

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

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Abstract

In Brazil, *stricto sensu* graduate programs are regulated by the Coordination of Improvement of Higher Education Personnel (CAPES), an agency linked to the Ministry of Education (MEC) which has the power to recommend or reject courses. In this context, it turns out that, over the years, programs have coordinated their strategies and actions to meet the requirements of the evaluation system. This study aims to identify the influence of co-authorship networks on the performance of graduate programs in the CAPES evaluation system. We used a quantitative research method to evaluate the correlation between the co-authorship network and the evaluations obtained by the programs that comprise the field of Business Management, Accounting and Tourism, from 2001 to 2009. The results point to a positive relationship between the consolidation of co-authorship groups and the grade achieved in the CAPES evaluation system.

Keywords: Co-authorship networks; evaluation system; graduate programs; *stricto sensu*.

Introduction

Graduate programs have done a great deal over the years to aid the development of the country by providing highly qualified human resources [1, 2]. According to the Brazilian Academy of Science [3], together with graduate programs, scientific research conducted by Brazilians has stood out in comparison with that of other countries. It is estimated that by the beginning of the next decade, Brazilian academic production will be greater than that of Japan and France.

The Coordination of Improvement of Higher Education Personnel (CAPES), the government agency responsible for monitoring and accrediting Brazilian *stricto sensu* graduate programs has used and improved its evaluation system to gauge the performance of graduate programs, demanding ever increasing rigor in quality evaluation procedures and, consequently, encouraging ongoing improvements to the system [4].

One of the various strategies and actions used in graduate program courses to enable the work of the teaching staff is the strengthening of research groups and, consequently, co-

authorship networks. This has led to an effective improvement in research results in all fields of knowledge [5]. In this context, researchers have also been developing software to aid the monitoring of the activities of their programs. A point in case is *Scriptlattes*, which was developed by researchers at the Institute of Mathematics and Statistics at the University of São Paulo (IME-USP) to monitor the formation of co-authorship networks as will be shown in this article [6].

The development of this type of software facilitates the evaluation of how teaching staff, over time, articulate the formation of their co-authorship networks. In this study, for instance, the co-authorship networks were gauged within each program for permanent members of the teaching staff [6].

Therefore, with the use of this technology, the following research question was asked: How did co-authorship networks influence the development of graduate programs in the fields of Business Management, Accounting and Tourism in Brazil from 2001 to 2009? To answer this question, a study was conducted of the documents related to the CAPES indicators to gauge how professors acted from 2001 to 2009 to form networks within their programs and the impact they had on the results of the CAPES evaluation.

Evaluation System for Graduate Programs in Brazil

The evaluation system for graduate programs in Brazil is coordinated by CAPES, the agency linked to the Ministry of Culture and Education (MEC). The system involves annual monitoring, through the data added to the system, known as the “CAPES Collection” and a triennial evaluation of the performance of all the programs and courses that make up the National Graduate System (SNPG). The results are expressed by awarding a grade on a scale of one to seven that helps the National Education Council (CNE-MEC) decide whether the “recognition” of a course will be renewed (i.e., if it obtains a grade of three or higher) for the following three-year period [7].

Ten fields of knowledge are evaluated through the system, denominated by CAPES as Agricultural Sciences, Biological Sciences, Health Sciences, Exact and Earth Sciences, Human Sciences, Applied Social Sciences, Engineering, Linguistics, Language and Arts, and Multidisciplinary, totaling 3, 412 recommended programs with 5,096 courses [8].

The evaluation of graduate programs consists of two processes: a) assessment of graduate programs; and b) assessment of proposals for new programs. The evaluations are conducted by ad hoc committees linked to the higher learning institutions (HLI) in every region of the country. During the evaluations, the consultants use charts to record the evaluations and thus ensure a uniform and standardized database for the evaluation and expansion processes, considering the specific features of each field and their established characteristics, and the level of integration between the fields in the context of their respective wider field and all the others. The evaluation charts, together with the field documents and evaluation reports, constitute the trinomial that expresses the results of the triennial evaluation [7].

For all fields of knowledge, the program assessment is structured and prepared considering the following matters: I – Proposal of the Program; II – Teaching staff; III – Student Body; IV – Intellectual Production; V – Social Insertion. As the focus of this study is on co-authorship networks of professors in graduate programs (internal co-authorship networks), there now follows a detailed description, based on the 2009 document for the field (CAPES document

on the issue of Intellectual Production in the field of Business Management, Accounting and Tourism).

Intellectual production: This factor accounts for 35% of the total evaluation, with the following items observed and evaluated with their respective weights to determine the total weight of this criterion: a) qualified publications of the program by permanent staff, 40% of the weight; b) distribution of qualified publications in relation to the teaching staff of the program, 30%; c) technical production, patents and other relevant productions, 15%; d) artistic production in the field in which the type of production is pertinent, 15%.

According to Sampaio, Oliveira, Costa, and Sano [9], in the triennial evaluation by CAPES, scientific production in periodicals is clearly important, as this is part of several requirements of the evaluation or is directly related to them. For example, one of the requirements considered by the committee that evaluates projects is the number of research projects with external funding. Therefore, scientific production is evaluated through a points system known as the Qualis [9] and to award the grade, CAPES publishes a table for the committee with the number of points for each academic publication in the fields of Business Management, Accounting and Tourism.

To comply with all the requirements in every aspect, each program must present to society a plan of action, with coherent proposals that are consistent with the development of the country, requiring that everyone involved in the programs, especially the managers, represented by the coordinator, develop strategies for development and maintenance. According to Meyer Jr., Pascucci and Mangolin [10], although the adoption of strategies by HLI intensified in the 1990s and beyond, several authors ([11, 12, 13, 14] have already shown the importance of planning and strategic management to HLI.

Of the five requirements of the evaluation system, the Teaching Staff category appears to be the most important, as the results of the works of the teaching staff are directly reflected in all the CAPES evaluation requirements. In this case, it is suggested that course coordinators should dedicate themselves to preparing strategic planning and its implementation to offer real conditions for the development of the academic work of the teaching staff (MACCARI et al. 2009a). Indeed, to Machado-da-Silva [13], the teaching staff play a central role in determining the strategic positioning of a program, and this is corroborated by Martins [14] who claims that “scientific production constitutes one of the most relevant dimensions for the evaluation of graduate programs in Brazil” (p. 82) and for better evaluation results, scientific production must be disseminated. According to Volpato [15], this responsibility falls to the teaching staff .

Co-Authorship Networks of Faculty Members

One of the concepts developed in graduate courses to meet some of the requirements of the CAPES evaluation system was “Co-authorship networks”, which have been studied in order to understand the structure of intellectual production by analyzing social networks to identify co-authorships between authors and institutions [15, 16, 17, 18, 19, 20]. According to Mello, Crubellate, and Rossoni [5], this is a strategic response adopted by graduate programs in Brazil for the CAPES evaluation. Crubellate, Rossoni, Mello, and Valenzuela [21] noted that with relationship networks, graduate programs saw the potential for co-authorship.

Currently, researchers in collaboration networks manage to complete their studies due to the technologies that are available. According to Nelson [22], in the 1980s, social network analysis was nothing new in the administrative sciences, but before the advent of the second

generation computer (when the transistor began to be replaced by the valve, which occurred between 1959 and 1965), researchers experienced methodological difficulties in analyzing complex organizations with networks with large numbers of actors. Furthermore, according to this author, during the 1980s, it was possible to conduct studies to analyze organizations from the perspective of social networks, such as the studies by Bacharach and Lawler [23], Perrow [24], Pfeffer [25], Tichy [26], and Van de Ven and Ferry [27].

To Nelson [22], networks can be classified in a number of ways (Figure 1).

Assuming that scientific knowledge is socially constructed, collaboration networks gained visibility in the academic field, as researchers identified cooperation between graduate programs and among researchers to publish and strengthen their studies and their own programs. Rossoni, Hocayen-da-Silva, and Ferreira Júnior, [19, 20] fed this line of thought by claiming that social relationships play a fundamental role in the construction of scientific knowledge.

In this sense, researchers from different fields have concentrated their efforts on studying this form of cooperation and collaboration networks from different viewpoints [13, 19, 20 21, 28, 29, 31]. By analyzing these networks and collaboration between graduate programs, the authors agree that the networks have a positive influence on all the actors involved, as they enable reflections on the production of existing knowledge, with discussions on the studies that have been conducted, aiding the continuity and consolidation of the specific field of knowledge in question [30].

Figure 1 – Classifications of social networks

Forms	Characteristics
Through structural properties	Dense or scarce; stable or unstable; centralized or decentralized; connected or unconnected.
Through contact	Formal or informal; strong or weak; frequent or rare; highly emotional or purely utilitarian.
Through the transactional content	Expression of affection; exchange of information; influence or material resources.
Connections between actors	Intensity or symmetry.

Source: Adapted from Nelson [22], p. 151.

Mena-Chalco and Cesar Jr. [32] developed a free software called *Scriptlattes* to research academic collaboration networks. This software enables the automatic compilation of bibliographic, technical and artistic production, orientations, research projects, awards and titles, collaboration graphs and the geographic map of a set of researchers registered on the Lattes platform. Networks can be represented in a number of ways, such as professor-to-professor, between universities, and from one institute to another. Every node can represent, according to the analysis, an author, an institution or an institute. One of the most important aspects of the software is the resultant layout samplings. In the center of these, one of the most active authors appears, surrounded by the less active in increasingly larger radii. This enables an understanding of these interactions, with some professors interacting more than others. The layouts also show existing collaborations and how the collaboration within the group might be increased.

Research Methodology

The study is characterized as descriptive research, with the characteristics of certain aspects of the programs in terms of their evolution and the strategies adopted to for the co-authorship networks, considering the matter of “Intellectual Production” for the CAPES evaluation. The study is also characterized as document research, an in-depth study of the CAPES evaluation system and the reports with the information derived from the programs and made available on the CAPES website through the indicator books.

To understand how the data on the population were obtained, i.e., the programs in the trienniums from 2001 to 2009, it is necessary to make some observations:

- a. **Number of indicator books:** from 2001 to 2009, the programs made 6818 indicator books available to CAPES, and during this time there was a significant increase in the number of books delivered, rising from 273 in 2001 to 1100 in 2009;
- b. **Number of programs:** in 2001, the number of programs that were graded by the CAPES evaluation system was 39; by 2009, this number had risen to over 100, figures that clearly show how much the field had grown.

Collection and/or Sampling Techniques

For the data collection in the first phase of the study, it was necessary to become familiar with the virtual environment, its structure, and the information and data that were available on the CAPES website. The systematic data collection process then proceeded as follows:

- a. **Identification of programs:** A (macro) program logic was prepared that automatically downloaded and saved all the indicator books individually. The program logic also enabled each accessed file to be saved in folders that contained the same names of the programs that were found on the CAPES website.
- b. **Lists of professors:** An analysis of the indicator book data enabled the identification of adjustments made by the programs over the years in relation to their permanent teaching staff, as every year the programs showed the relationships with the number and different names of professors.
- c. **Bibliographic production collaboration network:** The *Scriptlattes* software aided the analysis of the teaching staff and collaboration networks of professors from the Teaching Book – Performance – DA., and allowed the verification of the collaboration networks. This enriched the study, allowing new comparative scenarios between the programs.

In the present study, for the automatic compilation by the software, six types of production were considered to generate the reports: a) complete articles published in periodicals; b) published/organized books or editions; c) chapters of published books; d) complete works published in conference proceedings; e) expanded abstracts published in conference proceedings; and f) abstracts published in conference proceedings. The software was also used because it allows the results to be automatically generated in graphs. Before this solution was possible, according to Mello et al. [5], research results were generated by manually counting academic productions, which was a slow process.

- a. **Analysis of co-authorship networks:** The co-authorship networks were analyzed using co-authorship network techniques to characterize the behavior of the programs for each triennium.
- b. **Data analysis (Chi-square):** To determine whether the production of work with or without co-authorship causes any alteration to program performance, two hypotheses were formulated:
 - H_0 : The program performance grades do not depend on co-authorship.
 - H_a : The program performance grades depend on works with or without co-authorship.

To prove this finding, the Chi-Squared test was executed using the IBM SPSS Statistics program, version 20. This non-parametric test, according to Martins and Theóphilo [33], is recommended for analyzing results that present paired data (before-after) in order to verify whether the analyzed variables are independent or related.

Analysis and Discussion

The data from the CAPES website show the consolidation of relationships among teaching staff on the same program. Because of the relationship networks, there were more intense discussions of studies and, consequently, more consistent productions and more publications in periodicals and conferences identified in the Qualis system.

Table 1: Number of Business Management, Accounting and Tourism programs, curricula and productions analyzed for the 2004-2006 and 2007-2009 trienniums for the permanent teaching staff.

* N/G = no grade

Programs analyzed	Triennium 2004-2006					Programs analyzed	Triennium 2007-2009				
	Grades	Curricula Analyzed			No. productions analyzed		Grades	Curricula Analyzed			Productions analyzed
		Co-authorship		Total				Co-authorship		Total	
		Yes	No					Yes	No		
3	6	68	44	112	4486	2	7	49	28	77	3266
16	5	164	168	332	8605	3	6	47	28	75	2501
21	4	171	102	273	8866	17	5	191	129	320	7689
40	3	188	195	383	7181	35	4	295	171	466	13376
29	N/G*	4	5	9	159	39	3	230	201	431	8192
						13	S/N	18	11	29	560
Total	109	595	514	1.109	29297	109		830	568	1.398	35584

Source: Prepared by the authors from data generated by the *Scriptlattes* program [34].

One of the effects of the strategies adopted by the programs was the consolidation of co-authorship networks among the teaching staff of the same program. With the *Scriptlattes* program, it was possible to generate automatically, for all the lists of permanent staff on the programs, reports on academic productions, graphs/relationship networks and adjacency matrices that enable collaboration between professors to be measured.

In Table 1, the following information is presented: a) the number of programs, b) the number of curricula that were analyzed and c) the resulting productions, which, for the purposes of this article, are presented in accordance with the descending order of the program grade. The graphs are of programs with grades ranging from seven to five in the 2010 triennium.

Table 1 shows that the programs with a higher grade from one triennium to the next were also the ones that, according to the analyzed curricula, had co-authored works. Therefore, in order to verify whether there is a relationship between these variables, the Chi-Squared test (χ^2) was used. The data from Table 1 were clustered, and served as a basis for this analysis, as shown in Table 2, below:

Table 2: Performance of the Business Management, Accounting and Tourism programs for 2004-2006 and 2007-2009.

Programs Analyzed	Program Grade Performance	Triennium 2004-2006			Triennium 2007-2009		
		Curricula Analyzed			Curricula Analyzed		
		Co-authorship		Total	Co-authorship		Total
		Yes	No		Yes	No	
43	Grade rose	198	122	320	355	226	581
56	No change	133	334	667	428	297	725
10	Grade fell	64	58	122	47	45	92
Total	109	595	514	1109	830	568	1.398

Source: Prepared by the authors from data generated by the *Scriptlattes* program [34].

A summary of the number of programs and their respective performance in the trienniums in question is shown in Table 2. The table also shows the distribution of curricula that conducted studies with or without co-authorship. The relationship between this distribution and program performance appears to be significant. In this sense, to prove this finding, the Chi-square test was executed using the IBM SPSS Statistics program, version 20. The following below results were obtained:

The above results show that the value of $\chi^2 = 42.351$ (with a significance level of $\alpha = 0.05$; degrees of freedom = 2; $p = 0.000$). Therefore, H_0 is rejected when $p \leq \alpha$, thus, from a statistical viewpoint, it is proved that the performance of the program grades depends on works being written with or without co-authorship. However, with the Chi-Square test, we cannot infer which of the analyzed variables, in the case of works with or without co-authorship, have the greatest influence on program performance. Nevertheless, according to the results obtained with SPSS, the best performance occurred when the percentage of co-authored works (61.4%) was almost 23% higher than those without co-authorship (38.6%). This was not the case when the program maintained its grade or saw it reduced from one triennium to another (maximum variation of 6.2%).

Co-authorship graphs

Graphs were produced for the lists of permanent professors for the trienniums of 2004-2006 and 2007-2009, and for productions co-authored by the permanent staff on the same program. The graphs are shown according to program grade, beginning with Grade 7 programs for the 2007-2009 triennium (Figure 2).

Case Processing Summary

	Valid Cases		Missing Cases		Total	
	N	Percent	N	Percent	N	Percent
Program grade performance	2307	100.0%	0	0.0%	2307	100.0%

Program grade performance * Co-authorship Cross tabulation

		Co-authorship		Total	
		No	Yes		
Program grade performance	Grade rose	Count	348	553	901
		Expected Count	422.6	478.4	901.0
		% within program grade performance	38.6%	61.4%	100.0%
	Grade fell	Count	103	111	214
		Expected Count	100.4	113.6	214.0
		% within program grade performance	48.1%	51.9%	100.0%
	No change	Count	631	561	1192
		Expected Count	559.1	632.9	1192.0
		% within program grade performance	52.9%	47.1%	100.0%
Total	Count	1082	1225	2307	
	Expected Count	1082.0	1225.0	2307.0	
	% within program grade performance	46.9%	53.1%	100.0%	

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	42.351 ^a	2	.000
Likelihood Ratio	42.596	2	.000
N of Valid Cases	2307		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 100.37.

In the two programs that were awarded a grade six in the 2004-2006 triennium and rose to grade seven in the 2007-2009 triennium, co-authorship existed, and for USP_Adm, the grade

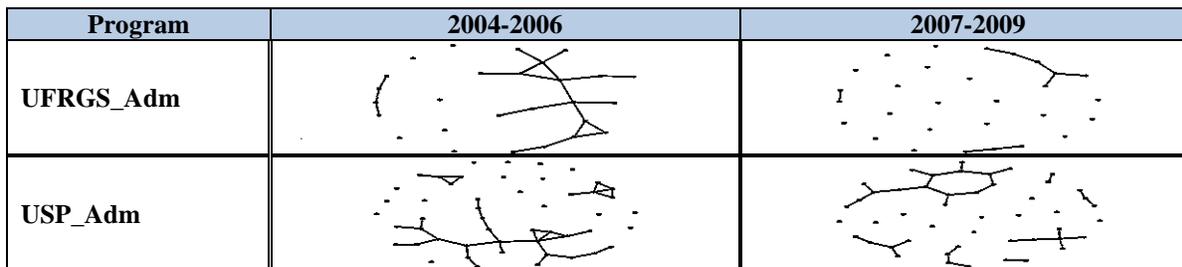


Figure 2 – Grade 7 Programs
Source: Co-authorship graph [35].

was higher between the 2007 and 2010 trienniums. Furthermore, there was a better distribution of co-authorship among the authors. It is understood that this division is based on the lines of research in which each researcher was involved. According to Rossoni and Hocayen-da-Silva, [18] productions between small groups can strengthen publications, as the authors create spaces for the discussion of their studies.

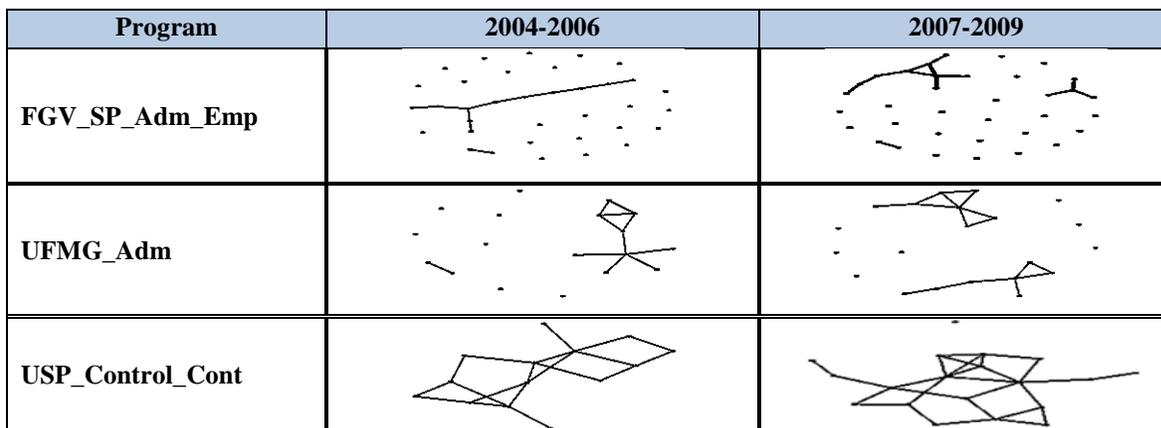
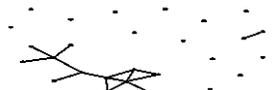
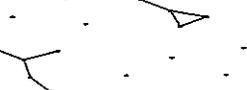
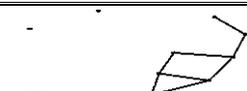
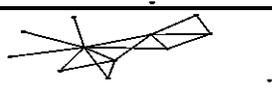
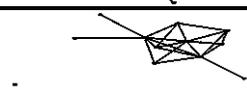
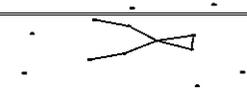
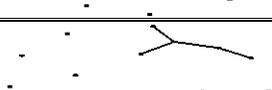
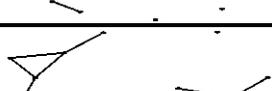
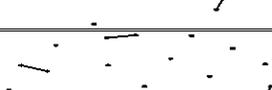
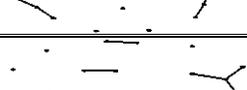
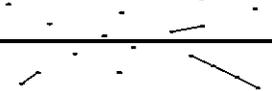
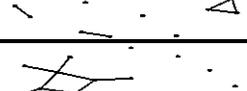
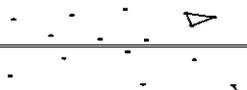
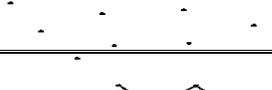


Figure 3 – Grade 6 Programs
Source: Co-authorship graphs [35].

In the UFRGS_Adem program, there was a considerable drop in co-authorship in the 2007-2009 triennium. This was also observed in the evaluation conducted by the CAPES consultants, who reported on their evaluation sheets that when considering the standards of the field, the average performance of the professors was very good, and the annual average of bibliographic production points per professor showed a significant improvement, rising from 85 in 2007 to 135 in 2009. It was highlighted that approximately 80% of average production was in periodicals.

The drop in the number of writing partnerships among the professors may have led to the observation made by the evaluators that, despite the very good performance, there was no uniform distribution of production among the teaching staff. In fact, there was a group of permanent professors whose production in periodicals was low or non-existent. The number of professors who did not achieve a very good production standard fell by half over the triennium, dropping to approximately 10% in 2009 [36].

An analysis of the co-authorship networks (Figure 3) of the three programs showed that for FGV_SP_Adem_Emp there was a rise in the number of partnerships and also the establishment of clusters in the 2007-2009 triennium. In the UFMG_Adem program, there was also an increase in the number of co-authorships. However, in this case there was also an increase in one of the co-authorship clusters. In the previous triennium, this cluster had only two professors, but this number rose to seven in the last triennium. In the USP_Control_Cont program, all the permanent staff from the 2004-2006 triennium at some time sought to form a partnership within the group and this was also the case in the second triennium, in which only one of the nineteen professors did not form a partnership with professors on the same program. An analysis of all three programs showed that they all practice co-authorship and the program that maintained a score of six in both trienniums began the process of dividing the group of professors according to their lines of research.

Program	2004-2006	2007-2009
FGV_RJ_Adms		
FGV_SP_Adms_Emp2		
FGV_SP_Adms_Pub_Gov		
FUCAPE_Cie_Cont		
PUC_MG_Adms		
PUC_PR_Adms		
PUC_RIO_Adms_Emp		
PUC_RIO_Adms_Emp2		
PUC_RS_Adms_Neg		
UFBA_Adms		
UFPE_Adms		
UFRJ_Adms		
UNB_Adms		
UNINOVE_Adms		

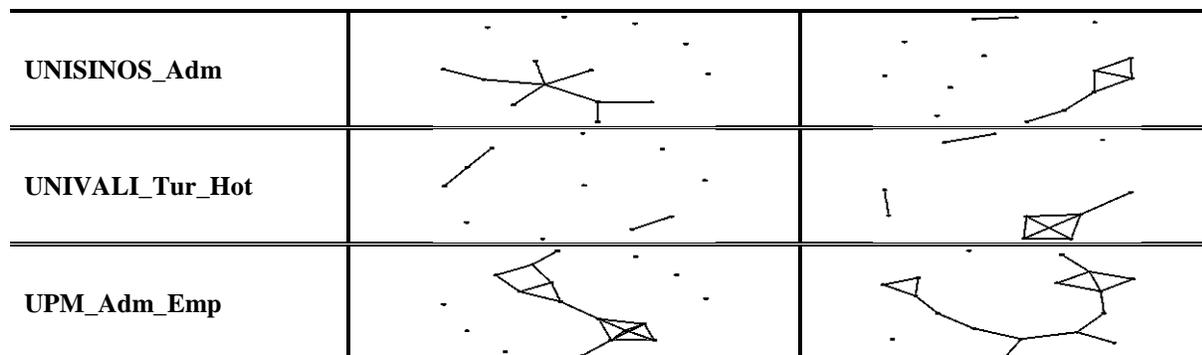


Figure 4 – Grade 5 programs
Source: Co-authorship graphs [35].

A study of co-author partnerships showed that all (Figure 4), to a different extent, adopted this practice and that the programs with the least co-authorship were FGV_SP_Adm_Emp_2 and UNB_Adm.

Conclusions

According to Maccari, Riccio and Martins [37], concern over the quality of the *stricto sensu* programs on offer originates from the structural imbalance between the State, HLI, and Society. Frequent social changes demand new actions from HLI in increasingly shorter periods of time. The HLI, in turn, are unable to respond adequately to these demands and modify their traditional structures and operations without a prior assessment process.

In this sense, to direct efforts toward change and make decisions, it is necessary to be aware of the current situation, the resources available, and the capabilities that exist and those that need to be developed. Thus, to Durham [38, 39], Schwartzman [40] and Maccari et al. [37], it is clear that assessment is an essential mechanism for the development of systems, organizations and countries.

To verify the strategies adopted and resources allocated by graduate programs that stood out in the CAPES evaluation system, as shown in the methodology section, document research was conducted using the indicator books published on the CAPES website to answer the research question: How did co-authorship networks influence the development of graduate programs in the fields of Business Management, Accounting and Tourism in Brazil from 2001 to 2009?

Quantitative document research helped to identify the consolidation of collaboration networks among the teaching staff of the same program, inferring that collaboration networks led to stronger discussions of studies and, consequently, more consistent production and more publications in periodicals and conference journals that are graded by the Qualis system. In most programs, these networks were formed organically by the professors as they shared common interests and because they worked in the same lines of research. This, according to Mello et al. [5], is the result of a strategic action, since it is part of the strategies of the programs to form groups of professors according to their line of research, and joint work was also considered a result of this clustering.

The Chi Square test proved that there is a relationship between program performance and works with or without co-authorship. An analysis of the results of this test showed that the best performance occurred when the percentage of co-authored works was almost 23% higher than

those without co-authorship. When this variation did not pass 6.2%, the evaluation score from one triennium to another was either maintained or reduced.

When the partnerships in the programs were charted, it was possible to see that, with the collaboration networks, the discussion of studies was strengthened and, consequently, so were the most consistent publications and productions. By demonstrating the levels of consistency of the networks, a possibility for expanding the research arose, namely, to study the forms of partnerships, both domestic and international, that are being implemented and their implications for the consolidation of the domestic and international programs in question.

Therefore, this study was restricted to examining the co-authorship networks of the teaching staff of the programs in the fields of Management, Accounting Sciences, and Tourism in Brazil. A suggestion for continuing this line of research might be to examine how the initiatives for internationalization activities contribute to the range of operations in Brazilian programs at the international level by measuring investments and comparing them with their returns.

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English abstract

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

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Abstract

In Brazil, *stricto sensu* graduate programs are regulated by the Coordination of Improvement of Higher Education Personnel (CAPES), an agency linked to the Ministry of Education (MEC) which has the power to recommend or reject courses. In this context, it turns out that, over the years, programs have coordinated their strategies and actions to meet the requirements of the evaluation system. This study aims to identify the influence of co-authorship networks on the performance of graduate programs in the CAPES evaluation system. We used a quantitative research method to evaluate the correlation between the co-authorship network and the evaluations obtained by the programs that comprise the field of Business Management, Accounting and Tourism, from 2001 to 2009. The results point to a positive relationship between the consolidation of co-authorship groups and the grade achieved in the CAPES evaluation system.

Keywords: Co-authorship networks; evaluation system; graduate programs; *stricto sensu*.

French abstract*

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

L'influence des réseaux de co-auteurs sur la performance des programmes d'études supérieures dans le système d'évaluation du Brésil

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Résumé

Au Brésil, les programmes d'études supérieures sont régis *stricto sensu* par la Coordination de l'Amélioration du Personnel de l'Enseignement Supérieur (CAPES), un organisme lié au Ministère de l'Education (MEC), qui a le pouvoir de recommander ou de rejeter des cours. Dans ce contexte, il apparaît que, au fil des ans, les programmes ont coordonné leurs stratégies et actions pour répondre aux exigences du système d'évaluation. Cette étude vise à identifier l'influence des réseaux de co-authoring sur la performance des programmes d'études supérieures dans le système d'évaluation du CAPES. Nous avons utilisé une méthode de recherche quantitative pour évaluer la corrélation entre les réseaux de co-auteurs et les évaluations obtenues par les programmes, dans les domaines de Management, Comptabilité et Tourisme, entre 2001 à 2009. Les résultats indiquent une relation positive entre la consolidation des groupes de co-auteurs et la note obtenue dans le système d'évaluation du CAPES.

Mots-clés: Réseaux de co-auteurs; système d'évaluation; programmes d'études supérieures; *stricto sensu*.

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German abstract*

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

Der Einfluss von Koautorenschaft-Netzwerken auf die Leistung von Graduiertenprogrammen im brasilianischen Bewertungssystem

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Zusammenfassung

In Brasilien sind *stricto sensu* Graduiertenprogramme reguliert durch die Coordination of Improvement of Higher Education Personnel (CAPES), eine Behörde die mit dem Ministry of Education (MEC) verbunden ist, welches die Macht hat Kurse zu empfehlen oder abzulehnen. In diesem Kontext zeigt sich, dass Programme über die Jahre ihre Strategien und Aktionen koordinierten um den Anforderungen des Bewertungssystems zu entsprechen. Diese Studie hat zum Ziel den Einfluss von Koautorenschaft-Netzwerken auf die Leistung von Graduiertenprogrammen im CAPES Bewertungssystem zu identifizieren. Wir benutzen eine quantitative Forschungsmethode zur Bewertung der Korrelation zwischen Koautorenschaft-Netzwerken und den Bewertungen durch die Programme, die Betriebswirtschaftslehre, Buchhaltung und Tourismus umfassen, aus den Jahren 2001 bis 2009. Die Ergebnisse deuten auf eine positive Beziehung zwischen der Konsolidierung von Koautoren-Gruppen und der im CAPES Bewertungssystem erhaltenen Note hin.

Keywords: Koautorenschaft-Netzwerke; Bewertungssystem; Graduiertenprogramme, *stricto sensu*

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Spanish abstract*

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

La Influencia de las Redes de Coautoría en el Desempeño de los Programas de Grado en el Sistema de Evaluación Brasileño

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Resumen

[En Brasil, los programas de postgrado stricto sensu están regulados por la Coordinación de Perfeccionamiento de Personal de Nivel Superior (CAPES), un organismo vinculado al Ministerio de Educación (MEC), que tiene el poder para recomendar o rechazar cursos. En este contexto, resulta que, en los últimos años, los programas han coordinado sus estrategias y acciones para cumplir con los requisitos del sistema de evaluación. Este estudio tiene como objetivo identificar la influencia de las redes de coautoría en el desempeño de los programas de posgrado en el sistema de evaluación de la CAPES. Se utilizó un método de investigación cuantitativa para evaluar la correlación entre la red de coautoría y las valoraciones obtenidas por los programas que componen el ámbito de la Administración de Empresas, Contabilidad y Turismo, de 2001 a 2009. Los resultados apuntan a una relación positiva entre la consolidación de los grupos de coautoría y la nota obtenida en el sistema de evaluación de la CAPES.]

Palabras Claves: [Redes de Coautoría; Sistema de evaluación; programas de grado; *stricto sensu*.]

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Arabic abstract*

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

أثر شبكات التأليف المشترك على أداء برامج الدراسات العليا
في نظام التقييم البرازيلي

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ملخص

في البرازيل، برامج الدراسات العليا (المتسلسلة زمنياً) حسب ماتنظمه وكالة تنسيق وتحسين موظفي التعليم العالي (CAPES)، وهي وكالة تابعة لوزارة التعليم العالي التي لديها القدرة على توصية أو رفض البرامج. في هذا السياق، فإنه ينتج من ذلك، على مر السنين، برامج تنسيق استراتيجيات وإجراءات لتطابق متطلبات نظام التقييم. وتهدف هذه الدراسة إلى التعرف على تأثير المشاركة في تكوين الشبكات على أداء برامج الدراسات العليا في نظام التقييم لدى وكالة (CAPES). استخدمنا منهج البحث الكمي لتقييم العلاقة بين المشاركة في تكوين الشبكات و التقييمات التي حصلت عليها البرامج التي تشمل مجال إدارة الأعمال، المحاسبة والسياحة، من عام 2001 إلى عام 2009. تشير النتائج إلى وجود علاقة إيجابية بين توحيد المجموعات المشاركة في التأليف والعلامة المحصلة في نظام تقييم وكالة (CAPES).

كلمات البحث: شبكات التأليف المشترك، نظام التقييم، برامج الدراسات العليا، النطاق الضيق

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Italian abstract*

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

L'influenza di network di coautori sulla prestazione dei programmi post universitari nel sistema di valutazione brasiliano

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Abstract

In Brasile, programmi post universitari propriamente stricto sensu sono regolati dalla dalle persone della Coordinazione del Miglioramento per l'Istruzione di Alto livello (CAPES), una agenzia legata al ministero dell'educazione (MEC) che ha il potere di raccomandare o non accettare corsi. In questo contesto, viene fuori che, nel corso degli anni, i programmi hanno coordinato le loro azioni e strategie per incontrare i requisiti del sistema di valutazione. Questo studio ha l'obiettivo di identificare l'influenza di network di coautori sulla prestazione dei programmi post universitari nel sistema di valutazione CAPES. Abbiamo utilizzato metodi di ricerca quantitativi per valutare la correlazione fra network di coautori e le valutazioni ottenute dai programmi che formano il campo del Business Management Accounting and Tourism, dal 2001 al 2009. I risultati inducono ad una relazione positiva fra la consolidazione di gruppi di coautori e la valutazione ricevuta dal sistema CAPES]

Keywords: network di coautori, sistemi di valutazione, programmi post laurea, stricto sensu

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Chinese abstract*

The Influence of Co-authorship Networks on the Performance of Graduate Programs in the Brazilian Evaluation System

在巴西评价系统下合著网络对研究生课程绩效的影响

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摘要

在巴西，严格意义上的研究生课程是由拥有推荐和拒绝课程权利的巴西教育部下属的巴西高等人才培养基金委员会（CAPES）管理的。在这种情况下，事实表明，这些年来，研究生课程项目的战略和行动一直是满足评价体系的要求。本文的研究目的是探讨在CAPES评价体系下合著网络对研究生课程绩效的影响。我们使用定量研究方法来评估合著网络和2001年至2009年期间的包含工商管理、会计和旅游研究生课程评价的关系。结果表明，合著群组和CAPES评价系统下的评估结果是积极的正相关关系。

关键词：合著网络，评价体系，研究生课程 严格意义上

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