10.5773/rai.v1i1.674

Ribeiro, H. C. M. (2022). 20 anos do escândalo corporativo da Enron: uma análise de sua produção científica à luz da análise de redes sociais. *ConTexto*, *22*(52), 45-59.

Ribeiro, H. C. M., & Corrêa, R. (2023). Governança corporativa: uma análise da produção científica divulgada nos periódicos científicos nacionais indexados na SPELL. XLVII Encontro da ANPAD - EnANPAD 2023 São Paulo - 26 - 28 de set de 2023 2177-2576 versão online. Recuperado em: < file:///C:/Users/hcmri/Documents/154ff8944e6eac05d0675c95b5b8889d.pdf>

Ribeiro, H. C. M., & Corrêa, R. (2022). Panorama e tendência do estado da arte da bibliometria e sociometria dos estudos publicados nos periódicos Indexados na Scientific Periodicals Electronic Library. *Anais...*, XLVI Encontro da ANPAD - EnANPAD 2022 On-line - 21 - 23 de set de 2022 2177-2576 versão online. Recuperado em: < http://anpad.com.br/uploads/articles/120/approved/adf7ee2dcf142b0e11888e72b43fcb75.pdf>

Ribeiro, H. C. M., Costa, B. K., Ferreira, M. A. S. P. V., & Serra, B. P. de C. (2014). Produção científica sobre os temas governança corporativa e stakeholders em periódicos internacionais. *Contabilidade, Gestão e Governança*, *17*(1), 95-114.

Rocha, I. F., & Kissimoto, K. O. (2022). Barreiras e benefícios na adoção de inteligência artificial e IoT na gestão da operação. *Revista de Administração Mackenzie*, *23*(4). https://doi.org/10.1590/1678-6971/eRAMR220119.pt

Rosa, R. A., & Romani-Dias, M. (2019). Indexação de periódicos e a política de avaliação científica: uma análise do campo de administração, contabilidade e turismo no Brasil. *International Journal of Professional Business Review, 4*(2), 1-17. http://dx.doi.org/10.26668/businessreview/2019.v4i2.168

Rossoni, L., & Guarido Filho, E. R. (2009). Cooperação entre programas de pós- cooperação entre programas de pós-graduação em graduação em administração no Brasil: evidências estruturais em quatro áreas temáticas. *Revista de Administração Contemporânea, 13*(3), 366-390. https://doi.org/10.1590/S1415-65552009000300003

Rossoni, L., Hocayen-da-Silva, A. J., & Ferreira Júnior, I. (2008). Aspectos estruturais da cooperação entre pesquisadores no campo de administração pública e gestão social: análise das redes entre instituições no Brasil. *Revista de Administração Pública, 42*(6), 1041-1067. https://doi.org/10.1590/S0034-76122008000600002

Rossoni, L. (2018). O Spell reduziu o efeito Mateus na citação de periódicos. *Revista Eletrônica de Ciência Administrativa, 17*(1), 1-8. http://dx.doi.org/10.21529/RECADM.2018ed1

Ruiz-Real, J. L., Uribe-Toril, J., Torres, J. A., & De Pablo, J. (2021). Artificial intelligence in business and economics research: trends and future. *Journal of Business Economics and Management, 22*(2), 98-117. https://doi.org/10.3846/jbem.2020.13641

Schmidt, P., & Tolotti, M. (2019). Um estudo bibliométrico da produção científica sobre accruals publicada nos periódicos nacionais de contabilidade. *Desafio Online, 7*(2), 278-305.

Silva Neto, V. J. da, Bonacelli, M. B. M., & Pacheco, C. A. (2020). O sistema tecnológico digital: inteligência artificial, computação em nuvem e big data. *Revista Brasileira de Inovação, 19*(e0200024), 1-31. http://doi.org/10.20396/rbi.v19i0.8658756

Sofyan, D., Abdullah, K. H., Hammood, W. A., & Roslan, M. F. (2022). Evaluative bibliometrics of artificial intelligence publications in the sports industry. *Nusantara Journal of Sports Science, 1*(1), 1-15.

Ullrich, A., Vladova, G., Eigelshoven, F., & Renz, A. (2022). Data mining of scientifc research on artifcial intelligence in teaching and administration in higher education institutions: a bibliometrics analysis and recommendation for future research. *Discover Artifcial Intelligence, 2*(6), 1-18. https://doi.org/10.1007/s44163-022-00031-7

Urbizagástegui-Alvarado, R. (2022). Bibliometria brasileira: análise de copalavras. *TransInformação, 34*, 1-20. https://doi.org/10.1590/2318-0889202234e220004

Vanti, N. A. P. (2002). Da bibliometria à webometria: uma exploração conceitual dos mecanismos utilizados para medir o registro da informação e a difusão do conhecimento. *Ciência da Informação, 31*(2), 152-162. https://doi.org/10.1590/S0100-19652002000200016

Varandas Junior, A., Miguel, P. A. C., Carvalho, M. M. de, & Zancul, E. de S. (2015). Gestão de ciclo de vida e desenvolvimento de produto: análise bibliométrica e classificação da literatura. *Production, 25*(3), 510-528. http://dx.doi.org/10.1590/0103-6513.071211

Vecchia, L. A. D., Mazzioni, S., Poli, O. L., & Moura, G. D. de. (2018). Corrupção e contabilidade: análise bibliométrica da produção científica internacional. *Sociedade, Contabilidade e Gestão, 13*(3), 1-19. http://dx.doi.org/10.21446/scg_ufrj.v13i3.20033

Walter, S. A., Bach, T. M., & Barbosa, F. (2012). Estratégia como prática: análise longitudinal por meio de bibliometria e sociometria. *Revista Brasileira de Estratégia, 5*(3), 307-323. https://doi.org/10.7213/rebrae.6073

Walter, S. A., & Bach, T. M. (2013). Inserção de pesquisadores entrantes na área de estratégia: análise das relações de autoria e temas estudados no período de 1997-2010. *Revista Eletrônica de Administração, 19*(1), 165-191. https://doi.org/10.1590/S1413-23112013000100007

Welter, L. M., Souza, Â. R. L. de, Trajano, B. B., & Behr, A. (2021). Redes de coautoria dos programas brasileiros de pós-graduação em contabilidade. *Revista Contemporânea de Economia e Gestão, 19*(10), 146-159. https://doi.org/10.19094/contextus.2021.61274

Williams dos Santos, C., & Farias Filho, M. C. (2016). Agentes Comunitários de Saúde: uma perspectiva do capital social. *Ciência & Saúde Coletiva, 21*(5), 1659-1667. https://doi.org/10.1590/1413-81232015215.23332015

Yang, D., Zhao, W. G., Du, J., & Yang, Y. (2024). Approaching artificial intelligence in business and economics research: a bibliometric panorama (1966–2020). *Technology Analysis & Strategic Management, 36*(3), 563-578. https://doi.org/10.1080/09537325.2022.2043268