

Sarbanes-Oxley Act: 20 years of its Brazilian Scientific Production in the Light of Scientific Journals Indexed in the Scientific Periodicals Electronic Library – SPELL

Lei Sarbanes-Oxley: 20 Anos de sua Produção Científica Brasileira à Luz dos Periódicos Científicos Indexados na Scientific Periodicals Electronic Library - SPELL

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RESUMO

O objetivo desta pesquisa foi investigar o desempenho e a propensão da formação das redes sociais da produção científica do tema Lei Sarbanes-Oxley divulgada nos periódicos científicos indexados na biblioteca eletrônica SPELL. Metodologicamente, utilizou-se as técnicas da bibliometria e da Análise de Redes Sociais, sendo está última proeminente, sobretudo no que concerne a análise de redes *one-mode* e *two-mode*. Os principais resultados foram: estabilidade nas publicações sobre o tema, apesar deste ser ainda iniciante na literatura acadêmica nacional; o periódico científico mais produtivo e central foi a Contabilidade Vista & Revista; o autor mais prolífero e central foi Paulo Roberto da Cunha; as instituições com maior centralidade e produtividade foram: Universidade de São Paulo, Fundação Escola de Comércio Álvares Penteado e Universidade Regional de Blumenau; e as palavras-chave mais centrais foram: governança corporativa, auditoria, controles internos, auditoria interna, comitê de auditoria, conservadorismo e gerenciamento de resultados. O presente estudo contribuiu para melhor entender e compreender a formação das redes de colaboração dos atores envolvidos no processo de construção do conhecimento científico nacional brasileiro sobre o tema Lei Sarbanes-Oxley.

Palavras-chave: Lei Sarbanes-Oxley; 20 anos; Produção científica; Análise de redes sociais; SPELL.

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ABSTRACT

The objective of this research was to investigate the performance and propensity for the formation of social networks of scientific production on the subject of the Sarbanes-Oxley Act published in scientific journals indexed in the SPELL electronic library. Methodologically, the techniques of bibliometrics and Social Network Analysis were used, the latter being prominent, especially with regard to the analysis of one-mode and two-mode networks. The main results were: stability in the publications on the referred theme, despite this being still a beginner in the national academic literature; Accounting Vista & Revista was the most productive and central scientific journal; Paulo Roberto da Cunha was the most prolific and central author; the institutions with the highest centrality and productivity were: University of São Paulo, Álvares Penteado School of Commerce Foundation and University Regional of Blumenau; and the most central keywords were: corporate governance, auditing, internal controls, internal auditing, audit committee, conservatism and earnings management. The present study contributed to a better understanding and comprehension of the formation of the collaboration networks of the actors involved in the process of building Brazilian national scientific knowledge on the subject of the Sarbanes-Oxley Act.

Keywords: Sarbanes-Oxley Act; 20 years; Scientific production; Analysis of social networks; SPELL.

1 INTRODUCTION

Large companies such as Enron, Worldcom, and Tyco, which were considered symbols of ethics, results, and process excellence, alerted the world to a negative global accounting landscape, particularly regarding the security and disclosure of information provided to their stakeholders (SOUZA; FIGUEIREDO, 2008). Therefore, this crisis of credibility in the corporate market in the United States (USA) as a result of these accounting scandals led to the enactment of the Sarbanes-Oxley Act (SOX) in July 2002, which focuses on defining a set of standards and rules aimed at certifying the veracity of accounting information presented by companies (CUNHA; SILVA; FERNANDES, 2013), thus bringing a greater need for transparency of this information, strengthening the pursuit of continuous improvement in aspects of internal and external auditing, internal controls and corporate governance (CG) of companies (CARIOCA; DE LUCA; PONTE, 2010; ROSA et al., 2014; RIBEIRO, 2022).

Therefore, well-founded formal corporate governance processes were defined, through codes of ethics as a key element for good corporate governance systems, influencing, a posteriori, the reduction of conflicts and agency costs and the increase in transactional costs of the board of directors and the audit committee (PELEIAS et al., 2010). Thus, SOX, through good corporate governance practices, which are guided by the basic principles of transparency through the disclosure of accounting information; The principles of stakeholder equity, accountability, and corporate responsibility (SOUSA et al., 2021) have mandated the adoption of these practices, emphasizing new internal controls, including the implementation of an audit committee. Non-US companies, including Brazilian companies with securities traded on the US capital market (American Depositary Receipts - ADRs), are required to comply with all the resulting precepts (PELEIAS; SEGRETI; COSTA, 2009), particularly regarding the audit committee (SANCOVSCHI et al., 2019; PEREIRA; GONÇALVES; COSTA, 2022).

In short, the SOX Act generated many changes for corporate governance, internal controls, and the capital market (PAULO; CARVALHO; GIRÃO, 2014), establishing penalties for administrators and auditors (BELLI et al., 2016). Therefore, it is possible to affirm and report that the SOX Act is a crucial point in auditing worldwide (PORTE; SAUR-AMARAL; PINHO, 2018). That being said, SOX has a direct relationship with Accounting (CUNHA; TOIGO; PICOLLI, 2016), as it directly affected the quality of accounting information (MARQUES et al., 2016), thus seeking to mitigate possible manipulations (PAIVA et al., 2022), and, concomitantly, accounting fraud (RIBEIRO, 2022), which in some cases became known as "creative accounting". In this sense, it is worth remembering the bankrupt auditing firm Arthur Andersen, which carried out such fraudulent practices (REINA; NASCIMENTO; REINA, 2008). However, it should be noted that auditing plays a relevant role in combating this type of corruption (SILVA; BRAGA; LAURENCEL, 2009). All of this has made the Sarbanes-Oxley Act an object of investigation for several researchers in the field of Accounting Sciences (CUNHA; SILVA; FERNANDES, 2013). Almost 20 years after the enactment of the Sarbanes-Oxley Act, this study presents the following research question: What is the performance and propensity of the formation of social networks of scientific production on the topic of the Sarbanes-Oxley Act published in scientific journals indexed in the SPELL electronic library?

Although there are already national academic texts, disseminated within academia, focusing on the scientific production of the SOX theme within the scope of white literature (CUNHA; SILVA; FERNANDES, 2013), and in the context of grey literature (SILVA, 2021), no scientific studies were found that investigated the performance and propensity for the formation of social networks of scientific production on the Sarbanes-Oxley Act disseminated in scientific journals indexed in the SPELL electronic library. Therefore, this is the objective proposed in this research, which will allow the consolidation and expansion of knowledge about the SOX Act in the Brazilian national scientific literary landscape, and will contribute to examining its evolution in this scenario, proposing guidelines for future academic work (DI VITO; TROTTIER, 2022).

Thus, it is reinforced that this research will contribute to a better understanding and comprehension of the landscape of scientific research publications on the Sarbanes-Oxley Act in Brazil. In addition, it will make it possible to identify the collaboration networks of those responsible for the construction, dissemination and development of knowledge on the subject, as well as the issues most discussed through the social networks of the keywords.

In order to answer the research question and achieve the objective proposed in this study, bibliometric analysis was used (CAMARGO et al., 2023), which is a quantitative research method based on indicators and the visualization of social networks that serves to measure performance or productivity.

and the structure or collaboration of different actors, such as: period, journals, researchers, institutions, keywords (BERMEO-GIRALDO et al., 2021).

In summary, bibliometric techniques (BISSOL; OLIVEIRA, 2022) were used in the first stage of this study, and SNA (RIBEIRO, 2022) as a prominent technique in this research. The use of bibliometrics in this study is justified because, in recent years, this technique has captured the interest of researchers worldwide, allowing them to obtain data on a specific field or topic of academic study (BORDIN; GONÇALVES; TODESCO, 2014). And, ARS metrics are based, above all, on graph theory (ROSSONI; HOCAYEN-DA-SILVA; FERREIRA JÚNIOR), allowing the investigation of the structure and connections of the network as a whole (RIBEIRO; SANTOS, 2015), subgroups of actors and actors individually within the social network, and, in this research, attempted to capture insights on the study of the SOX Law in Brazilian national scientific production, using bibliometrics (RIBEIRO, 2017), and, notably, ARS (DISSANAYAKE et al., 2022), through SPELL (RIBEIRO; CORRÊA, 2022).

The choice of the SPELL database is cited due to its importance in the dissemination and socialization of scientific studies, especially in the areas of Administration, Accounting, and Tourism (ATAMANCZUK; SIATKOWSKI, 2019), thus maximizing the visibility of Brazilian national scientific production and, concomitantly, impacting the evolution of citations of scientific journals indexed in SPELL (ROSSONI, 2018). To date, SPELL has indexed 116 academic journals (SPELL, 2023), influencing its relevance in research related to bibliometrics (SPERANDIO; CALIMAN, 2019) and ARS (FAVARETTO; FRANCISCO, 2017), in the Brazilian context especially (RIBEIRO & CORRÊA, 2022). Therefore, SPELL is connected to the National Association of Postgraduate Studies and Research in Administration – ANPAD (GUIMARÃES et al., 2018; FAGUNDES; SCHREIBER, 2020).

This study contributes to the scientific literature in the areas of Administration and Accounting by investigating the scientific production of research on the SOX Act, from the perspective of ARS, highlighting the one-mode and two-mode social networks of the actors responsible for the dissemination and development of this topic in academia, thus contributing to its expansion and strengthening and to the greater maturation of its scientific information and knowledge. In other words, it is also hoped that this research, in addition to contributing to the growth of the aforementioned topic in academia, will provide opportunities for the emergence of new avenues for future studies on this subject, and thereby expand knowledge about the SOX Law, thus seeking to motivate and mobilize researchers, both senior and novice, who wish to cooperate in the theoretical improvement of this topic in the Brazilian national scientific literature.

2 SARBANES-OXLEY ACT

The globalization of the capital market has highlighted the need to solve the problems identified in publicly traded companies, such as ownership structure, conflicts of interest between shareholders and managers, lack of disclosure, and conduct that is not always correct with minority shareholders, thus expanding the GC movement (SILVA et al., 2009). In this context, SOX is considered the most important legislation in the US capital market since the New York Stock Exchange crash in 1929 and the acts issued by the Securities and Exchange Commission (SEC), which is the US Securities and Exchange Commission (CVM), in 1933 and 1934 (SILVA; ROBLES JUNIOR, 2008).

Its creation took place on July 30, 2002, in the USA, and it was drafted by two congressmen, Senator Paul Sarbanes

and Republican Representative Michael Oxley, in response to the successive corporate scandals (BELLI et al., 2016) involving Enron, Worldcom, Tyco, Arthur Andersen, among other companies, which threatened to destroy investor confidence in the country's capital market (CONTEZINI; BEUREN, 2012). Given this, SOX emerged with the purpose of protecting these investors by improving the accuracy and reliability of the transparency of companies' financial statements (MENDONÇA et al., 2010), establishing a stringent set of norms and rules for the main actors involved in the corporate world, including administrators, auditors, lawyers, and market analysts (SILVA; ROBLES JUNIOR, 2008).

It can be understood that the SOX Act is a regulation that influences earnings management, mainly due to its provisions regarding internal control systems and auditing.

and GC (CAPPELLESSO; NIYAMA; RODRIGUES, 2020). Consequently, SOX is a rigorous GC mechanism (MARTINEZ; RIBEIRO; FUNCHAL, 2019), being considered one of the most stringent regulations, establishing robust internal controls, the preparation of financial reports and the disclosure of more transparent information (SANTOS; LEMES, 2007), through a new GC environment, generating a set of new responsibilities and sanctions for administrators in order to avoid future harmful practices that may expose publicly traded companies to high levels of risk (OLIVEIRA; LINHARES, 2007).

The various SOX rules apply not only to listed US companies, but also to foreign companies that issue ADRs (MARTINEZ; RIBEIRO; FUNCHAL, 2019).

This is achieved through sections that focus on various controlled sectors (CONTEZINI; BEUREN, 2012). In this way,

Table 1 shows the main sections of SOX.

Sections	What is it about?
104	Requirement that the Company Accounting Oversight Board (PCAOB) conduct inspections of each accounting and auditing firm, to protect the interests of investors as well as the interested public through inspection reports.
201, 202, 204 e 301	Audit committee, auditor independence, solutions and issues reported by auditors, and prohibition of certain services by audit firms.
302 e 906	Certifications of the annual reports, containing the financial statements, by the executive and financial administrators [Chief Executive Officer (CEO) and Chief Financial Officer (CFO)], placing them under civil and criminal liability.
304	Penalties for board members and directors for breach of duty of conduct and confiscation of bonuses in cases of republication of financial statements.
305	Penalties and jurisdictions for directors.
306	Limits employee benefit plans.
307	It adopts professional standards of conduct for lawyers.
402	Prohibition of loans to board members and directors by the company.
404, 407, 408 e 409	They address aspects of internal control and SEC oversight of public information. They mandate the issuance of a special report, with an opinion, delivered to the SEC, attesting to the annual evaluation of internal controls and processes that form the basis of financial reports.
406	Code of ethics for financial executives.
802	Criminal penalties for altering documents.
804	It presents limitation periods for the right to legal action, concerning issues related to fraud and manipulation of information involving securities.
806	Protection for employees of publicly traded companies who provide evidence of fraud.
1.105	The SEC has the authority to prohibit individuals from serving as directors.
1.106	increases the criminal penalties of the Securities Exchange Act of 1934.

Source: Adapted from: Oliveira and Linhares (2007), Santos and Lemes (2007), Contezini and Beuren (2012), Cunha, Wrubel and Chiarello (2015), Cappellessso, Niyama and Rodrigues (2020).

Analyzing Table 1, it is clear that these sections explicitly show the breadth of rules, standards, controls, and monitoring that the implementation of SOX requires from companies, also demonstrating transparency and concern for all important aspects for the presentation of quality internal financial and accounting controls (CONTEZINI; BEUREN, 2012). In this context, the SOX Act is stringent, reaching the level of severe criminal penalties (CUNHA; WRUBEL; CHIARELLO, 2015), that is, the SOX Act stipulates that the disclosure of any accounting statement that does not comply with the requirements established by said Act is punishable by a fine of US\$1,000,000 or imprisonment for 10 years, or both; and for the intentional disclosure of any accounting statement that does not comply with the requirements set forth by the aforementioned Law is a penalty of US\$ 5,000,000 or imprisonment for 20 years, or both (AMORIM et al., 2017).

Among other measures, the law requires companies to adopt codes of ethics for their administrators, highlighting their duties to shareholders and the capital market, and prohibits loans to these administrators. It is reinforced that the SOX Law requires the creation of an audit committee, imposing a clear separation between audit and consulting services. It expressly focuses on the responsibility of lawyers regarding the obligation to inform the SEC of relevant violations of capital market legislation by companies and their respective managers. And, with regard to GC, additionally, the SOX Law imposes the adoption of specific regulations to reduce agency conflicts (COVA, 2005).

Here, it is worth adding that, in Brazil, the topic of Corporate Governance gained importance and scientific relevance starting in 2006 as a result of the enactment of the SOX Act (FERREIRA et al., 2019), also influencing the mandatory nature and adequacy of audit committees, and consequently, the internal controls of Brazilian national companies listed on the stock exchange (SORRENTINO; TEIXEIRA; VICENTE, 2016).

3 METHODOLOGICAL PROCEDURES

The objective of this research was to investigate the performance and propensity of the formation of social networks in the scientific production on the topic of the Sarbanes-Oxley Act, published in scientific journals indexed in the SPELL electronic library, using SNA techniques from one-mode and two-mode perspectives.

It is worth noting that, in order to delve into the ARS and simultaneously create its one-mode and two-mode social network matrices (TOMAÉL; MARTELETO, 2013; RIBEIRO; CORRÊA, 2023), it was necessary to use bibliometrics in the first stage of this research (CUENCA; TOMEI; MELLO, 2022), and this choice was made because this method is popular and rigorous for exploring and investigating scientific data, thus allowing us to unveil the evolutionary nuances (URBIZAGÁSTEGUI-ALVARADO; RESTREPO-ARANGO, 2021) of the Sarbanes-Oxley Act theme.

In Social Network Analysis (SNA), there are basic concepts for better understanding it (SEVERIANO JUNIOR et al., 2021), that is, ways to ascertain the structure and interactions of a collaborative network, among which the following stand out: nodes, which are the arrangements that define the relevant locations of the actors in the structure of the social network. Ties, which are situated by the actors in a given environment, thus defining patterns of relationships and dynamics of mutual influence (ALLEGRETTI et al., 2018). Centralities, in turn, are widely used network properties that confer characteristics related to the importance and visibility of an actor in a cooperation network (FARIAS; CARMO, 2021). Among these centralities, degree centrality is emphasized, which is the property that contemplates the interaction activity of an actor (BALESTRIN; VERSCHOORE; REYES JUNIOR, 2010), by measuring the number of relationships of each of these actors.

in a graph (ALVES; PAVANELLI; OLIVEIRA, 2014), that is, the number of partnerships in the construction and dissemination of academic research (PESSOA ARAÚJO et al., 2017). And the betweenness centrality, which is the attribute that focuses on the actors' potential for intermediation, by assessing how much a given actor acts as a foundation and path, collaborating to strengthen the connections of the various actors in the social network (BATAGLIN et al., 2021). Here it is worth highlighting that in this study, we chose to focus on degree centrality and betweenness centrality (MELLO; CRUBELLATE; ROSSONI, 2009).

In short, the SNA can be: one-mode and or two-mode. The one-mode social network is characterized when actors in a collaboration network have relationships with other actors in the same division, such as, for example: a social network composed only of authors. And the two-mode social network differs when its actors have intersections with actors from other categories, such as, for example: authors and their respective native Higher Education Institutions (HEIs). Therefore, it is observed that in Brazilian national scientific research, it is infrequent to find scientific texts that investigate two-mode networks. In other words, research on one-mode social networks far exceeds, in quantity, research on two-mode social networks (TOMAÉL; MARTELETO, 2013).

The research universe highlighted all the studies from scientific journals available in the SPELL electronic library, in the areas of Administration, Accounting Sciences, Economics and Tourism. It is emphasized that the choice of the SPELL database is due to its adherence to the proposal of this research, considering that SPELL is a database with a large volume of indexed scientific journals and academic research produced in Brazil, regarding Applied Social Sciences and, in particular, academic productions in the field of Administration and Accounting (ANJO; BRITO; BRITO, 2022). Recently published studies have used SPELL as a database for bibliometric and/or sociometric research (ALBUQUERQUE et al., 2022; RIBEIRO, 2022), authenticating and making the aforementioned database consistent for these types of investigation in the Brazilian national context. In addition, SPELL is among the TOP Five databases that authors use to conduct research with a bibliometric and/or sociometric focus in Brazil (RIBEIRO; CORRÊA, 2022).

The sample selection process for the research was carried out as follows: a) selection of keywords applied in the search filter of the SPELL database; b) data collection in the SPELL database; c) search for keywords in the titles, abstracts, and keywords of the studies; d) definition of the sample, by reading the titles and/or abstracts of each article. In the SPELL data platform, a filter was placed with the keywords: "Sarbanes-Oxley Law"; "Sarbanes-Oxley", "Sarbanes Oxley"; "SOX"; and "Sarbox" (PELEIAS et al., 2013; BELLI et al., 2016). These keywords were searched in the title, abstract, and keywords of each article, in a non-simultaneous manner, thus allowing all studies on the subject of this research to be identified and connected.

Thus, the sample consisted of 43 studies, in a time frame from 2004 to 2022. The analyses of these 43 studies were carried out using the following SNA indicators: (i) periods and authors; (ii) journals and authors; (iii) co-authorship networks (degree centrality); (iv) co-authorship networks (intermediation centrality); (v) social networks of HEIs (degree centrality); (vi) social networks of HEIs (intermediation centrality); (vii) social networks of keywords; and (viii) social networks of keywords (degree centrality).

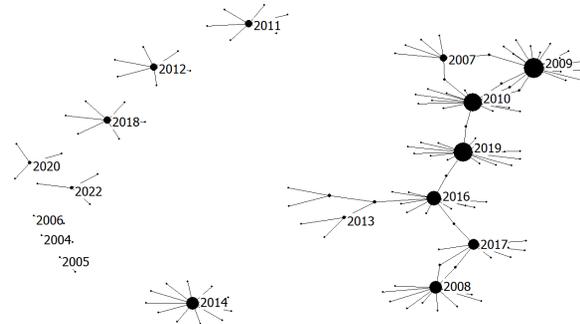
The aforementioned data and information were extracted from the respective articles, and then the procedures for measuring the symmetric and asymmetric matrices and visualization were initiated.

the graph represents the respective one-mode and two-mode collaboration networks of the actors. The bibliometric data (first stage of this study) were collected using Bibexcel and Microsoft Excel 2007 software; and the ARS indicators were measured using UCINET and NetDraw software.

4 ANALYSIS AND DISCUSSION OF RESULTS

Figure 1 highlights the first two-mode social network of this study, showing the 18 periods and the 118 authors together.

Figure 1: Periods and authors



Source: Research data (2023)

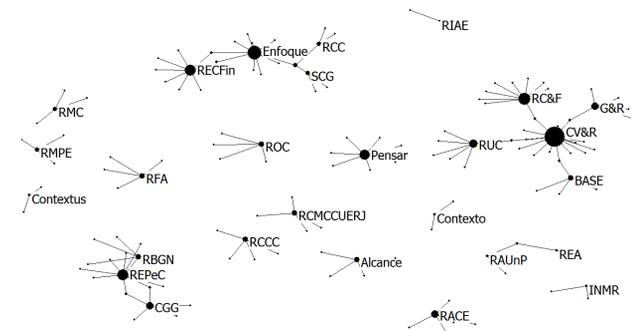
Exploring Figure 1, the presence of national research on the SOX Act is observed, in light of the authors who published it. It is noted that during 18 years, that is, from 2002 to 2022, which comprises a period of 21 years, the periods in which there was evidence of academic work on the subject under investigation represent 86%, which shows the consistency of articles at the national level in Brazil on this topic during these 21 periods. It is noted that the SOX Act has been actively focused on in the literature since its enactment (CUNHA; SILVA; FERNANDES, 2013); however, despite this persistent research on the SOX Act, its production of academic research in the Brazilian academic literature landscape is still embryonic, from the perspective of articles published in scientific journals indexed in SPELL.

The peak of publications occurred in 2009, possibly as a result of the 2008 subprime financial crisis (PAIVA et al., 2022), influencing the generation and dissemination of scientific studies on the SOX Act in the national context. Other periods were also highlighted: 2007, 2008, 2010, 2014, 2016, 2017, and 2019. It is worth noting that the creation of the Financial Stability Board (FSB), which had a strong impact on auditing activities worldwide, may have been crucial in keeping the SOX Act relevant to scholars (SILVA, 2021).

It is interesting to note that, of these highlighted years, only the period of 2014 was displaced from the others. The periods that remained interconnected, forming a group of eight periods, except for the year 2013 which was not highlighted in Figure 1, regarding the degree of centrality, result (these interconnections) from the intermediary link of the researchers, forming bridges, which influenced the construction of knowledge (BATAGLIN et al., 2021; DI VITO; TROTTIER, 2022) about the SOX Law in this research.

Figure 2 introduces the second two-mode social network of this research, focusing on the 27 scientific journals and the 118 researchers in partnership.

Figure 2: Newspapers and authors

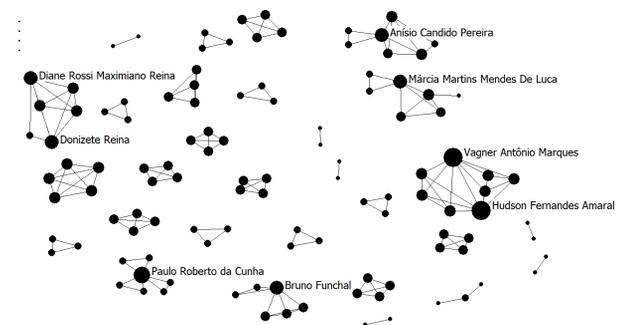


Source: Research data (2023)

Upon examining Figure 2, it is observed that the 43 articles identified in this study were published in scientific journals in the fields of administration and accounting, with a greater emphasis on academic journals: Contabilidade Vista & Revista (CV&R) with 15 authors publishing; Enfoque: Reflexão Contábil (Enfoque) with 10 researchers; Revista Contabilidade & Finanças (RC&F) with nine scholars; Revista de Educação e Pesquisa em Contabilidade (REPeC) and Revista Evidenciação Contábil & Finanças (RECFin), both with eight academics disseminating their respective studies; and Pensar Contábil (Pensar) with seven professors highlighting their research. These results are similar to and corroborated by studies analogous to the present research, particularly when focusing on issues inherent to the SOX Act, such as the audit committee (PEREIRA; GONÇALVES; COSTA, 2022). Therefore, it can be stated that the cited journals are the most influential in terms of scientific research production on the topic of SOX Law in Brazil.

Co-authorship networks are used to reveal how authors and their respective HEIs are related to others in the field of research and/or academic topics, discovering, for example, groups of influential authors, communities of hidden authors, institutions focused on a specific area of knowledge, collaborating in the performance of scientific and investigative activity (BERMEO-GIRALDO et al., 2021). Consequently, Figure 3 visualizes the co-authorship networks, which are contemplated by 314 ties and 118 nodes, highlighting the authors with greater degree centrality.

Figure 3: Co-authorship networks (degree centrality)



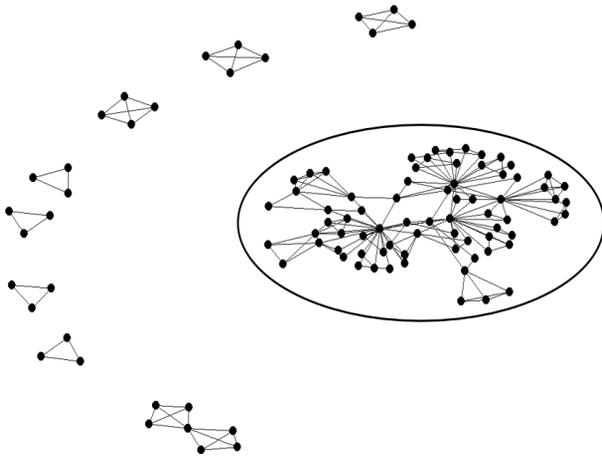
Source: Research data (2023)

Thus, the scholars who received the highest grades in this research were: Hudson Fernandes Amaral, Wagner Antônio Marques, Paulo Roberto da Cunha, Márcia Martins Mendes De Luca,

The social network of keywords measures the frequency, level of occurrence, and strength that exists between words and their respective relationships (BERMEO-GIRALDO et al., 2021). Therefore, Figure 7 establishes the visibility of the social networks of the 104 keywords discovered in this research, consisting of 394 links and 104 nodes. It should be noted that the 104 keyword occurrences are unique, as the only criterion used was not to differentiate between uppercase and lowercase letters, and the words in the singular and plural were kept disparate (FAVARETTO; FRANCISCO, 2017; RIBEIRO, 2022; RIBEIRO; CORRÊA, 2023).

It should also be noted that the aforementioned figure shows a cluster that has been highlighted.

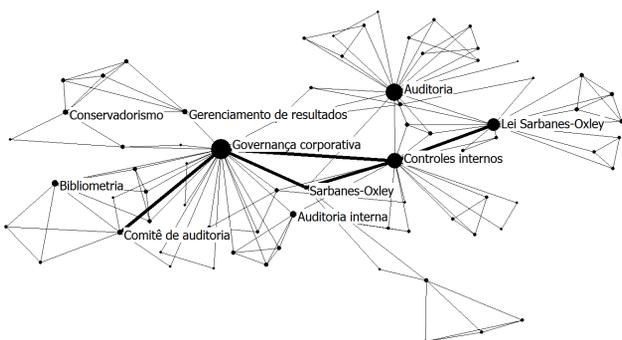
Figure 7: Social networks of keywords



Source: Research data (2023)

Figure 8 externalizes the keyword group, which is composed of 310 ties and 73 nodes, and which was highlighted in Figure 7, focusing on degree centrality. The coincidence of keywords extracted from articles in the information search can reveal groups of articles on symmetrical thematic interests (BERMEO-GIRALDO et al., 2021).

Figure 8: Social networks of keywords (degree centrality)



Source: Research data (2023)

In the cluster highlighted in Figure 8, the keyword analysis identified seven important points for future discussions (CAMARGO et al., 2023), namely: corporate governance,

audit, internal controls, internal audit, audit committee, conservatism, and earnings management. That being said, these highlighted keywords can be considered as those that occupy positions of relevance (FAVARETTO; FRANCISCO, 2017), and central evidence in the flow of information (RIBEIRO, 2022), and thematic and theoretical knowledge of the topic investigated in this research (RIBEIRO; CORRÊA, 2023).

It is worth adding that the keywords Sarbanes-Oxley Act and Sarbanes-Oxley were highlighted in Figure 8 because these were the keywords used to search for and select studies on the Sarbanes-Oxley Act in this article. Therefore, their respective highlights were a sine qua non condition of the search for the aforementioned scientific investigations in this study.

Another supplement corresponds to the highlighting of the keyword "bibliometrics" in Figure 8 of this research. In this case, although the keyword in question provides evidence in the aforementioned figure, it is not inherently associated with the topic of the Sarbanes-Oxley Act and, therefore, cannot be considered an indispensable topic for understanding said law, particularly with regard to its sections. (OLIVEIRA; LINHARES, 2007; SANTOS; LEMES, 2007; CONTEZINI; BEUREN, 2012; CUNHA; WRUBEL; CHIA-RELLO, 2015; CAPPELLESSO; NIYAMA; RODRIGUES, 2020) that are intrinsic to them.

However, it is important to point out that "bibliometrics" was highlighted in Figure 8 because it is an essential research technique for deepening the understanding of the subject itself (BERMEO-GIRALDO et al., 2021), that is, the Sarbanes-Oxley Act (SILVA, 2021), especially with regard to the development of its scientific production in the academic field (CUNHA; SILVA; FERNANDES, 2013; SILVA, 2021).

The visualization of the highlighted keywords in Figure 8 is complemented by examining their most selective intersections, that is, the "partner" keywords that most connected with them, namely: Sarbanes-Oxley Act and internal controls; Sarbanes-Oxley and internal controls; internal controls and corporate governance; Sarbanes-Oxley and corporate governance; audit and corporate governance committee, in all cases with two connections between the keywords "partners", going along with what is observed and verified in academia (SORRENTINO; TEIXEIRA; VICENTE, 2016; SANCOVSCHI et al., 2019; CAPPELLESSO; NI-YAMA; RODRIGUES, 2020).

5 CONCLUSION

The objective of this research was to investigate the performance and propensity of the formation of social networks of scientific production on the topic of the Sarbanes-Oxley Act published in scientific journals indexed in the SPELL electronic library. Thus, this research makes two central contributions to the fields of knowledge of Administration and Accounting in particular: (i) the first related to the topic of the Sarbanes-Oxley Act; and the second referring to the metric indicators of the SNA.

In view of the evidence, a consistency of studies published on the topic in Brazilian academia was observed, but still incipient, since only 43 studies on the subject were identified in 19 years (from 2004 to 2022). Of these studies, the scientific journals that stood out as the choice of scholars to publish their respective findings and contributions on the topic of the Sarbanes-Oxley Act were: CV&R, Enfoque, RC&F, REPeC, RECFin and Pensar Contábil. Among these researchers, Paulo Roberto da Cunha, from FURB, was the most prolific and central. The most relevant and central higher education institutions in this research were USP, FECAP, and FURB.

Among the central keywords of this investigation, the following stand out: corporate governance, audit, internal controls, internal audit, audit committee, conservatism, and earnings management. In short, of the 104 keywords used by the researchers in the 43 studies published in academic journals indexed in SPELL, it is possible to verify that the aforementioned words adequately address the topic of the Sarbanes-Oxley Act, especially those highlighted in Figure 8. It was found, therefore, that the words mentioned and highlighted encompass cross-cutting issues and underlying elements of the Sarbanes-Oxley Act, addressed and published in the 43 articles, opening opportunities for future studies (CUENCA; TOMEI; MELLO, 2022; DI VITO; TROTTIER, 2022).

In summary, this study maximizes and contributes to increasing the current understanding of the SOX Act for teachers, researchers, students, and professionals in the fields of Administration and Accounting in particular, especially emphasizing their academic production in light of the formation of networks.

social one-mode and two-mode of the actors responsible for the creation of knowledge and dissemination, sharing, and socialization of information on the topic investigated in the Brazilian national academic literature through their studies published in academic journals indexed in SPELL, thus harmonizing and providing the possibility of the emergence of a research agenda for future research.

The limitation that can be verified for the aforementioned research relates to the fact that the survey was conducted only in the specific SPELL database. Therefore, it is suggested for future studies to expand this study, using other national and, above all, international data platforms, such as SciELO, EBSCO, Web of Science, and Scopus. As well as using national and international scientific events, and national and international scientific journals that are legitimate and consolidated in academia in the area of knowledge of the Sarbanes-Oxley Act. And, finally, to conduct a Systematic Literature Review on the topics covered in this research.

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