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TECHNICAL PRODUCTION OF PROFESSIONAL MASTERS IN MANAGEMENT: ANALYSIS OF THE DISCLOSURE OF TECHNICAL REPORTS BETWEEN THE YEARS 2013 TO 2017

Simone Aquino[1]
Tatiana Tucunduva Philippi Cortese[2]
Fábio Ytoshi Shibao[3]

ABSTRACT

Objective of the study: The aim of this study was to analyze which events and periodicals are most relevant in the dissemination of technical reports, as well as to analyze the differences of guidelines among the types of technical productions, designated as technical report.

Methodology/approach: the study of qualitative, exploratory, descriptive and explanatory approach was based on surveys of calls of events and Annals of publications in scientific meetings in the area of administration, sciences Accounting and Tourism, which presented specific rules for technical reports.

Originality/relevance: The relevance of the study is to demonstrate how the dissemination of technical reports has evolved over the years, since it is a form of dissemination of practical results of an intervention in sectors or organizations, in which the methodological rigor follows the same scientific basis as academic lines.

Main results: The total number of productions totaled 159 publications, between the years 2013 and 2017, and in 2015 it was observed that the numbers of publications of technical reports triated, in relation to the year of 2014.

Theoretical/Methodological contributions: Through the study, it was possible to determine the forms of dissemination of this modality of technical production, with an increasing tendency of production, as observed in the study between the years 2016 and 2017.

Conclusion: The modality of technical reporting emerged as an important tool for the dissemination of solutions directed to the practices in administration in organizations and companies, as well as for society, since the search for solutions or proposed interventions are also needed in public sectors.

Keywords: Technical report. Dissemination. Publications.

[1] Doutora em Ciências pelo Instituto de Pesquisas Energética e Nucleares-USP. Programa de Mestrado Profissional em Administração - Gestão Ambiental e Sustentabilidade – UNINOVE. ORCID: https://orcid.org/0000-0003-1445-6490. E-mail: siaq06@hotmail.com.
[2] Doutora em ciências pela Faculdade de Saúde Pública da USP. Mestrado - Programa Cidades Inteligentes e Sustentáveis – UNINOVE. ORCID: https://orcid.org/0000-0003-2915-5084. E-mail: tatianatpc@uni9.pro.br.
[3] Doutor em Administração de Empresas pela Universidade Mackenzie. Programa de Mestrado Profissional em Administração - Gestão Ambiental e Sustentabilidade – UNINOVE. ORCID: https://orcid.org/0000-0002-66660330. E-mail: fabio.shibao@gmail.com.

PRODUÇÃO TÉCNICA DE MESTRADOS PROFISSIONAIS EM ADMINISTRAÇÃO: ANÁLISE DA DIVULGAÇÃO DE RELATOS TÉCNICOS ENTRE OS ANOS DE 2013 A 2017

RESUMO

Objetivo do estudo: O objetivo do estudo foi analisar quais os eventos e periódicos de maior relevância na divulgação de relatos técnicos, bem como analisar as diferenças de diretrizes entre os tipos de produções técnicas, designados como relato técnico.

Metodologia/abordagem: O estudo de abordagem qualitativa, exploratória, descritiva e explicativa foi baseado em levantamentos de chamadas de eventos e anais de publicações em encontros científicos da área de Administração, Ciências Contábeis e Turismo, que apresentaram regras específicas para relatos técnicos.

Originalidade/Relevância: A relevância do estudo é demonstrar como a divulgação de relatos técnicos evoluiu ao longo dos anos, visto ser uma forma de divulgação de resultados práticos de uma intervenção em setores ou organizações, na qual o rigor metodológico segue a mesma base científica de linhas acadêmicas.

Principais resultados: O total de produções somaram 159 publicações, entre os anos de 2013 a 2017, sendo que no ano de 2015 foi observado que o número de publicações de relatos técnicos triplicou, em relação ao ano de 2014.

Contribuições teóricas/metodológicas: estudo realizado foi possível determinar as formas de divulgação desta modalidade de produção técnica, com uma tendência crescente da produção, como observado no estudo entre os anos de 2016 e 2017.

Conclusão: A modalidade de relato técnico surgiu como uma ferramenta importante para a divulgação de soluções direcionadas para as práticas em administração em organizações e empresas, bem como para a sociedade, visto que a busca por soluções ou intervenções propostas também são necessárias em setores públicos.

Palavras-chave: Relato técnico. Divulgação. Publicações.

PRODUCCIÓN TÉCNICA DE MÁSTER PROFESIONAL EN GESTIÓN: ANÁLISIS DE LA DIVULGACIÓN DE INFORMES TÉCNICOS ENTRE LOS AÑOS 2013 A 2017

RESUMEN

Objetivo del estudio: el objetivo de este estudio fue analizar qué eventos y publicaciones periódicas son más relevantes en la difusión de informes técnicos, así como analizar las diferencias en las directrices entre los tipos de producciones técnicas, designados como un informe técnicas.

Metodología/enfoque: el estudio del enfoque cualitativo, exploratorio, descriptivo y explicativo se basó en encuestas de convocatorias de eventos y anales de publicaciones en reuniones científicas en el área de Administración, Ciencias Contabilidad y turismo, que presentaron normas específicas para los informes técnicos.

Originalidad/relevancia: la relevancia del estudio es demostrar cómo ha evolucionado la difusión de los informes técnicos a lo largo de los años, ya que es una forma de difusión de los resultados prácticos de una intervención en sectores u organizaciones, en los que el rigor metodológico sigue la misma base científica que las líneas académicas.

Resultados principales: el número total de producciones ascendía a 159 publicaciones, entre los años 2013 y 2017, y en 2015 se observó que los números de publicaciones de informes técnicos se triplicaron, en relación con el año de 2014.

Palabras clave: Informe técnico. Divulgación. Publicaciones.

Introduction

After graduation, many students decide to enter the job market and others choose to pursue academic studies. Among the options offered by the universities of Brazil, the academic or professional master's degree provides the interested person with deepening in several areas of knowledge, in order to allow a high degree of scientific or technical competence. The professional master's model is also directed to professional training, but with the same levels and standards of demand applied in any postgraduate program (Coordination of Improvement of Higher Education Personnel [CAPES], 2014a).

The technological changes and the currents of economic-social transformations have demanded professionals with profiles of specialization different from the traditional ones. Some masters programs have characteristics that differ from those existing in the postgraduate system of the country. These differences are manifested in the orientation of curricula, in the composition of faculty and students, in forms of financing and in institutional arrangements (Documentos e Debates, 1997).

Created in 1999, the professional master's degree is aimed at those who wish to acquire a high level of professional qualification or postgraduate education in any higher education institution in the country. In 1999 there were only four professional master's degrees; 62 courses (CAPES, 2014a). In 2007 it reached 184, and in 2011, 338 new courses were created. CAPES announced in 2017 the final result of the Quadrennial Evaluation, of stricto sensu graduate programs, in the professional mode in administration, economics, among others. The 2017 assessment reported 703 professional masters programs nationwide, with grades one through five (CAPES, 2017). By the year 2018, there were 841 professional master's degree programs in operation. The number of professional master's degrees is distributed mainly in the following areas: Interdisciplinary, with 94 options; followed by the Area of Education, with 93 courses; Administration, Accounting, and Tourism total 80, and Education presents the total of 50 existing courses (Sucupira Plataform, 2019).

The objective of a professional master's degree program is to contribute to the national productive sector in the sense of adding a greater level of competitiveness and productivity to companies and organizations, both public and private. Consequently, proposals for new courses (in the professional master's modality) should present a curricular structure that emphasizes the articulation between up-to-date knowledge, relevant methodology domains, and application oriented to the field of specific professional activity (CAPES, 2014b).

The final work with the degree program should always be linked to real problems of the professional-student's area of work. Depending on the nature of the area and the purpose of the course, this work can be presented in several formats (CAPES, 2014b). The options of presentation of final papers are greater in relation to the academic masters. The papers presented by students may be dissertations, articles, patents, technical projects, technological publications, or other terminal papers (CAPES, 2014a).

The products generated in a professional master's program of study are no longer only represented by dissertations and scientific articles. Recently, new forms of presentations of results of academic and professional works have emerged, such as technical reports, technological reports, or technological articles. The technical report not only describes a case to be studied in an organization, but the presentation of practical results of an intervention, where methodological rigor follows the same scientific basis of academic lines, unlike a traditional report (Biancolino, Kniess, Maccari, & Rabechini, 2012).

In this context, a technical report is defined as the final product of a work (applied research or technical production) that describes an experience within an organization. It should be written based on scientific and methodological rigor and also reflect the thinking of the author. Thus, the technical report is not intended to present pure and simple facts occurring at companies, nor does it constitute a managerial report (Biancolino et al., 2012).

In 2017, the professional doctorate, regulated by Administrative Rule MEC n. 389, dated March 23, 2017 and by the CAPES n. 131, dated June 28, 2017, emerged in addition to the existence of the professional master's degree as a Postgraduate modality that was *stricto sensu* aimed at the qualification of professionals in the various areas of knowledge, through the study of techniques, processes, or themes that meet some labor market (Ordinance No. 389, 2017, CAPES Order No. 131, 2017).

The present study aimed to carry out a survey and analyze the structuring and dissemination of technical reports, technological reports, or technological articles in events and in national journals, between the years of 2013 to 2018, as part of the process of production of the masters and professional doctorates. To this end, the present study proposed the following research question: How were productions in the format of technical reports or technological articles modified and disseminated between 2013 and 2017 as a research product of professional masters in administration?

In addition to the introduction, the present study is divided into four sections: a literature review, methodological procedures, results analysis, and discussion, as well as the conclusion of the work.

Literature review

Differences between a technical report and a scientific article

According to Biancolino et al. (2012), one of the most difficult questions to be answered in the field of management studies is the basic difference between field research and applied research. According to the author, the field of administration is, by nature, an applied objective, since it involves studies directed to the better functioning of organizations. In the areas of engineering and medicine, the problem-solving approach is common, and perhaps this differentiation is not as important. In the area of administration, the dominant paradigm is the development of research focused on the understanding of phenomena (Aken, 2005, Motta, 2017). Therefore, the differentiation between professional or technological products and traditional scientific products has become important (Motta, 2017).

According to the Brazilian Association of Technical Norms (ABNT), the scientific article can be defined as "publication with declared authorship, which presents and discusses ideas, methods, techniques, processes, and results in the various areas of knowledge" and classifies as an original article or review (ABNT-NBR 6022, 2003, p.2-3). Regarding the content addressed in the article, Marconi and Lakatos (2005, p.262) described that it should:

> a) be about a personal study, a discovery, or give an approach contrary to what is already known; b) offer solutions to controversial issues; c) bring to the

attention of the intellectual or specialized public on the subject, new ideas, for opinion polling or updating of reports; d) approach secondary aspects, raised in some research, but not otherwise used or explored.

For the classification of articles, Qualis was used, which is the set of procedures used by CAPES to stratify the quality of the intellectual production of graduate programs. This process is designed to meet the specific needs of the evaluation system and is based on the information provided through the Data Collection application. As a result, it provides a list with the classification of the vehicles used by the graduate programs for the dissemination of their production (CAPES 2014c; Sucupira Plataform, 2019). Qualis Periodics, therefore, is one of the tools used for the evaluation of graduate programs in Brazil. Its function is to assist the evaluation committees in the process of analysis and qualification of the bibliographical production of the professors and students of the graduate programs accredited by CAPES. In addition to the classification system of chapters and books, the Qualis Periódicos is one of the fundamental instruments for the evaluation of intellectual production, adding the quantitative to the qualitative aspect (Barata, 2016).

Stratification of the quality of this production is performed indirectly. In this way, Qualis assesses the quality of scientific articles. The classification of journals is carried out by the evaluation areas and are classified into strata indicative of quality - A1, the highest; A2; B1; B2; B3; B4; B5; and C - with zero weight (CAPES 2014c; Sucupira Plataform, 2019). The citation indicators of articles reflect the scope of "conversation" among the researchers, since they show the knowledge and recognition of other authors of the area for the subject of their research (Marchioro, 2007). The new 2013-2016 classification requires that the journal must satisfy at least one of the three impact factors (JCR, H-Scopus or Scielo). The Journal Citation Reports (JCR) value must be greater than 0 and less than and equal to 0.7, and the H-Scopus should be between greater than 0 and less than or equal to 9. The Scielo impact factor should be greater than 0.01 and is also used for B2 journals (Rosa, 2016).

It is important to emphasize that a technical report, as well as a scientific article, includes scientific rigor in its elaboration as premise. The main difference between a technical report and a scientific paper is in the proposal, that is, while the scientific article is willing to present empirical research or a theoretical discussion, the technical report describes a process of practical intervention carried out in an organization (Roje & Walter, 2014).

The technical report presents differentiated content compared to a scientific article mainly regarding the description of the context of the problem situation and the intervention performed. In addition, there are differences in the space allocated to each part of the production and in the distribution and organization of the presented content, as represented in Figure 1 (Roje & Walter, 2014).

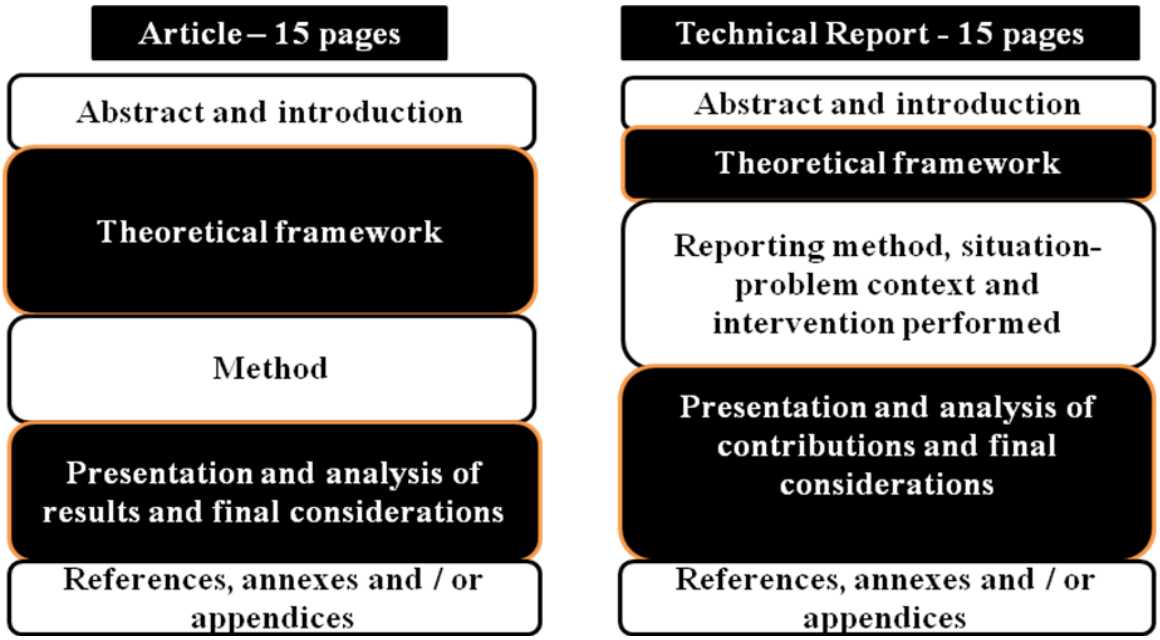

Figure 1. Visual example of the difference of organization between an article and a technical report. Source: adapted from "Technical Report: Roadmap for Drafting", by Rojo and Walter (2014), ComSus Competitiveness and Sustainability Magazine, 1, p. 4.

Technical report, technical description, technological report and technological article

According to Roje and Walter (2014), there are a variety of names used to report the production and dissemination of the results of interventions in organizations, applied research, products, and other objects of study. Still in the field of management research, it is common to use terms such as technical reporting, technological reporting and technological article, such as papers presented in the professional master's degree. In organizations the use of technical reports is a common practice and the purpose of a technical report adopted by Thomsett-Scott (2006) is that they are generally produced to report on a specific research need such as process, progress, or results of a technical or scientific research. They can, for example, serve as a report to a research funding organization and can be evaluated in two general categories regarding the problem, the research method, and the results found (Thomsett-Scott, 2006):

1. Non-governmental reports: published by associations or institutes, such as the American Institute of Aeronautics and Astronautics, the Institute of Electrical and Electronic Engineers, or the Society of Automotive Engineers;

2. Government reports: when the research was funded by a government agency or international agency, since all US agencies issue reports, such as NASA.

According to the Gray Literature International Steering Committee (GLISC, 2005), the body of a technical report may be structured according to its content and complexity in the introduction, core of the report, and conclusions (Figure 2).

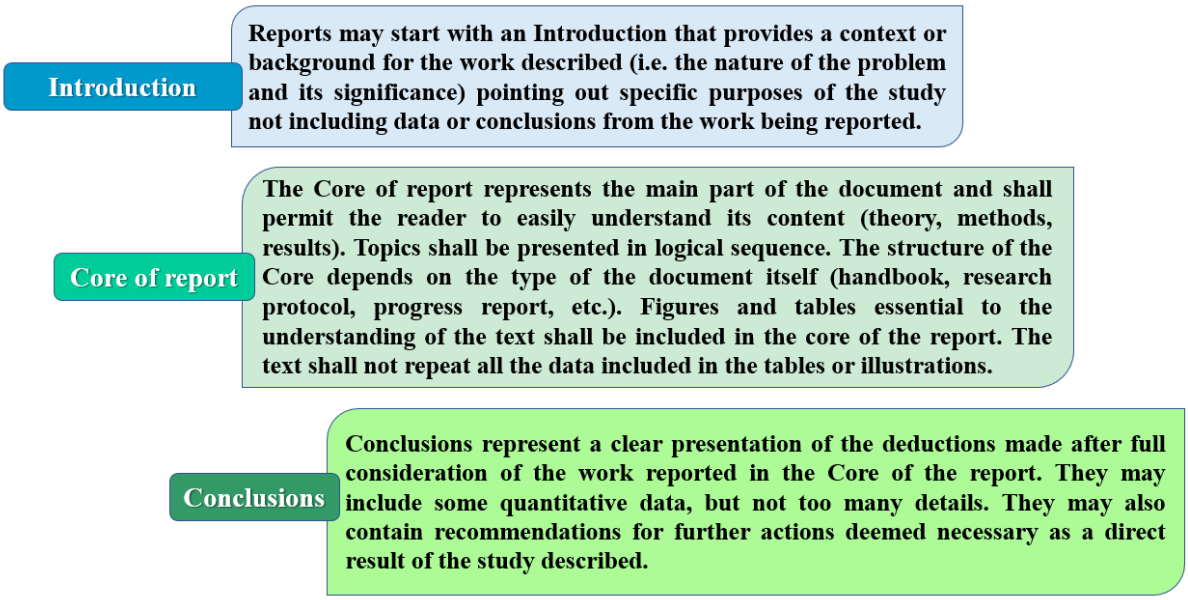

Figure 2. Parts of the composition of a technical report.
Source: adapted from GLISC, 2005.

When the information is so detailed in the technical report (many tables or pictures on the same subject) that it interrupts the flow of the text, such data should be presented in appendices, which may also contain extra or supplementary materials. "Personal communication" should be avoided unless it provides essential information not available from a public source, in which case the name of the person and the date of communication should be quoted in parentheses in the text. In general, each reference will include all the bibliographic elements necessary to unambiguously identify the source (GLISC, 2005).

When citing electronic material, the Internet address must be added for each online source, preceded by "available from" or "retrieved from" with the date of the display. Preference should be given to e-mail addresses related directly to documents cited, i.e., generic website citations should be avoided (GLISC, 2005).

According to the Brazilian Association of Technical Standards (ABNT, 1989, p.1), the technical-scientific report is a "document that formally reports the results or progress of research and development research or describes a situation with a technical or scientific basis. The technical-scientific report systematically presents sufficient information to a qualified reader, draws conclusions, and makes recommendations" (ABNT, 1989).

Textual development can be divided into as many sections and subsections as necessary, with the following subdivisions: general objectives and specific objectives; methodology (adopted in the research); experimental procedures (equipment, techniques, and processes used); results (obtained from the experiments and studies carried out); conclusions that are based on the discussions and data of the experiments carried out in the course of the research and, finally, the recommendations, which are concise statements of actions, deemed necessary from the conclusions obtained, to be used in the future. References should be cited in the text and listed at the end of the technical report. The technical report allows the use of appendices (texts or documents prepared by the author of the work in question in order to complement and support the argument) and annexes, texts or documents not elaborated by the author of the work in question, but they serve to justify, prove and/or provide illustration (ABNT, 1989).

In this context, unlike a technical report, the definition of a simple technical description may be given as a final account of applied work in research or production (Biancolino et al.,

2012). A technical report should reflect the thinking of the author and be written based on scientific and methodological rigor. Thus, the technical report is not intended to present pure and simple facts occurring in companies, nor does it constitute a management report. According to Biancolino et al. (2012, p. 299):

> "[...] technical reporting should: (1) present the basic differentiation of, rather than analyzing a conventional theoretical/empirical object, describe an intervention in an organization or project, and (2) propose practical / concrete solutions that may be adopted in the future in other organizations, with the support of a theoretical reference of the area".

According to Padilha and Lima (2015) the goal of a technical report is for professional purposes, using scientific and methodological rigor, to share in the work the technical experience of a project carried out, emphasizing the practical application of the resolution of the problem studied. Pinheiro, Sousa, and Moreira (2018) described their technical report as a study that should be focused on a more restricted context (on which should be prescribed feasible solutions of technical scope), using a methodology of its own.

For Motta (2017), the difference between a report with academic emphasis and one with professional emphasis rests on its approach. An academic report focuses on the understanding (description, explanation, and, in some cases, prediction) of phenomena, while the technical report or, more specifically, the technological article, aims primarily to solve problems.

The common definition found by Motta (2017) and Biancolino et al. (2012) between the definition of technical report and technological article is in the proposition to present a resolution of practical/real problems of the administration field, with scientific basis and methodological rigor, demonstrating a clear domain of the subject under study. In both, the contribution to knowledge must follow the approaches proposed by Gregor and Hevner (2013): 1. Focus on innovation: the author(s) develops new solutions to new problems; 2. Focus on improvement: the author(s) develops new solutions to known problems; 3. Focus on extrapolation: the author(s) extends known solutions to new problems.

A new solution can be understood in several ways: advancement or inclusion/exclusion of known solutions; combination of known solutions, etc. These solutions can be presented as: (a) models and management processes; (b) protocols; (c) systems (also software); (d) methodological proposals (including for research); (e) operating manuals; (f) instructional material (we add didactic material), among others (Motta, 2017). The protocol for technical reporting proposed by Biancolino et al. (2012) demands the logic called CIMO, which means:

> 1. Context (problem-situation); 2. Intervention (or type of intervention proposed to solve the problem presented); 3. Mechanisms adopted (or description of how the problem was solved) and 4. Obtained Results, which describe in an objective and non-generic way, the results obtained in the organization, also highlighting the conjunctural factors that may have affected this result beyond the intervention made.

In 2014 the National Association of Postgraduate and Research in Administration (ANPAD) made the technological report available as a new modality of submission of papers, in order to divulge products resulting from works of a practical and applied nature, carried out by researchers in any of the divisions of ANPAD. The Technological Report, however, is nothing more than another terminology for technical reporting, since the technological report is not intended to describe purely and simply developed actions or occurrences in the company/sector/operating environment, nor does it constitute a report management. Despite its

practical and applied character, its basis is scientific and therefore must be based on the foundations of science.

The focus of a technological report in the area of administration may include the development of new solutions to known problems, the application of known solutions to known problems, the proposal of new solutions to new problems, or the expansion of known solutions to new problems (ANPAD, 2014).

The structure of the technological report on the ANPAD website follows the structure of the technical report protocol described by Biancolino et al. (2012), that is, it should be elaborated with: a) Introduction; b) Context and the reality investigated; c) Diagnosis of the problem situation and/or opportunity; d) Situation-Problem Analysis and innovation/intervention/recommendation proposals; and, e) Technological/Social Contributions. Therefore, to better understanding in the present work, a technical report, a technological report, and a technological article were considered to be the same type of production.

Methodological procedures

According to Duarte, Ramalho, Autran, Paiva and Araújo (2009), the qualitative approach to a problem, besides being an option of the investigator, is justified in our study mainly because it is an adequate technique to understand the nature of a social phenomenon. This study is highlighted as an exploratory and descriptive study, which according to Gil (2008), the research (according to objectives and groups) is exploratory, descriptive and explanatory. Descriptive research has as main objective the description of the characteristics of a given population or phenomenon, or the establishment of relations between variables (Duarte et al., 2009).

Given this methodological strategy adopted, invitations were drawn for nine events and annals of publications in scientific meetings in the area of Administration, Accounting and Tourism, which presented specific rules for technical reports and technological articles. The selected events were: ANPAD Meeting (EnANPAD); Meeting of the Professional Masters in Administration (EMPRAD); Meeting of the Pedro Leopoldo Foundation; Master's Degree in Public Administration in National Network (PROFIAP); Seminars in Administration of the University of São Paulo (SEMEAD); International Symposium on Project Management, Innovation and Sustainability (SINGEP); International Meeting on Environmental Management and Environment (ENGEMA), and Teaching and Research Meeting on Amazonian Administration (EnEPA) (Figure 3).

Event	General Rules for Technical Reporting
EnANPAD; EMPRAD; FUNDAÇÃO PEDRO LEOPOLDO; PROFIAP; SEMEAD; SINGEP; ENGEMA; EnEPA	–Paper size - A4 (29,7 x 21 cm); – Paper layout: portrait; – Font: Times New Roman/size 12; – Line spacing: simple, one column; – Alignment: justified; – Margins: Superior: 3 cm; lower: 2 cm; left: 3 cm; right: 2 cm. – Pages: number of pages at bottom, right side. - Rules: APA or ABNT

Figure 3. Standards for technical reporting on events in the Administration area.
Source: the authors based on event sites.

A survey of publications of technical reports and technological articles between the years of 2013 to 2017, in the periodicals of Administration, Accounting and Tourism Sciences Qualis A2, B1, B2 and B3, was carried out based on the following descriptors: technical report, technological report, and technological article. However, as an exclusion criteria, Qualis B4, B5 and C periodicals were not considered, nor were events and journals released from the years prior to 2013, since the first guidelines and protocols created and published for the development of technical reports have appeared since the year 2012.

The selection of reports or technological articles in the analyzed journals was also based on the study of Silva (2018), guidelines and publications in the Scientific Periodicals Electronic Library - Spell (ANPAD), and Google Scholar, which produced a list of periodicals that publish technical reports and technological articles, as shown in Figure 4.

Qualis Administration	Journal
A2	Revista de Administração Contemporânea (RAC)
B1	Revista de Empreendedorismo e Gestão de Pequenas Empresas (REGEPE)
B2	Revista de Gestão Ambiental e Sustentabilidade (GeAS); Revista Eletrônica de Negócios Internacionais da ESPM (INTERNEXT-ESPM); Revista Pretexto; Future Studies Research Journal (FSRJ); Revista Gestão & Tecnologia (G&T); Revista Iberoamericana de Estratégia (RIAE); Revista da Micro e Pequena Empresa (RMPE- FACCAMP).
B3	Journal of Financial Innovation (JFI); Revista Capital Científico eletrônica (RCCe); Revista de Administração, Sociedade e Inovação (RASI); Revista Eletrônica Científica do CRA-PR (RECC); Revista Hospitalidade (RH); PODIUM Sport, Leisure and Tourism Review; Revista Inovação, Projetos e Tecnologias (IPTEC); Revista Inteligência Competitiva (RIC); Revista de Administração, Contabilidade e Economia da Fundace (RACEF); Caderno Profissional de Administração (CPA) da UNIMEP; Revista de Administração, Contabilidade e Economia (RACE); Prisma.Com (Portugal).

Figure 4. National journals that allow submissions of technical reports or technological articles
Source: adapted from "Technical Periodicals" by Silva, A. O., 2018, Recovered from http://scholarlyopen-access.hospedagemdesites.ws/scholarly_open/lista-dos-periodicos-para-publicar-relato-tecnicoartigo-tecnologico/.

The Spell (Scientific Periodicals Electronic Library, 2019) database is a system of indexing, for research and with free availability of scientific production, particularly in the areas of Public Administration and Business, Accounting, and Tourism. The Spell database has the main objective of promoting access, organization, dissemination, and analysis of scientific production of different areas of knowledge, and also organizes, in a single database, a significant body of knowledge and provides free access to users interested in scientific production.

Analysis of results and discussion

The submissions found in annals of event sites in the administration area began in 2012, with special mention being made of the International Symposium on Project Management, Innovation and Sustainability (SINGEP) and in the annals of SEMEAD. Starting in 2014, the publications found in events in the form of technical reports gained more space for the diversification and opening of calls in events such as PROFIAP and ENGEMA, however, only

in the years 2015 and 2016 were productions presented as technical reports published in ENGEMA and in 2016 in PROFIAP (Figure 5).

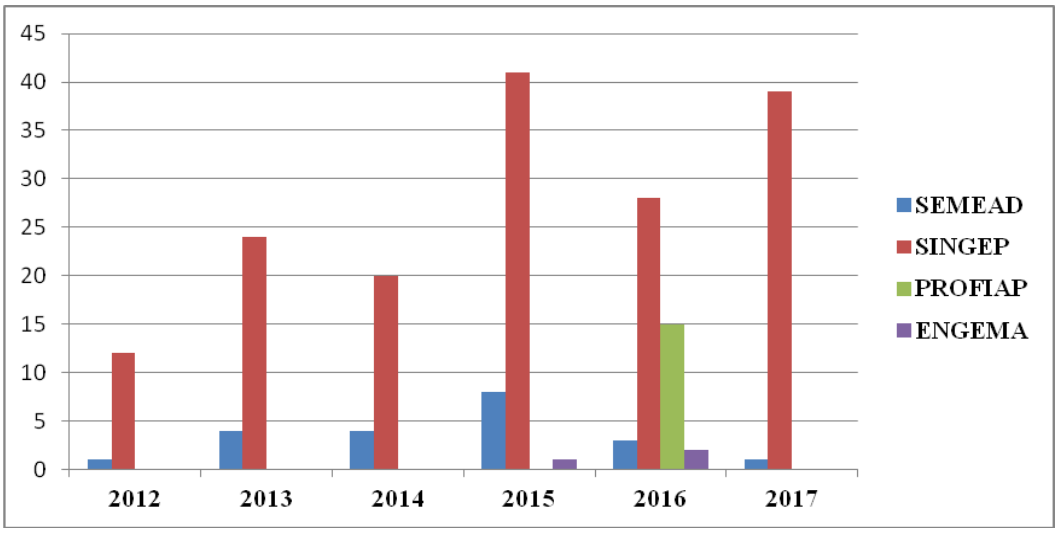

Figure 5. Technical reports presented at events between the years 2012 to 2017.
Source: the authors.

The research limitation was observed in relation to the ANPAD Meeting (EnANPAD), since there was no recognition of the descriptors "technical reports, technological reports, and/or technological articles" for the searches in the annual annals of the event, even if there were calls with guidelines for submissions of technological reports, which later came to be designated as "technological articles," in the last editions. For the other events, some changes of guidelines were observed in the elaboration of technical reports, such as adoption of the ABNT and/or APA standards for references and page limits, according to Table 1.

Table 1. Guidelines adopted for events for technical reports, technological reports and/or technological articles.

Event	Call for technical & technological reports, and technological articles	Standard for Citations and Bibliographical References	Pages
EMPRAD	Yes	APA or ABNT/NBR-6023	7 to 16
EnANPAD	Yes	APA or ABNT/NBR-6023	8 to 16
EnEPA	Yes	ABNT/NBR-6023	13 to 22
ENGEMA	Yes	APA or ABNT/NBR-6023	Maximum 15
FUNDAÇÃO PEDRO LEOPOLDO	Yes	APA	8 to 12
PROFIAP	Yes	ABNT/NBR-6023.	Maximum 12
SEMEAD	Yes	APA or ABNT/NBR-6023	Maximum 15
SINGEP	Yes	APA	7 to 16

Source: the authors. APA - American Psychological Association. ABNT- Associação Brasileira de Normas Técnicas - Brazilian Association of Technical Standards

Publications in national (Brazilian) journals

No publications of technical reports were found before 2012 in the journals of the Administration area surveyed. As of 2013, only IPTEC magazine presented nine technical reports, three of which were project management, two of sustainability, two for innovation, one people management, and one technology approach. As for the periodicals analyzed between the years of 2013 to 2017, 21 national magazines of the area of administration published technical reports in their annual editions. The beginning of the diversification of periodicals that began to publish technical reports occurred from 2014, with a peak in 2017 (Figure 6).

Figure 6. Numbers of technical reports published between 2013 and 2017.
Source: the authors.

Although some of the journals were releasing technical reports or technology articles in specific sessions, some of the sites have not yet submitted specific submission guidelines, i.e., 36% of journals do not present their own technical reporting guidelines (although they accepted this type of production) and 64% presented specific guidelines for elaboration of technical reports, technological reports, or technological articles.

The total number of technical reports, technological reports, or technological articles in all the reviewed journals totaled 159 publications, with emphasis on the Innovation, Projects and Technologies Magazine (IPTEC), which has a Qualis B3 with 45% of the productions between 2013 and 2017. The focus of IPTEC Magazine is the publication of technical reports and practical cases with appropriate academic rigor related to its areas of scope such as Innovation, Project Management, Technology Development, and Sustainability. Between the years of 2013 and 2017, 12 technical reports were published focusing on Environmental Management and Sustainability, between 2 to 3 reports per year. It should be noted that in 2015, the number of publications doubled compared to 2014, maintaining the high number of publications in the following years 2016 and 2017 (Table 2).

Table 2. Number of technical reports, technological reports and/or technological articles published in periodicals from 2013 to 2017.

Qualis	Journal	Guidelines for TR	2013	2014	2015	2016	2017	Total per journal
A2	RAC	Yes	0	0	0	0	5*	**5**
B1	REGEPE	Yes	0	0	0	0	0	**0**
B2	Revista GeAS**	No	0	0	0	0	0	**0**
	INTERNEXT-ESPM	No	0	0	0	0	0	**0**
	PRETEXTO	No	0	0	0	0	0	**0**
	FSRJ	No	0	0	0	3	3	**6**
	G&T	No	0	1	3	3	7	**14**
	RIAE	No	0	0	4	4	5	**13**
	RMPE- FACCAMP	No	0	0	4	5	6	**15**
B3	IPTEC	Yes	9	9	18	18	18	**72**
	JFI	No	0	0	0	0	0	**0**
	RCCe	Yes	0	2	4	3	4	**13**
	RASI	No	0	0	0	0	0	**0**
	RECC	Yes	0	0	1	2	0	**3**
	RH	No	0	0	0	0	0	**0**
	PODIUM	No	0	0	0	0	0	**0**
	RIC	Yes	0	1	2	4	9	**16**
	RACEF	No	0	0	0	0	0	**0**
	CPA - UNIMEP	Yes	0	0	0	0	0	**0**
	RACE	Yes	0	0	0	0	2	**2**
	PRISMA.COM	Yes	0	0	0	0	0	**0**
Total per year			**9**	**13**	**36**	**42**	**59**	**159**

Source: the authors.

* In 2017 the journal RAC began to incorporate the technological articles of the journal TAC, which began to publish guidelines from 2018. **

In 2016, ANPAD decided that from January 2017, Revista de Administração Contemporânea (RAC) would publish the technological articles submitted, until then, by the journal Tecnologias de Administração e Contabilidade (TAC). The migration from TAC to RAC, in line with ANPAD's strategic objectives, sought to revalue the scientific production of management technologies, since CAPES's decision to reclassify the TAC from Qualis B3 to C negatively affected the fundamental production of this type document in the administration and accounting community (ANPAD, 2016).

The magazine TAC was launched in 2011 to value and sell the intellectual production of post-graduate programs (in particular the professional masters) characterized as Administration and Accounting technologies. Throughout the six years of TAC placement, 33 technological articles were published (ANPAD, 2016).

For Motta (2017) the key criteria for the evaluation of a technological article are clarity and objectivity, that is, those who go straight to the point certainly have greater possibilities of advancing the desk review. This includes those articles that have clear titles and which clearly

articulate the purpose and content in the abstract. Additionally, Motta (2017) proposes five other fundamental parts of the text submitted for evaluation:

> [...]1. Right in the introduction, expose the problem situation and/or opportunity for improvement related to the context under analysis (organization/government/social actors); 2. Include brief diagnostic text of the situation/problem and or opportunity, demonstrating mastery of the subject under study and the theoretical and scientific bases that support this diagnosis; 3. Synthetically describe the procedures used to collect data and information relevant to the situation analysis; 4. Present as an article a text that analyzes the problem situation and discusses the possible alternatives for its resolution or innovation, improvement, extrapolation; 5. Complete the text, demonstrating the contribution of the proposal to organizations and/or society.

In Motta's (2017) analysis there are two main reasons for the rejection of technological articles. The first is related to the mistaken perception that this type of production has lower quality, which does not differ in relation to traditional articles, since the difference between scientific and technological articles is in the approach of the research and, in some cases, the audience. The second reason is to fail to meet one of the three approaches: (a) innovation, (b) improvement, or (c) extrapolation. Publication is not justified for manuscripts that report only the simple application, in specific cases, of solutions already known for problems for which they were developed, without innovation, improvement, or extrapolation. For the author, a good technological article questions social and/or organizational situations in order to offer proposals aimed at solving management problems and presenting something new (new ways of dealing with old problems or new configurations of old solutions)

Conclusion

By means of the survey, it was possible to verify eight events where the submissions for technical reports and publications in 21 Qualis A2, B1, B2 and B3 periodicals were highlighted, verifying the increasing technical production, in the form of technical reports and technological articles. These totaled 159 productions in the areas of project management, sustainability, health management, people management, innovation, and technology, during the period studied.

Although publication of articles in high-ranking journals is the goal of master's programs (academic and professional), the increase in technical reports, technical descriptions, and technological articles has been significant. These types of studies have emerged as a tool for publication of research that has practical importance for society. Technical studies may present solutions or interventions to solve real problems observed in organizations and companies, and throughout diverse sectors. Scientific and periodical events should exploit this trend by providing greater visibility in the calls of their divisions and even creating special editions, since it is a growing production in numbers of publications in Qualis journals above stratum B3.

At the same time, the reviewers must meet specifications for the analysis of reports or technological articles differently from scientific articles. Reports and technological articles are academic productions that have their own peculiarities in structuring, yet they follow methodological standards adopted in the elaboration of scientific articles. Their objective is centered on the presentation of solutions or interventions to the problems of professional practice in companies, institutions or organizations.

References

Aken, J.E. van. (2005). Management research as a design science: Articulating the research products of mode 2 knowledge production in management. *British Journal of Management*, *16*(1), 19–36.

Associação Brasileira de Normas Técnicas. NBR 10719 (1989). Apresentação de relatórios técnico-científicos. Rio de Janeiro, pp. 1-9.

Associação Brasileira de Normas Técnicas. NBR 6022 (2003). Informação e documentação: artigo em publicação periódica científica impressa: apresentação. Rio de Janeiro, pp. 2-3.

Associação Nacional de Pós-Graduação e Pesquisa em Administração (2014). Normas para Relato Tecnológico. Recuperado de http://www.anpad.org.br/m/content.php?e=aWRfZXZlbnRvPTQmaWRfdGV4dG89NTE=.

Associação Nacional de Pós-Graduação e Pesquisa em Administração (2016). TAC - Tecnologias de Administração e Contabilidade. Publicação Descontinuada. Recuperado de http://www.anpad.org.br/~anpad/periodicos.php.

Barata, R.C.B. (2016). Dez coisas que você deveria saber sobre o Qualis. *Revista Brasileira de Pós-Graduação- RBPG, 13* (1), 1-18.

Biancolino, C.A., Kniess, C.T., Maccari, E.A., & Rabechini, R. Jr. (2012). Protocolo para elaboração de relatos de produção técnica. *Revista de Gestão e Projetos - GeP*, *3* (2), 294-307.

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (2014a). Capes recomenda 574 opções de cursos de mestrado profissional. Recuperado de http://www.brasil.gov.br/educacao/2014/05/capes-recomenda-574-opcoes-de-cursos-de-mestrado-profissional.

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (2014b). Mestrado Profissional: o que é? Recuperado de http://capes.gov.br/avaliacao/sobre-a-avaliacao/mestrado-profissional-o-que-e.

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (2014c). Qualis. Recuperado de http://www.capes.gov.br/component/content/article?id=2550:capes-aprova-a-nova-classificacao-do-qualis.

Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (2017). CAPES divulga resultado final da Avaliação Quadrienal 2017. Recuperado de http://capes.gov.br/sala-de-imprensa/noticias/8691-capes-divulga-resultado-final-da-avaliacao-quadrienal-2017.

Documentos e Debates (1997). Mestrado Profissional. *Revista de Administração Contemporânea*, *1*(2), 145-152.

Duarte, E.N, Ramalho, F.A., Autran, M.M.M, Paiva, E.B., & Araújo, M.B.S. (2009). Estratégias metodológicas adotadas nas pesquisas de iniciação científica premiadas na UFPB: em foco a Série "Iniciados". *Encontros Bibli: Revista Eletrônica de Biblioteconomia e Ciência da Informação, 14* (27), 170-190.

Gil, A.C. (2008). Métodos e técnicas de pesquisa social (6. ed.). São Paulo: Atlas.

Grey Literature International Steering Committee (2005). Guidelines for the production of scientific and technical reports: how to write and distribute grey literature. Retrieved from http://eprints.rclis.org/7469/2/index.html.

Marchioro, G. (2007). Indicadores SciELO e JCR/ISI identificam fluxo de informação científica brasileira. Recuperado de https://www.ufrgs.br/blogdabc/indicadores-scielo-e-jcrisi-identifica/.

Marconi, M. A., & Lakatos, E.M. (2005). *Fundamentos de metodologia científica* (6a. ed.). São Paulo: Atlas, p. 262.

Motta, G.S. (2017). Editorial Seção Artigos Tecnológicos: Como Escrever um Bom Artigo Tecnológico? *Revista de Administração Contemporânea*, *21*(5).

Padilha, P. & Lima, T. (2015). Relação Causa-Efeito de Custos Indiretos Desatualizados: um Estudo de Caso em uma Indústria Alimentícia. *Revista Gestão & Tecnologia*, *15* (2), 235-249.

Pinheiro, R.G., Sousa, F.E.R. & Moreira, I.R. (2018). Relato técnico sobre a contribuição do compliance na mitigação de riscos fiscais em uma empresa do segmento do alumínio situada na região do ABC Paulista. *RICADI, 4*, 107-127.

Plataforma Sucupira (2019). Cursos avaliados e reconhecidos. Recuperado de https://sucupira.capes.gov.br/sucupira/public/consultas/coleta/programa/quantitativos/quantitativoAreaAvaliacao.jsf.

Portaria n. 389, de 23 de março de 2017 (2017). Dispõe sobre o mestrado e doutorado profissional no âmbito da pós-graduação stricto sensu. Recuperado de http://www.capes.gov.br/tutorial-sucupira/documentos/Portaria389-2017_doutoradoprofissional.pdf.

Portaria da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior n. 131 de 28 de junho de 2017 (2017). Dispõe sobre o mestrado e o doutorado profissionais. Recuperado de Recuperado de https://www.capes.gov.br/images/stories/download/legislacao/30062017-portaria-131-2017.pdf

Rojo, C.A, & Walter, S.A. (2014). Relato técnico: roteiro para elaboração. *Revista Competitividade e Sustentabilidade -ComSus, 1* (1), 1-18.

Rosa, R.A (2016). Qualis Periódicos CAPES na Administração, Contábeis e Turismo, o que mudou? SCI & ORG – Ciência e Organizações. Recuperado em https://sciandorg.wordpress.com/2016/01/30/qualis-capes-na-administracao-contabeis-e-turismo-o-que-mudou/.

Silva, A.O. (2018). Periódicos técnicos. Recuperado de http://scholarlyopen-access.hospedagemdesites.ws/scholarly_open/lista-dos-periodicos-para-publicar-relato-tecnicoartigo-tecnologico/.

Scientific Periodicals Electronic Library (2019). Objetivos do *Spell*. Recuperado de http://www.spell.org.br/sobre/objetivos

Thomsett-Scott, B. (2018). Technical Reports. A guide to technical reports: what they are, where they come from, how to find them. Penn State University Libraries. Retrieved from https://guides.libraries.psu.edu/c.php?g=407286&p=2773498