

BRAZILIAN PUBLICATIONS ON OUTSORCING: BIBLIOMETRIC AND COOPERATION NETWORKS ANALYSIS

PUBLICAÇÕES BRASILEIRAS SOBRE TERCEIRIZAÇÃO: ANÁLISE BIBLIOMÉTRICA E DE REDES DE COOPERAÇÃO

DOI: [HTTP://DX.DOI.ORG/10.13059/RACEF.V13I2.790](http://dx.doi.org/10.13059/RACEF.V13I2.790)

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Data de envio do artigo: 20 de Outubro de 2020.

Data de aceite: 03 de Junho de 2022.

Abstract: *This research aimed to analyse the characteristics of scientific publications on the theme of outsourcing in Brazil through a bibliometric analysis and cooperation networks. The sample was composed of 268 articles and classified according to the year of publication, journal of publication, research method and number of citations. It was possible to verify that most publications were concentrated in the last ten years. The Bibliometric Laws analysis identified that most authors published just one article about outsourcing; 33% of publications are focused on 16 journals, and the word outsourcing is the most used as a keyword. The authors also identified that few researchers cooperate, and the relationship between authors is weak. The main contribution of the research is the compilation of more than 30 years of discussions. With coverage of a significant number of databases, the authors make a substantial contribution to future research by consolidating presently available information on the topic of outsourcing.*

Keywords: *Outsourcing; Bibliometry; Cooperation Networks.*

Resumo: Esta pesquisa teve como objetivo analisar as características das publicações científicas sobre o tema terceirização no Brasil, através de uma análise bibliométrica e de redes de cooperação. A amostra foi composta por 268 artigos e classificada em ano de publicação, canais de publicação, método, e artigo mais citado. Foi possível verificar que a maioria das publicações estão concentradas nos últimos dez anos. A análise de Leis Bibliométricas refletiram que a maioria dos autores publicou apenas um artigo sobre terceirização; 33% das publicações estão publicadas em 16 periódicos; a palavra terceirização é a mais usada como palavra-chave. Foi possível concluir que apenas alguns pesquisadores cooperam e a relação entre autores é fraca. A principal contribuição da pesquisa é a compilação de mais de 30 anos de discussões sobre o tema; abrange um número significativo de bancos de dados e corrobora para pesquisas futuras, uma vez que traz uma

atualização do que está sendo investigado sobre o tema.

Palavras-chave: Terceirização; Bibliometria; Redes de Cooperação.

1. INTRODUÇÃO

Outsourcing is a major research theme. It is an activity mostly adopted as a strategy by companies to reduce costs and gain market share (MORENO; RODRÍGUEZ; ZAMBRANA, 2018). When it is well applied, outsourcing strengthens enterprises flexibility and competitiveness. On the other hand, if it is poorly administered, it could result in a loss of competitiveness for organisations (LI-JUN, 2012). Outsourcing can also provide organisations with decentralisation in decision-making (ALVES; COSTA, 2018), transferring activities not understood within an enterprise to specialised entities (OLIVEIRA, 2018).

The importance of the theme is also reflected in the high number of studies. In the economic area, for example, researchers noticed an increased use of outsourcing by organisations (POCHMANN, 2008). Other research focuses on the radical change that outsourcing has brought to regulations and laws (BIAVASCHI; DROPPA, 2014). Whilst many studies focus on the motivations for the adoption of outsourcing and the benefits to organisations, as well as the critical factors of its accounting success and the evidence of organisation performance (ALMEIDA et al., 2014; BUSI; MCIVOR, 2008; ELHOUSHY; SLAEM; AGAG, 2019). Specifically, in Brazil, the research around this topic is vital as there are lots of controversial motives around outsourcing. Such motives are varied: economical, judicial, political and social; whereas the rationale for outsourcing is focused on greater specialisation and productivity of work (CAMPOS, 2018), with an emphasis on cost reduction through precarious work (OLIVEIRA, 2017).

In addition to this, some studies already aimed to identify the existence of publications on outsourcing (AMARAL et al., 2014; CASSUNDÉ; BARBOSA; MENDONÇA, 2016; ENSSLIN et al.,

2015; GUIMARÃES JUNIOR; EBERHARDT, 2020). Authors revealed that research on accounting and outsourcing are ongoing; however, there is a relatively small presence on this topic in accounting journals (AMARAL et al., 2014). More recent research analysed outsourcing and precariousness in organisational administrations (CASSUNDÉ; BARBOSA; MENDONÇA, 2016; SILVA; GOULART JÚNIOR; CAMARGO, 2019) and they concluded that it was not possible to identify a prominent group in academic production because the articles were mostly elaborated within co-authorship. Furthermore, research indicated that there is not much analysis concerning the working-class perspective and the few that did, covered the issue indirectly. Similarly, little emphasis was made regarding the harmful effects on health and the legal / administrative aspects related to outsourcing (GUIMARÃES JUNIOR; EBERHARDT, 2020). Finally, the studies already performed on outsourcing diverge on topics, keywords and methodologies (ALMEIDA et al., 2014, GUIMARÃES JUNIOR; EBERHARDT, 2020) and the number of research platforms and articles founded (GOULART JÚNIOR; CAMARGO, 2019). As such, it is possible to conclude that further research and collaboration is required.

Thus, this article aims to map and characterise Brazilian publications on outsourcing until June 2020, through a bibliometric analysis and cooperation networks considering the dynamicity and evolution of science (CASSUNDÉ; BARBOSA; MENDONÇA, 2016). The research contributes to a compilation of almost 30 years of discussions about outsourcing. It expands samples already studied in the country and composes the model with articles published in a larger number of databases. It also corroborates to guide other researchers with respect to future research through the bibliometric analysis (MORAES et al., 2013). It acquires greater robustness and flexibility when integrated with the study of networks (FRANCISCO, 2011). Furthermore, its relevance is underlined by the change in the Consolidation of Labour Laws (CLT) in Brazil on outsourcing that authorised the hiring of third

parties for end-activities in companies (Law nº 13,429 of March 31, 2017).

2. THEORETICAL BACKGROUND

2.1. Outsourcing

The origins of outsourcing date back to the Japanese subcontracting system in 1859, when Japan opened its ports for imported products and machines. In the 20th century, outsourcing processes and capabilities were evidenced as a way to achieve business results quickly (DAVENPORT, 2005). The outsourcing process became strong; it was a way to reduce costs through a win-win partnership; whereby the leading company can expend effort in a specialised activity, and at the same time generate jobs through the subcontractor (MARCELINO, 2006).

As a corporate strategy, outsourcing became viable in the 1980s (CORBETT, 2004), when companies outsourced secondary activities, such as cleaning, maintenance and property security, with the main objective to reduce costs (DIBBERN et al., 2004). Further to this, outsourcing began to cover other activities such as design, manufacturing, marketing, logistics and human resources (HOLCOMB; HITT, 2007). In Brazil, outsourcing has been in a state of development since 1980 and involves many different industry areas; with the main objective to reduce cost within organisational structures. There is much criticism concerning outsourcing in Brazil, mainly because of the precarious nature of employment, i.e. the non-standard or temporary nature of work, resultant from the intensive cost reduction that involves subcontracting (MARCELINO, 2006).

Outsourcing is characterised as a management approach that allows companies to designate the responsibility for the processes, activities or services to an external company, creating a collaborative and interdependent relationship between contractor and subcontractor (QUINN; FREDERICK, 1994; PIRES 2004). The main contractor can work with the

subcontractor in a partnership relationship and focus on its core competencies, increasing the value for customers, making the business more competitive and sharing risks within suppliers (QUINN; FREDERICK, 1994; PIRES 2004). As the company grows, it's more challenging to overcome prior knowledge in a specific activity, therefore reinforcing the resultant level of outsourcing (QUINN; FREDERICK, 1994).

Despite the various benefits reported by past research, the decision to outsource should be strategically considered given the possibility of risks involved in these activities. The evaluation of capabilities is necessary, especially concerning the cost and risks involved in the service and the product to be outsourced (HAMZAH et al., 2010). The business needs to give specific attention to outsourcing since there are numerous related risks, e.g. loss of confidential information and low quality of services and products. Some authors describe the perceived benefit and risk of outsourcing as being based on the cognitive evaluation of managers; indicating that this internal process plays an essential role in the decision to initiate an outsourcing process in the business (ELHOUSHY; SLAEM; AGAG, 2019).

The alternative is for companies to maintain a vertically integrated process within the organisation (ANDRIOLI; DIEHL; HANSEN, 2015). The main reasons are described as difficulties in developing suppliers and imposing standards in specifications and services, as well as the reduction of bargaining power and cost associated with internal control and supplier coordination (LIEB; RANDALL, 1996; PORTER, 1998). Furthermore, some studies describe problems caused by outsourcing specifically in Brazil, such as the fact that the outsourcing activity could bring informality to the workforce; increasing suffering and reducing the quality of life quality for workers (DRUCK, 2016). This reflects the importance of the subject of outsourcing in Brazil, especially for researchers seeking the betterment of society as a whole.

A significant challenge to mapping previous outsourcing research concerns the terminologies used to describe it. Marcelino (2007) points out

that in France, there is a separation between concepts involving outsourcing. The process whereby a subcontractor works for a leading company that is responsible for overseeing their responsibilities is defined as outsourcing. On the other hand, when the work is carried out outside of the company, it is referred to as an externalisation process (MARCELINO, 2007). This could make it difficult for previous analysis to map the real contributions of the theme to research. In Brazil, this distinction between processes is not made, and outsourcing is considered as all forms of subcontracting (ANDRIOLI; DIEHL; HANSEN, 2015). It also can be found in the recent Law nº 13,429 of March 31, 2017, allowing for all forms of outsourcing, including end-activities.

3. METHOD

This research adopts a qualitative approach through a bibliometric analysis of publications on outsourcing in Brazil as found in different research databases. The sample includes both national and international types of research that are related to outsourcing in Brazil. The bibliometric study aims to evaluate the productivity and quality of existent research, as well as search for indicators about the development of previous studies and behaviour (ARAÚJO; ALVARENGA, 2011).

The study is defined as descriptive and exploratory so that subsequent analysis can be designed with a greater understanding of the subject. Descriptive research seeks to find the relation between variables and broad knowledge of the phenomenon that is studied (GIL, 2019; GODOY, 1995). The exploratory analysis is characterised by developing previous knowledge and concepts already learned, contributing to future research through a more developed research problem (GIL, 2019).

The bibliometry was developed through three laws: Lotka's Law (1926); which describes the frequency of research publications in a specific field; Bradford's Law (1934); which elucidates that most of the studies on a specialised topic area are published by a limited

number of journals; and Zipf's Law (1949); which words frequency occurrence is inversely proportional to its rank

The databases considered in this research were: CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior); SPELL, ScienceDirect and EBSCO journals. From each of the platforms, we sought the terms in Portuguese 'externalização' and 'terceirização'; and in English 'outsourcing'. For Brazilian publications, the keywords were considered in both languages to include all the possibilities and then removed from the final sample if it didn't fit the research objectives. We chose to use the keyword 'outsourcing' instead of 'externalisation' because the word has a broader meaning (SOUZA; BACIC, 1997).

The filters used to create our sample included publications in Brazilian journals that contained the words in the abstract, title, and keywords—the research covering the 30 years up to June 2020. After the analysis of abstracts, exclusion of duplicate articles, and those that did not have outsourcing as the central theme of the study, we finalised our sample with 268 articles. Chart 1 shows how the research was conducted.

The information extracted from the sample was as follows: year and source of publication, the approach used in the studies, and the number of citations obtained through research in Google Scholar on July 10, 2020. We also verified the number of articles that each author developed, and which author was more productive. Furthermore, we calculated and analysed Price's Law along with the Bibliometric Laws (Bradford, Lotka and Zipf). Bradford's Law was interpreted by distributing journals by publication source; Zipf's Law was developed through the tool Wordart's Word Cloud, and Lotka's Law was verified by the number of articles published by each author.

In addition to the bibliometric analysis, we carried out an analysis of cooperation networks for the sample. This analysis allows for the verification of the cooperation structure between authors and classifies their publication regularity over time (FRANCISCO, 2011). The

network analysis is essential; it helps in the understanding of the development of relations and incorporates knowledge concerning information mobility in the academic and scientific environment (BORGES, 2010). The network analysis was developed using UCINET 6 for Windows and Microsoft Excel software. Concerning these variables, the next section presents the results.

Chart 1 – Criteria for research selection analysis

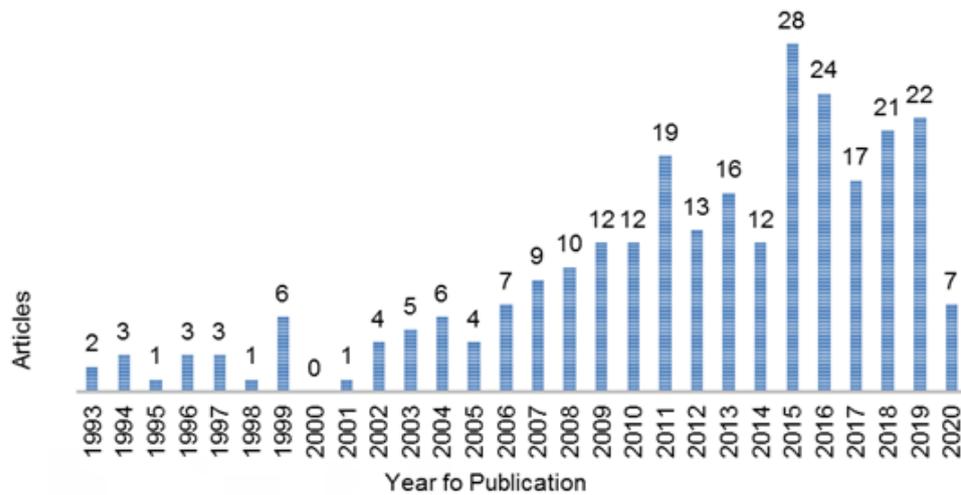
Research		Keywords					
		externalização		terceirização		outsourcing	
Nº Research founded = E Nº Research selected = S		E	S	E	S	E	S
Databases and general limiting search criteria	Capes Advanced Search: -Search filter: subject, contains the word OR title, contains the word; -Type of material: article -Language: any language; -Publication date: any year; -Availability: peer-reviewed journals	68	35	476	173	4187*	1903
	Spell Advanced Search: -in the article title OR abstract OR keywords -types of document: article; -in any language.	32	8	133	82	165	132
	ScienceDirect Advanced Search: -Title, abstract, keyword; -Type of article: review articles and research articles.	5	1	3	2	2203*	704
	EBSCOhost Advanced Search: - title OR abstract OR subject terms; -The word outsourcing should be in the title of the article; -full text PDF; -document types: academic journals; -language: English, Portuguese, Spanish	97	12	148	52	3124*	248
Total I: total research founded		3352					
Total II: total excluding duplicates		1108					
Total III: Brazilian research or researched in Brazil		303					
Total IV: Total researches analysed		268					

Source: Developed by the authors.

4.1 Publications Methods

The sample includes almost three decades of publications, as shown in Graph 1. The oldest research is from Borges and Druck (1993), which presents the characteristics and consequences of outsourcing on workers and the labour market in Brazil. It also describes the advantages and disadvantages of the outsourcing process, along with the strategic implications of outsourcing.

Graph 1 – Time distribution of publications



Source: Developed by the authors.

During the analysis of the publication distribution, we identified an inconstancy concerning the years of publications. The first ten years (1993 to 2002) comprise 9% of the sample, while 67% of the publications are concentrated in the last ten years (2011 to 2020). The most significant amount of work was found in recent periods, and that can be attributed to the increase of research discoverable within online databases since old studies are often not available. It may also be related to the recent changes in the Brazilian Law concerning outsourcing, which authorised the hiring of third parties for end-activities in companies.

This study identified that 175 different journals addressed the theme of outsourcing; however, there are few journals that, throughout the period analysed, have a high intensity of research published on the subject. The majority (133) produced only one article on the subject, confirming Bradford's Law. According to the Law, only a few sources will contain the highest proportion of literature for any discipline. In contrast, the rest of the research will be published in a wide variety of sources (TSAY; LI, 2017). The distribution of articles by publication source is presented in Table 1.

The journal *Gestão e Produção* contributed the most significant number of works (3.4% of all publications identified during the period surveyed). This journal was created in 1995 by the Department of Production Engineering of the Federal University of São Carlos and had Qualis B1 in the area of administration and accounting, according to CAPES classification. Following this, there are four journals that are found to contribute a significant amount of research: *Produção*; *Revista de administração Contemporânea*; *Revista de Administração de Empresas*; and *Revista do Direito, Trabalho e Meio Ambiente*, withim seven publications each (2.6%).

Table 1 - Distribution of articles by Publication Source

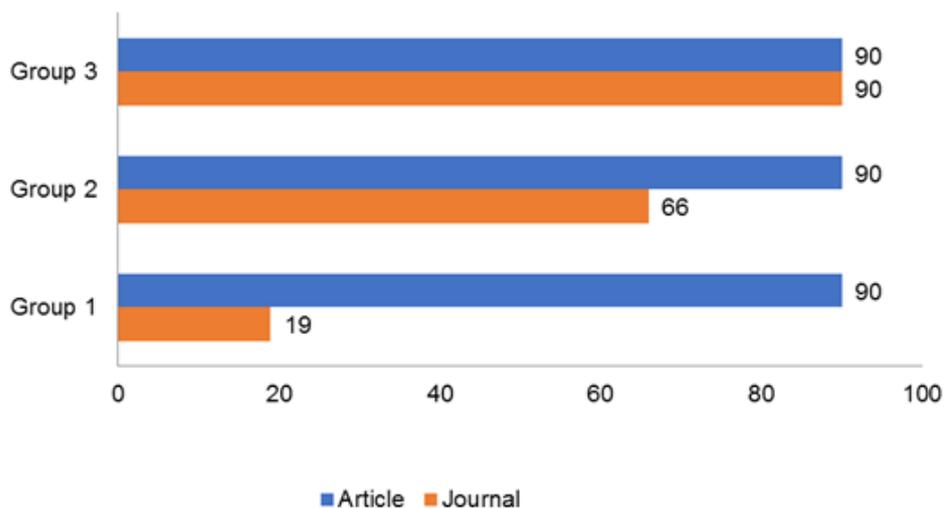
Journals	Occurrence	%
<i>Gestão e Produção</i>	9	3.4
<i>Produção; Revista de administração Contemporânea; Revista de Administração de Empresas; Revista do Direito do Trab. Meio Ambiente</i>	7	2.6
<i>Revista Psicologia: Organização e Trabalho</i>	6	2.2
<i>O&S; Caderno CRH</i>	5	1.9
<i>Revista de Adm. Mackenzie; Trabalho Educação e Saúde</i>	4	1.5
<i>Caderno Ebape; Ciência & Saúde Coletiva; Revista Contemporânea de Econ. E Gestão; Revista da ABET; Revista de Ciênc. Da Administração; Revista Eletrôn. De Administração; Revista Eletrôn. De Ciênc. Administrativa; Sociedade Contabilidade e Gestão; Revista de Adm. Pública; Sociologias.</i>	3	1.1

Note: There were 22 journals with two publications each (0.77%) and 133 journals with one publication each (0.4%). Source: Developed by the authors

Source: Developed by the authors.

Bradford’s Law also states that an extensive group of journals from a particular area of knowledge, organised in order of the number of publications, will generate three relevant groups. Each group will contain 1/3 of the total relevant articles, and the number of journals in each group increases, while productivity decreases (ARAÚJO; ALVARENGA, 2011). In order to test the statement of Bradford’s Law, we created Graph 2.

Graph 2 – Distribution of journals and articles by groups – Bradford’s Law



Source: Developed by the authors.

It was verified that the distribution of journals (Graph 2), follows Bradford’s Law. The first group contains only 19 journals and is responsible for publishing 90 pieces of research on outsourcing. The journals with the highest number of publications on outsourcing are in this first group. The second group covered 66 journals, with 90 published studies, with each journal publishing one to three articles each. Finally, the third group included a high number of journals (90), which are classified by low productivity and were responsible for only one publication each.

Researchers should evaluate the journals that they intend to submit their future articles to, considering the main topic and area of interest in order to ensure the journal is most representative of the subject area, and also stimulate more research on the subject (AMARAL et al., 2014). It is possible to conclude that the best perspectives and recognition for the topic of outsourcing is found in journals from the first group. Amaral et al. (2014) found in their research the same evidence for this statement; the most prolific author of their sample had published in journals belonging to the first group. However, it was found in this research that the most prolific author published (Edmir Parada Vasques Prado) only released one article into journals belonging to group 1; his other works were published in journals belonging to groups two and three.

In order to verify which national articles on outsourcing are the most cited, we developed Table 2. The article with the highest number of citations (208) was written by Ensilin et al. (2010). The work consisted of building a model to evaluate the performance of outsourced companies in the telecommunications area. The developed model allows managers to view the outsourced companies profiles concerning criteria identified by the manager as relevant to the success of the organisation.

Research by Amato Neto (1995) also analysed the main factors that have induced the process of vertical disintegration and outsourcing for large companies. The author concluded that large companies concerned with the production of durable goods demonstrated a preferential option for global outsourcing because of the supplier strategies and staff reduction.

Table 2 - Articles in the sample with the highest number of citations

Author (Year)	Articles	Quotes
Ensslin et al. (2010)	<i>Avaliação do desempenho de empresas terceirizadas com o uso da metodologia multicritério de apoio à decisão – construtivista (Revista Pesquisa Operacional)</i>	266
Amato Neto (1995)	<i>Reestruturação Industrial, terceirização e redes de subcontratação (Revista de Administração de Empresas)</i>	158
Brasil (1993)	<i>A empresa e a estratégia da terceirização (Revista de Administração de Empresas)</i>	104
Barros; Mendes (2003)	<i>Sofrimento psíquico no trabalho e estratégias defensivas dos operários terceirizados da construção civil (Psico – USF)</i>	104
Borges; Druck (1993)	<i>Crise global, terceirização e a exclusão no mundo do trabalho (Caderno CRH)</i>	92
Druck, Druck. Borges (2002)	<i>Terceirização: Balanço de uma década (Caderno CRH)</i>	88
Rezende (1997)	<i>Terceirização: a integração acabou? (Revista de Administração de Empresas)</i>	75
Chillida; Cocco (2004)	<i>Saúde do trabalhador & terceirização: perfil de trabalhadores de serviço de limpeza hospitalar (Revista Latino-am Enfermagem)</i>	57
Marcelino; Cavalcante (2012)	<i>Por uma definição de terceirização (Caderno CRH)</i>	56
Figueiredo et al. (2007)	<i>Reestruturação produtiva, terceirização e relações de trabalho na indústria petrolífera offshore da Bacia de Campos (RJ) (Gestão e Produção)</i>	55

Source: Developed by the authors.

The term ‘terceirização’ was the most frequently cited as a keyword, being present 201 times. The second most usual term was ‘trabalho’ (105), followed by ‘gestão’ (39), ‘serviços’ (31) and ‘precarização’ (26). The highlight of the following terms: work, services and precariousness may be related to recent changes in the Law that authorised the hiring of third parties for end-activities in companies.

4.3 Authorship

The articles were analysed according to the number of authors per work, and then we applied the Lotka’s Law, Price’s Elitism Law and the analysis of the cooperation network of authors. The number of authors per article ranges from 1 to 6. There is a preference for teams formed by two researchers (40%). Independent production is also valued (29%), followed by publications by three authors (18%).

The 268 articles were signed by 528 different authors. We used the Lotka’s Law for the analysis of the productivity of the sample. This Law indicates that the number of authors who publish a certain amount of works is inversely proportional to the square of these works (BAILÓN-MORENO et al., 2005), i.e. some researchers publish a significant amount of research, and many researchers publish little (GUEDES; BORSCHIVER, 2005). Table 3 presents the results of productivity per author, according to Lotka’s Law calculation.

Table 3 - Authors’ productivity

Number of published articles	Number of authors	% of the sample	Lotka Standard - %
1	485	91.86	60.80
2	31	5.87	15.2
3	6	1.14	6.76
4	1	0.19	3.80
5	3	0.57	2.43
6	1	0.19	1.69
7	1	0.19	1.24
More than 7	0	0.00	8.08
Total	528	100	100

Source: Developed by the authors.

The percentage of authors in the sample who published a single article (91.86 %) was far from Lotka’s pattern. The high concentration of authors with only one study suggests a lack of continuity in research (LEITE FILHO; SIQUEIRA, 2007). The continuity of research and renewal of the area of knowledge may be necessary since the entry of new academics directly impacts the introduction of expertise (WALTER; BACH, 2013).

Price (1963) formulated the Law of Elitism to improve Lotka’s Law. This Law considers that if “n” represents the total of people that contribute to research, then “ ” would be the most significant authors of the studied area. Based on the number of researchers (528), we estimated 23 notable authors of the studied. Table 4 (next page) presents the group of the most prolific authors.

Table 4 - Authors of the elite with the highest number of production

Author	Publications	Percentage
PRADO, Edmir Parada Vasques	7	2.61
SARAIVA, Luiz Alex Silva	6	2.24
BIAVASCHI, Magda Barros	5	1.87
NETO, Antônio Moreira de Carvalho	5	1.87
DRUCK, Maria da Graça	5	1.87
MAGALHÃES, Yana Torres	4	1.49
BARBOSA, Átila Magno and Silva,	3	1.12
CALDERÓN, Adolfo Ignacio	3	1.12
CAVALCANTE, Savio Machado	3	1.12
DROPPA, Alisson	3	1.12
TAKAOKA, Hiroo	3	1.12
GUIMARÃES JUNIOR, Sergio Dias	3	1.12

Note: We found 31 authors with two published articles and 485 authors with a single publication.

Source: Developed by the authors.

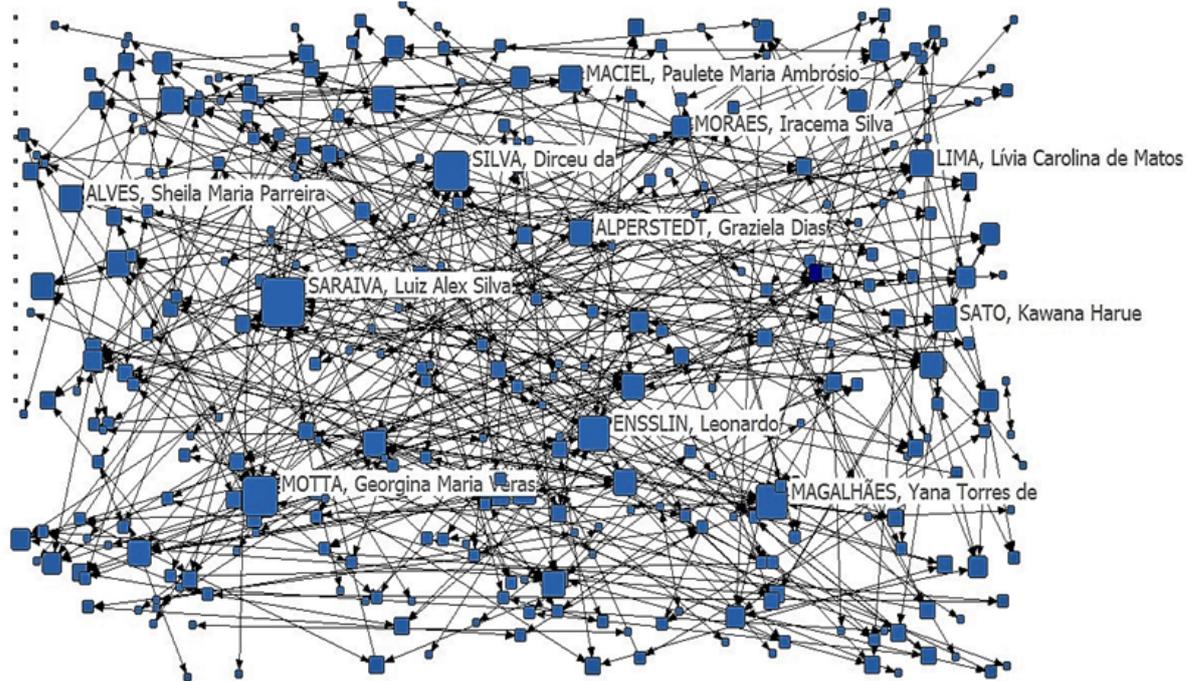
Table 4 shows that the author with the highest number of articles published on the subject was Edmir Parada Vasques Prado. This researcher published all his work focused on outsourcing of information technology (IT), verifying the factors that motivate its adoption (CRISTOFOLI; PRADO, 2011; PRADO; TAKAOKA, 2002) and the profile of organisations that outsource IT (PRADO; TAKAOKA, 2006). Also, the author focuses his research on the outsourcing of IT in Brazilian organisations (PRADO; TAKAOKA, 2008); the view of the supplier concerning outsourcing (PRADO, 2009); the reduction of risks in the outsourcing of IT (PRADO, 2011), and the results obtained with respect to cost reduction (PRADO; CRISTOFOLI, 2012).

From the perspective of the cooperation network, the articles were analysed regarding the co-authorship network, the degree of centrality, and the density and centrality of intermediation (the degree to which they are connected). This analysis resulted in Figure 2.

The degree of centrality seeks to measure the number of ties that an author has with other authors in a cooperation network (ROSSONI; GUARIDO FILHO, 2009). The higher the degree, the greater the importance of an author on others for the exchange of information (ROSSONI; GUARIDO FILHO, 2009).

Figure 2 highlights the central researchers of this sample. The most representative in the chart is Luiz Alex Silva Saraiva, followed by Yana Torres de Magalhães, Dirceu da Silva, Georgina Maria Vêras Motta and Leonardo Ensslin.

Figure 2 – Co-authoring networks degree - degree centrality



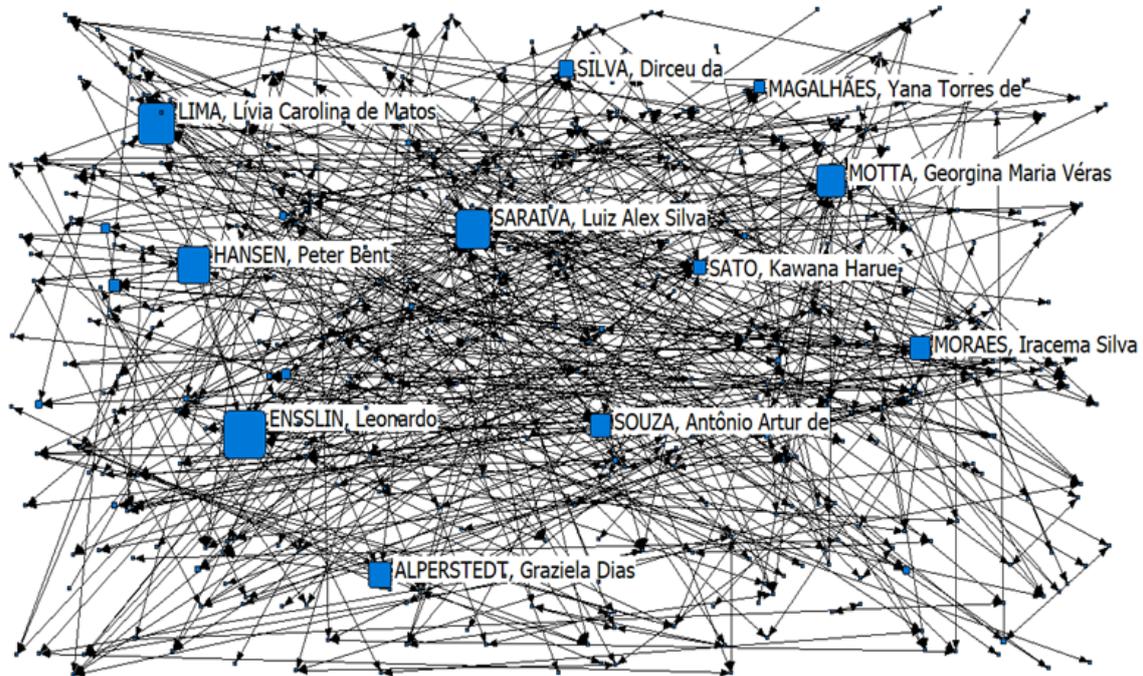
Source: Developed by the authors, in UCINET 6 for Windows

It was observed that the network density of all researchers in this study has is 0.0043, i.e. just 0.43% of the potential relationships were used. It was possible to infer that the cooperation network for the research considered in this study exhibits a low level of interaction. It is essential to increase the interaction and support between the authors in order to contribute to the quantity and quality of the academic research produced (MELLO; CRUBELLATE; ROSSONI, 2009).

Figure 3 presents the betweenness, which evaluates the dependence of authors not adjacent to others. The higher the degree of centrality of mediation, the greater the potential control of an author over others, who depend on the author to interact (ROSSONI; GUARIDO FILHO, 2009).

The degree to which research is related falls on a small group of researchers. The author, Leonardo Ensslin, has the highest degree, followed by Luiz Alex Silva Saraiva, Livia Carolina de Matos Lima, Peter Bent Hansen and Georgina Maria Vêras Motta. It is identified that the author Luiz Alex Silva Saraiva, besides being among the most productive authors, also has a high degree of centrality, as well as a high centrality of intermediation. On the other hand, the most prolific author of the sample (Edmir Parada Vasques Prado) does not stand out for co-authorship ties or centrality of intermediation. This result could be explained by the fact that the author prefers to research and publish independently or does not diversify their network of co-authorship.

Figure 2 – Co-authoring networks degree - degree centrality



Source: Developed by the authors, in UCINET 6 for Windows

The present work presents similar findings as that found in three previous articles (AMARAL et al., 2014; CASSUNDÉ; BARBOSA; MENDONÇA, 2016; ENSSLIN et al., 2015). The authors Antonio Carvalho Neto and Graça Duck, who appear among the most productive in this research, are highlighted in the article by Cassundé et al. (2016) as more productive and with a more significant number of citations, respectively.

In this research, we found that most articles were produced by two authors. Similarly to this, the study by Amaral et al. (2014) found that two authors developed most of the articles in their sample. However, in the research of Amaral et al. (2014), one authorship was the least used, while in this research, it is apparent that this is the second most used (29% of the articles). Also, the study of Amaral et al., (2014), presented international publications from 1995 in the EbscoHost and Scopus databases and found ten publications as the largest number of annual publications (2003, 2007). In this research, we presented national publications from 1993, and the largest number of publications was found in 2015, with 28 national publications on the subject.

5. CONCLUSION

This research analysed Brazilian publications until June 2020, on the subject of outsourcing, through the Bibliometric Laws. The Bradford Law showed there were only 16 journals responsible for the publication of 78 of the pieces of research. Zipf's Law presented the term outsourcing as the most constant in the keywords, and Lotka's Law stated that most authors in the sample published a single article (91.16%). The article with the highest number of citations (208) was produced by the author with the greatest centrality of intermediation (Leonardo Ensslin), in partnership with Edilson Giffhorn; Sandra Rolim Ensslin; Sérgio Murilo Petri and William Barbosa Vianna. Most articles were qualitative (70%), and the most productive author was Edmir Parada Vasques Prado. The author Luiz Alex Silva Saraiva, who is among the most productive, had a high degree of centrality and a high centrality of intermediation.

The main results described contribute to incentivise further investigation into the subject.

It was possible to infer that there are a few authors that devote time to the understanding of outsourcing and collaborate through a cooperation network. The collaboration between the authors can grow by 99.57%, which can consequently influence the development of new studies on outsourcing. The network analysis indicates that the centrality of the network of cooperation and intermediation are occupied by a few researchers, and there is low connectivity between authors. Also, it was possible to notice that there is no consistency or preference for journals by the authors, meaning that the topic was dispersed throughout various journals and therefore, less accessible to the most relevant readership. Thus, it contributes to a lack of attention on the subject, whereby further attention should be expected, considering the importance of the theme.

Furthermore, concerning outsourcing topics, the author who published most articles, focused his research on IT outsourcing, but there remain lots of other industries to which the research could be applied in order to contribute to this subject. The keyword analysis identified some exciting areas to explore, e.g. 'precarização' or the precariousness of work, primarily owing to the recent change in the law concerning outsourcing in the end-activity in Brazil.

During the research, it was possible to verify similar studies with a literature analysis (AMARAL et al., 2014; ENSSLIN et al., 2015). Amaral et al. (2014) identified 113 articles that were published in international accounting journals, from 1995 to 2013, available at SCOPUS and EBSCOhost, about accounting related to outsourcing. According to Amaral et al. (2014), the first accounting research on outsourcing was elaborated in the mid-1990s. Since then, research about accounting and outsourcing are constant, but there is a relatively small presence on this topic in accounting journals.

Moreover, Ensslin et al. (2015) identified 23 articles on the management of information technology outsourcing through the CAPES (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior) database. The analysis

covered the period from 2000 to 2013. Through a bibliometric analysis technique, the authors presented the most cited researchers and those that produce the most articles, as well as identifying the most common keywords. We found similar results concerning keywords, but with our broader investigation, we found some differences concerning the authorship preferences with respect to publication, i.e. the number of authors per article.

The importance of our research is underlined by the fact that it covers a more significant sample and references studies from many different areas, whilst also utilising the most current data. It is essential to emphasise that the topic is vital for Brazilian society and more studies should be carried out in order to understand the consequences of this strategic tool being adopted by organisations, especially with respect to the recent changes in outsourcing law and its implications. As suggestions for future research, researchers may consider a more detailed analysis of the reasons for outsourcing in organisations, whilst simultaneously capturing the point of view of the vendor or third-party employee.

Although the importance and contribution of the results presented cannot be understated, the research presented has some limitations which should be acknowledged. The first limitation is the keywords used to research the articles. It is always possible to explore additional and different terms and increase the sample. Secondly, only electronic databases were analysed, which does not cover printed media, particularly relevant to old studies.

The article aimed to map and characterise national research on outsourcing through bibliometric analysis and cooperation networks. It was possible to verify an increase in the number of publications on the subject in recent years (2009 to 2018). The journal *Gestão e Produção* published more articles regarding outsourcing than any other. This research demonstrates the relevance of the topic of outsourcing to scholars and the need for improvement, promotion and socialisation between authors.

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