

Costs in Public Sector: An Analysis of Brazilian Accounting Standards From Perspective of Accounting Theory

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Abstract: To identify the main characteristics of Brazilian cost norms in the public sector from the perspective of Accounting Theory. Therefore, the Brazilian Technical Accounting Standard that deals with the Public Sector Cost Information System (NBC T 16.11) and the Brazilian Technical Accounting Standard applied to the Public Sector that deals with Public Sector Costs (NBC T SP 34) were analyzed. Iramuteq software was used. The Descending Hierarchical Classification proposed by Reinert (1990) was also used. The results revealed that in NBC T SP 34, five characteristics did not remain in relation to NBC T 16.11 and thirteen new characteristics were inserted. It was also observed that the norms keep similarities in terms of formal aspects of Accounting Theory, such as the adoption of the accrual basis. However, the new standard (NBC T SP 34) presents a significant change of focus by emphasizing innovative features aimed at the management approach and public governance.

Key words: public sector, costs, Brazilian accounting standards, content analysis, accounting theory

JEL code: D, D2, D24

1. Introduction

Administrative reform in Brazil is a theme that accumulates controversial discussions, going through political cycles, in search of transformations and improvement in the quality of public service. In 2020, the Federal Government presented a proposal for an amendment to the Constitution (PEC 32/2020) that seeks to increase the efficiency of the State services provided to society and to reduce the growth of public spending, i.e., from this perspective it seeks to offer quality services at a lower cost.

As a corollary to this process, there is an urgent need for a public management supported by cost accounting, to enable decision-making based on parameters and mechanisms of management control, with proper planning and measurement of results to be achieved, with performance evaluation and indicators that can transparently show the operational mode of Brazilian public administration.

In this scenario, the great challenge is to determine costs in the public sector. According to Mauss & Souza (2008, p. 5) the government and society do not know how much public services cost. Thus, as the cost of a service is not known, it is also unknown whether the public administration is being efficient.

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Several researches in cost accounting seek to investigate the costing models adopted by organizations, both in relation to the analysis of the choices made, as to the reasons rationalized by managers (Beuren & Raupp, 2003; Souza, Lisboa & Rocha, 2003; Coronetti, Beuren & Souza, 2012; Collato, Nascimento & Lacerda, 2016).

Besides this line of research there are studies focused on the analysis of the development of costing models applied to sectors of the economy (Bonacim & Araújo, 2010; Sinisgalli, Urbina & Alves, 2009; Kremer & Richartz, 2011; Hildebrand, 1995; Aranha, Dias & Itavo, 2016; Scarpin, 2011).

Even in the face of this context, it is worth pointing out that the legal requirement in Brazil has already proven to be insufficient for the process of implementing and calculating costs in public administration, since there was already prior signaling since 1964 through Law no. 4,320, followed by Decree-Law no. 200 in 1977, the 1988 Federal Constitution, and Complementary Law no. 101 of 2000, known as the Fiscal Responsibility Law.

Furthermore, Brazil also has a normative structure approved by the Federal Accounting Council (FAC). In 2011, CFC Resolution no. 1366 approved the Brazilian Technical Accounting Standard (NBC T 16,11), which was altered in 2013 by CFC Resolution no. 1437, deals with the Public Sector Cost Information System, establishing the conceptualization, the object, the objectives and the basic rules for measuring and disclosing costs in the public sector and presenting the Public Sector Cost Information Subsystem (PSCIS). According to Carneiro et al. (2012) one of NBC T SP 16.11's weaknesses was not to establish a deadline for the implementation and development of the public sector's cost system.

In November 2021 the FAC approved the Brazilian Norm of Technical Accounting applied to the Public Sector (BNTA PS 34), with the objective of establishing guidelines and standards to be observed in the implementation of the cost system, to address criteria for the generation of cost information, as an instrument of public governance, and to point to the important role of the manager in the effective adoption of cost management models. However, its effectiveness was scheduled to begin on January 1, 2024, when FAC Resolution no. 1,366 and CFC Resolution no. 1,437/2013 will be repealed, respectively.

This normative scenario exposes a need that the Brazilian public sector has to overcome the challenge of preparing the organizational environment for the creation and implementation of cost calculation and management. However, in order to achieve the effective practice of cost information generation, there is an arduous path to be followed in the public machine.

When considering this conjuncture, one also notes that one must emphasize a structuring pillar in this process, which is grounded on Accounting Theory, for providing a conceptual lens on the mission of generating useful information for decision making, based on the criteria of recognition, measurement and disclosure.

Thus, given the recent approval of the new standard, BNT A PS 34, the following question arises: **What are the main similarities and differences of the Brazilian cost standards applied to the public sector?** The general objective is to identify the main characteristics of the Brazilian cost standards in the public sector from the perspective of Accounting Theory. And, seeking to fulfill the proposed objective, the following specific objectives were established: (i) to compare the content of the Brazilian accounting standards that deal with costs in the public sector; (ii) to analyze the similarities and differences between them; and, (iii) to identify the main characteristics from the Accounting Theory perspective.

To address the research question, BNT A 16.11 and BNT A PS 34 were analyzed. As a content analysis tool, the Iramuteq software was used, developed under the logic of open source, licensed by GNU GPL (v2), anchored in the statistical environment of the R software and in the python language (Camargo & Justo, 2013). Besides the basic use of word frequency, also, the Descending Hierarchical Classification (CHD) proposed by Reinert (1990)

was used. Subsequently, dendrograms, similarity graphs and word clouds were generated to support the analysis of this research.

Given the challenge of implementing and calculating costs in the Brazilian public sector, this study is justified by the need to promote a discussion based on the Brazilian normative structure that deals with the theme. In turn, the relevance of this research consists in the contributions based on scientific criticality to reach strong points and identify weaknesses.

Thus, it is expected to contribute to the academy with a theoretical scientific lens on cost normalization in the public sector for Brazil. And, furthermore, by allowing one to observe and identify perspectives of points that deserve a more specific look, whether for the market, for the government, or for society.

Besides this introduction, this article is composed in section 2 by the theoretical framework. The methodology used in the research is presented in section 3, followed by the presentation and discussion of results in section 4. And, the final considerations are presented in section 5, followed by the references used.

2. Theoretical Reference

2.1 Cost Accounting from an Accounting Theory perspective Management in Emerging Markets

In 2000, the International Federation of Accountants (IFAC) issued a statement dealing with the prospects of cost accounting for the government, in which it is possible to verify an international overview of the theme, by presenting cases of several countries that already have a more advanced cost process, such as Australia, which adopts cost accounting as the basis for the use of a budget by results, where fixed and variable costs are separated to determine the budget and provide control through comparison between the planned and the executed.

In Canada the cost system has peculiarities that also accredit it to offer relevant contributions in information. In New Zealand, cost accounting has well-defined characteristics and a strategic function for the decision-making of managers. In Taiwan, it provides information for government budget planning in the medium and long term. In Malaysia it is an essential part of the management concept that the government uses all the time: “value for money” (IFAC, 2000).

Cost accounting is important in efficient and effective government management. But the difficulties of measuring and applying it must be recognized. It will become more widespread as more success stories are reported and governments adopt accrual accounting. In addition, its successful implementation requires the participation of senior management, to define goals and strategies or answer questions about how it will be used, what information will be provided and included in reports, and what changes in systems are most appropriate (IFAC, 2000).

In Brazil, according to Mauss & Souza (2008) public management needs cost accounting to offer parameters and mechanisms that underlie the planning and measurement of the result of public activities. The authors state that there is no cost management culture in the Brazilian public service and that public managers do not use cost information as a basis for their daily decisions.

According to Leone (2009), the purpose of cost accounting is to prepare information that can help management in the functions of planning, decision making, control, costs, performance, among others.

Studies such as those by Rosa, Silva & Soares (2015) and Lovato, Oliveira, Guimarães & Catapan (2016) point out as one of the great gaps in this area, the deepening on the difficulties and barriers for the costs implementation in the public sector, due in particular to its low implementation in the empirical evidences.

In this context, it is necessary to rescue that cost accounting is rooted in the Accounting Theory, where there is

the conceptual domain of the criteria for recognition, measurement and disclosure of assets and liabilities, revenues and expenses, losses and gains, crucial elements to provide a value closer to the reality of the equity of an entity, whether public or private.

Because it is a social science, Accounting is strongly influenced by the environment in which it operates, and its theory is not a philosophical subject, far from reality; on the contrary, it is focused on terminologies and currents of thought, it is flexible to accept different forms of evaluation, and it is the main language of business communication (Niyama & Silva, 2013). Moreover, accounting theory presents a robust framework to support accounting practices, as well as being a backbone of accounting standards.

Kupfer & Hasenclerger (2013) draw attention to the notions of costs considered by Accounting professionals and researchers, which are focused on the measurement of economic facts and their disclosure in the financial statements, unlike economists where the focus is directed to the criteria of cost reduction and profitability improvement.

Given the above, one must emphasize that it is not the purpose of this study to exhaust the theme, but to offer a perspective of observing cost norms in the Brazilian public sector, through the lens of Accounting Theory, in order to perceive in them the essence of recognition, measurement and disclosure criteria, as a basic structure for the achievement of their practical implementations and applicability.

Thus, a scenario is envisioned to discuss an approach aimed at verifying in the analysis of the BNT A 16.11 and BNT A PS 34 standards what they presented as similarities and differences.

2.2 Brazilian Costs Norms in the Public Sector

Since 2007, Accounting Applied to the Public Sector (CASP) in Brazil has been undergoing several changes, which were initiated in search of promoting and achieving recognition, measurement and disclosure criteria of public assets, in line with the international standards issued by the International Federation of Accountants (IFAC).

This process occurred gradually through a set of actions articulated between the National Treasury Secretariat (NTS) and the Federal Accounting Council (FAC), which culminated in the approval of the Brazilian Technical Accounting Standards applied to the Public Sector (BTAS PS).

In this context, in 2011 the FAC Resolution no. 1,366 approved the Brazilian Technical Accounting Standard (BNT A 16.11), which was amended in 2013 by CFC Resolution no. 1,437, to address the Public Sector Cost Information System, establishing the conceptualization, object, objectives and basic rules for measuring and evidencing costs in the public sector and presented the Public Sector Cost Information Subsystem (PSCIS).

Even with NBC T 16.11 in effect, the FAC approved, in November 2021, BNT A PS 34 (Costs in the Public Sector), with the purpose of establishing guidelines and standards to be observed in the implementation of the cost system, to deal with criteria to generate cost information, as a public governance instrument, and to point out the important role of the manager in the effective adoption of cost management models. However, its validity was programmed for January 1st 2024, when the FAC Resolution no. 1,366 and the FAC Resolution no. 1,437/2013, respectively, will be revoked.

It is worth noting, that before these standards, the use of cost information in the Brazilian public sector was already suggested in the main legal instruments of Public Finance in the country, such as Law No. 4,320 since 1964, Decree-Law No. 200 of 1967, the Federal Constitution of 1988, the Complementary Law No. 101 of 2000. However, until today they remain unfulfilled by most public organizations, signaling little concern to implement what the legislators intended.

All these efforts seek to lay the foundations of a public management model structured on the usefulness of cost information, having it as the main basis for decision making, from planning to the control of public spending, optimizing resources and avoiding waste.

This normative scenario exposes a need that the public sector in Brazil has to overcome the challenge of preparing the organizational environment for the creation and implementation of cost calculation and management. However, to achieve the effective practice of generating cost information, there is an arduous path to be traveled in the public machine.

Studies such as Ball (2012) and Rossi, Cohen, Caperchione & Brusca (2016) refer to a number of factors that can be considered as difficulties for the implementation of new accounting standards, including, but not related to cost accounting, such as: a) investments in information technology and communications; b) training of public servants; c) costs related to the identification and evaluation of assets in accrual accounting; and, d) costs with consultants.

In this sense, one can infer that only the Brazilian norms of costs in the public sector are sufficient to achieve their practical applicability, and that other variables are part of this context and it is necessary that they be investigated, explored and worked on so that they can resolve part of these existing obstacles in the area.

3. Methods

To carry out the research it is necessary to use methods and techniques adopted among the known scientific procedures (Matias-Pereira, 2016). Thus, this article is a descriptive and documentary research for verifying and describing the discourse on the Brazilian cost standards in the public sector.

To enable the analysis, data were collected from the official website of the FAC, for analysis of the standards, since such positions and manifestations influence and contribute directly in the process of cost determination in the public sector, if adopted by a public entity.

The study carried out the content analysis of the norms, using the Iramuteq software, developed under the logic of open source, licensed by GNU GPL (v2), anchored in the statistical environment of the R software and in the python language (Camargo & Justo, 2013). It should be noted that “the use of the software is not a method of data analysis, but a tool to process it” (Kami et al., 2016, p. 2).

In addition to the basic use of word frequency, the present research also made use of the Hierarchical Descent Classification (HDC) proposed by Reinert (1990), which classifies segments of the vocabularies under analysis, thus the entire text corpus is divided in a reduced form based on their frequency. Next, dendrograms, similarity graphs and word clouds were generated, which allow a better visualization of textual data, using as filters: common nouns, verbs and adjectives.

For the text corpus of the content analysis, the BNT A 16.11 (corpus 1) and the BNT A PS 34 (corpus 2) were considered. In the comparative analysis between them, it was necessary to categorize by the following characteristics: 1) objective; 2) scope; 3) definitions; 4) cost information users; 5) cost information characteristics; 6) cost information attributes; 7) cost information evidencing; 8) cost information generation; 9) cost system contextualization; 10) cost system mandatory; 11) competence regime; 12) overhead distribution quota; 13) productive capacity variation; 14) integration with other organizational systems; 15) implementation of the cost system (subsystem); 16) implementation of the cost management model and the cost information system; 17) responsibility for cost information; 18) economic result statement (DRE); 19) responsibility centers; 20) costing

methods; 21) comparative analysis; 22) cost management model; 23) definition of cost objects; 24) cost classification; 25) cost assignment; 26) disclosure; and 27) cost management in the public sector.

Regarding the reflexive approach between the analyzed speeches, this study allowed to strengthen the understanding of the accounting reflexes in the referred standards, seeking to evidence how the subject performs the discursive practices and how he/she behaves in a scenario of changes that result in future expectations of adoption of the new standard.

It is worth mentioning, as a limitation of this study, the fact that it resides in the circumscribed selection of the Accounting Theory perspective; other lenses arising from different theories can perceive characteristics beyond those achieved.

4. Findings

4.1 The Cost Norms in the Brazilian Public Sector

Table 1 Characteristics of NBC T 16.11 and NBC T SP 34.

Characteristics	BNT A 16,11	BNT A PS 34
1) Objective.	Presents	Presents
2) Range.	Presents	Presents
3) Definitions.	Presents	Presents
4) Cost Information Users.	Does not present	Presents
5) Cost Information characteristics.	Presents	Presents
6) Attribute of cost information.	Presents	Does not present
7) Disclosure of cost information.	Presents	Does not present
8) Generation of cost information.	Does not present	Presents
9) Cost system background.	Does not present	Presents
10) Mandatory Cost System.	Does not present	Presents
11) Competency Regime.	Presents	Presents
12) Overhead Distribution Quota.	Presents	Does not present
13) Variation in production capacity.	Presents	Does not present
14) Integration with other organizational system.	Presents	Presents
15) Deployment of the cost system (subsystem).	Presents	Presents
16) Implementation of the cost management model and the cost system information.	Does not present	Presents
17) Responsibility for cost information.	Presents	Presents
18) Economic Outcome Statement (EOS).	Presents	Does not present
19) Responsibility centers.	Does not present	Presents
20) Costing methods.	Presents	Presents
21) Comparative Analysis.	Does not present	Presents
22) Cost management model.	Does not present	Presents
23) Definition of cost objects.	Does not present	Presents
24) Classification of costs.	Does not present	Presents
25) Cost Assignment.	Does not present	Presents
26) Disclosure.	Does not present	Presents
27) Cost management in the public sector.	Does not present	Presents

“When verifying the twenty-seven (27) characteristics that were observed when comparing the Brazilian accounting standards applied to the public sector, it is immediately apparent that the content of the new standard

(BNT A PS 34), which will become effective as of January 1, 2024, presents thirteen (13) characteristics that are not contained in the BNT A 16.11, corresponding to the relevant differences between them: (a) users of cost information; (b) generation of cost information; (c) contextualization of the cost system; (d) mandatory nature of the cost system; (e) implementation of the cost management model and the cost information system; (f) responsibility centers; (g) comparative analysis; (h) cost management model; (i) definition of cost objects; (j) cost classification; (k) cost attribution. ; l) disclosure; and m) cost management in the public sector.

In sequence, only five (05) characteristics contained in BNT A 16.11 no longer remain in BNT A PS 34, corresponding to: a) attributes of cost information; b) evidencing cost information; c) indirect cost distribution quota; d) variation in production capacity; and economic result statement (ERS).”

As far as the characteristics that are contained in both standards are concerned, it is worth mentioning some specific points:

- 1) As for the objective, BNT A 16.11 established basic rules for measuring and evidencing costs in the public sector. The BNT A PS 34 established guidelines and standards to be observed in the implementation of the cost system, innovating when dealing with the generation of cost information, as an instrument of public governance and the important role of the manager in the effective adoption of cost management models.
- 2) As for definitions, both BNT A 16.11 and BNT A PS 34 presented a list of terms with their meanings. However, the new standard innovates by bringing the definitions of the following terms that can be used: Regular basis; Center of responsibility; Public governance; Cost system; Cost information system; Controllable cost; Non-controllable cost; Support costs; Finalistic costs; Cost driver; Cost management model; Cost object; Final cost objects; Intermediate cost objects; Resources; Regime of competence; and, Public value.
- 3) As for the characteristics of cost information the BNT A PS 34 brings an update to those defined in the BNT A PS dealing with the Conceptual Framework.
- 4) As for the integration with other organizational systems the BNT A PS 34 allows, where appropriate, the reconciliation of data if they come from a non-accounting basis and this is not provided for in the BNT A 16.11.
- 5) As for the implementation of the cost system (subsystem), the BNT A 16.11 takes into consideration the intended organizational objectives, the decision-making processes that will use the cost information segmented by its different user groups, as well as the transparency and social control criteria. Whereas the NBC T SP 34 presents another perspective where it must be based on the appropriate detailing of: the definition of the systems or databases to be integrated; the practical feasibility of data compilation and processing; the availability of data processing tools; and the estimate of their installation, training, operation, and maintenance costs.

Thus, it is observed in BNT A 16.11 more restricted characteristics of cost accounting, aimed at measurement and control, limited to specific issues of governmental accounting, considering the dimension of the products and services provided, identified and measured from the transactions related to the assets of the entity, in accordance with the Accounting Principles.

In turn, the BNT A PS 34 has its innovative characteristics focused on the broader management approach, where cost information should contribute to public governance, directing it to improve the quality of public spending, in the context of a model of public management by results.

Thus, when comparing these norms, it is observed that they have similarities in terms of formal aspects of accounting theory, such as the adoption of the accrual basis. But the new standard presents a significant change in focus by emphasizing cost information as an instrument of public governance, in the generation of public value.

4.2 The Iramuteq Lexicometric Techniques

With the use of Iramuteq it was possible to gather a set of distinct possibilities for the treatment of qualitative data based on lexicometry. The different lexicometric techniques begin with an automatic segmentation process, a stage in which the occurrences that make up each of the texts being analyzed are recognized (BNT A 16.11 and BNT A PS 34).

This process is responsible for building the vocabulary of a corpus, that is, according to Salem (1986) it is the set of distinct forms that are used throughout the material. In Iramuteq it is possible to lemmatize the occurrences of the corpus in order to reduce the variability of the vocabulary, allowing greater homogeneity to the text that is being submitted to the different lexicometric treatment techniques.

In turn, the lemmatization step allows regrouping verbs in the infinitive, nouns in the singular, and adjectives in the masculine singular (Salem, 1986). In this way, it is possible to know how many times each lemmatized word was used in the texts.

In qualitative research, the use of this type of software allows us to explore formal aspects of a text or set of texts, facilitating the identification of discursive styles, as well as the evaluation of the evolution of a work over time, for example.

For content analysis of the texts from BNT A 16.11 and BNT A PS 34, the following were extracted from Iramuteq, in the sequence presented below: 1) the Descending Hierarchical Classification; 2) the similarity analysis; and, 3) the word cloud.

4.3 Descending Hierarchical Classification

The Descending Hierarchical Classification (DHC) or Reinert's method, which presents the relationship between text segment classes, can be described as a cluster analysis (clusters) in which the text segments of a corpus are successively partitioned as a function of the co-occurrence of lexical forms, aiming to classify a sample of entities (e.g., individuals, objects, texts) into a smaller number of mutually excluding groups. These groups are defined after data treatment and consider similarities found between the entities analyzed (Hair, Black, Babin, Anderson & Tatham, 2009).

In the context of DHC, cluster analysis is used to identify classes of text segments that present similar vocabularies to each other, and at the same time, different from the vocabularies of the text segments of the other classes.

From the results of the Reinert method, the dendrogram is a fairly common representation, which brings together the most characteristic (specific) linguistic forms of each class, by demonstrating the connection between the words that are associated with each other, allowing to interpret the formations of each class, as well as leads to comprehend the approximations and distances between the created classes.

Thus, classes are obtained by lexical similarity, in which the most similar text segments are grouped into the same class, and the classification is demonstrated by the dendrogram, where each class is presented in a specific color, with its most frequent words represented hierarchically from largest to smallest size, according to the frequency obtained (Camargo & Justo, 2013).

Thus, the results can be seen in Figures 1 and 2 below.

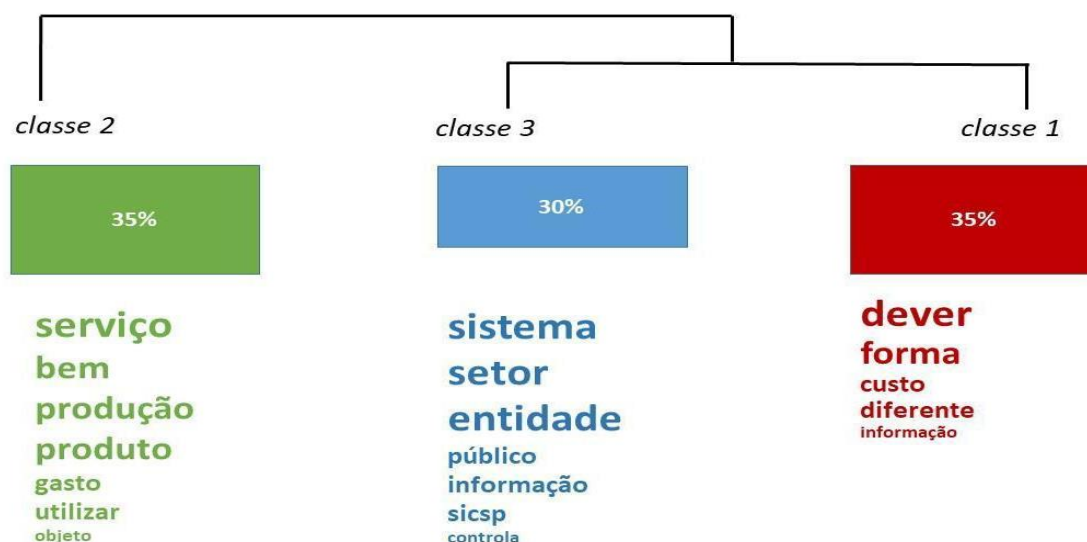


Figure 1 NBC T 16.11 Dendrogram

In Figure 1 it says Class 2: 35% service, good, production, product, expense, utilize, object. Class 3: 30% system, sector, entity, public, information, sicsp, control. Class 1: 35% duty, form, expense, different, information.

Figure 1 shows the dendrogram of corpus 1, verifying that the text has three (3) classes, that is, corresponding to three different vocabularies, with classes 1 and 2 each representing 35% of corpus 1 and class 3 representing 30% of the total text.

In turn, Figure 2 presents the dendrogram of corpus 2, verifying that the text has four (4) classes.

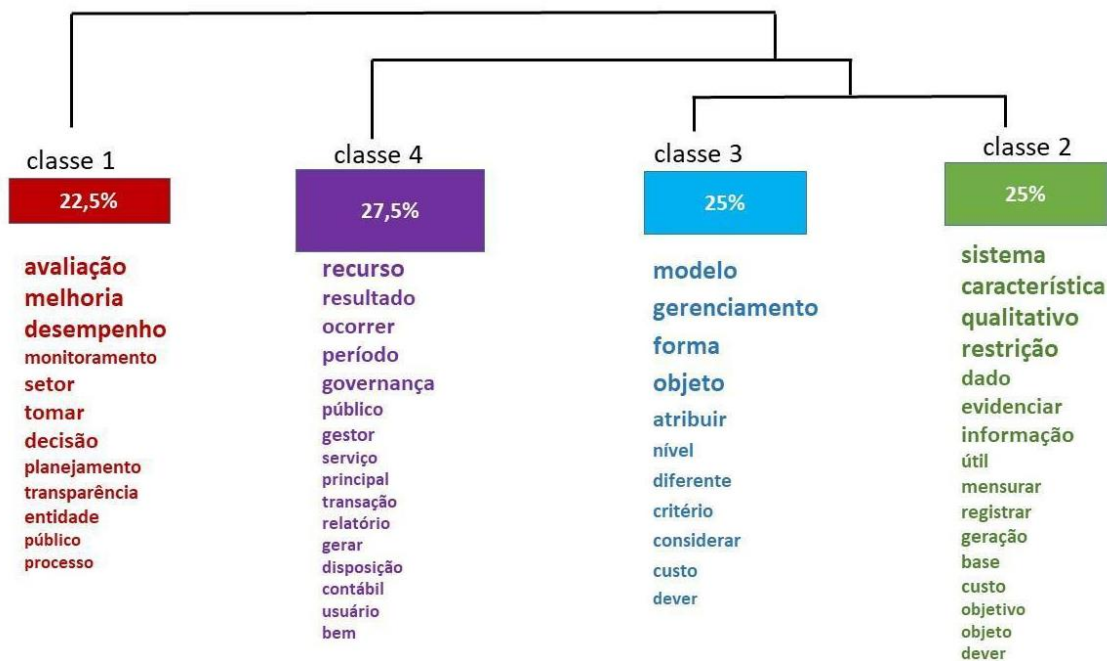


Figure 2 NBC T SP Dendrogram 34.

In Figure 2 it says Class 1: 22.5% evaluation, improvement, performance, monitoring, sector, taking, decision, planning, transparency, entity, public and process. Class 4: 27.5% resources, result, occur, period, governance,

public, manager, service, main, transaction, report, generate, disposition, accounting, user, good. Class 3: 25% model, management, form, object, attribute, level, different, criteria, consider, cost and duty. Class 2: 25% system, characteristic, qualitative, restriction, data, highlight, information, useful, measure, registrate, generate, base, cost, objective, object and duty.

Figure 2 shows in the dendrogram of corpus 2 four (4) classes, that is, corresponding to four different vocabularies, with class 1 representing 22.5% of corpus 2, classes 2 and 3 each representing 25% and class 4 representing 27.5% of the total text.

In these figures, it is possible to visualize, more objectively and punctually as NBC T 116.11 and NBC T SP 34 reflect different perspectives. However, it is necessary to emphasize that they find similarities in the measurement and disclosure of costs, as well as in the qualitative characteristics of the information, criteria that are based on the Accounting Theory.

Thus, in order to provide information to users, accounting contributes to the control and interpretation of the facts that occur in the assets of the entities, observing the measurement, recognition and disclosure of the equity and financial information of the entities (Rodrigues & Sallaberry, 2013). Therefore, the manager must be attentive to the *modus operandi* that they must perform, within the public sector, to apply and meet what is proposed by the cost standard, with regard to the accounting criteria for measurement, recognition and disclosure.

In addition, when applying the aforementioned standards, aspects focused on the qualitative characteristics of accounting information, relevance, reliable representation, understandability, timeliness, comparability and verifiability (MCASP, 2021), should also be considered.

With the aid of Iramuteq, Similitude Analysis was performed, which uses the co-occurrence of lexical forms in texts or text segments to build graphical representations of the content structure of a corpus. According to Marchand & Ratinaud (2012) the results are presented in the form of graphs, where the words constitute the vertices and the edges represent the relationship between them. This is particularly useful in identifying the connection between the linguistic forms of a set of texts, which refers to the way the content is structured.

For Salviati (2017) the analysis of similitude, or similarities, has its bases in the theory of graphs, part of mathematics that deals with the relations that occur between objects in a set and it makes it possible to identify the occurrences between words.

In view of the above, with the analysis of similitude, we seek to understand the structure of construction of the texts of NBC T 16.11 and NBC T SP 34, showing the words near and far from each other, through statistical indicators, forming the links between the words in a corpus.

As a result, Iramuteq presents a word tree with its ramifications, based on the relationships between them in the texts.

Thus, the results can be seen in Figures 3 and 4 below.

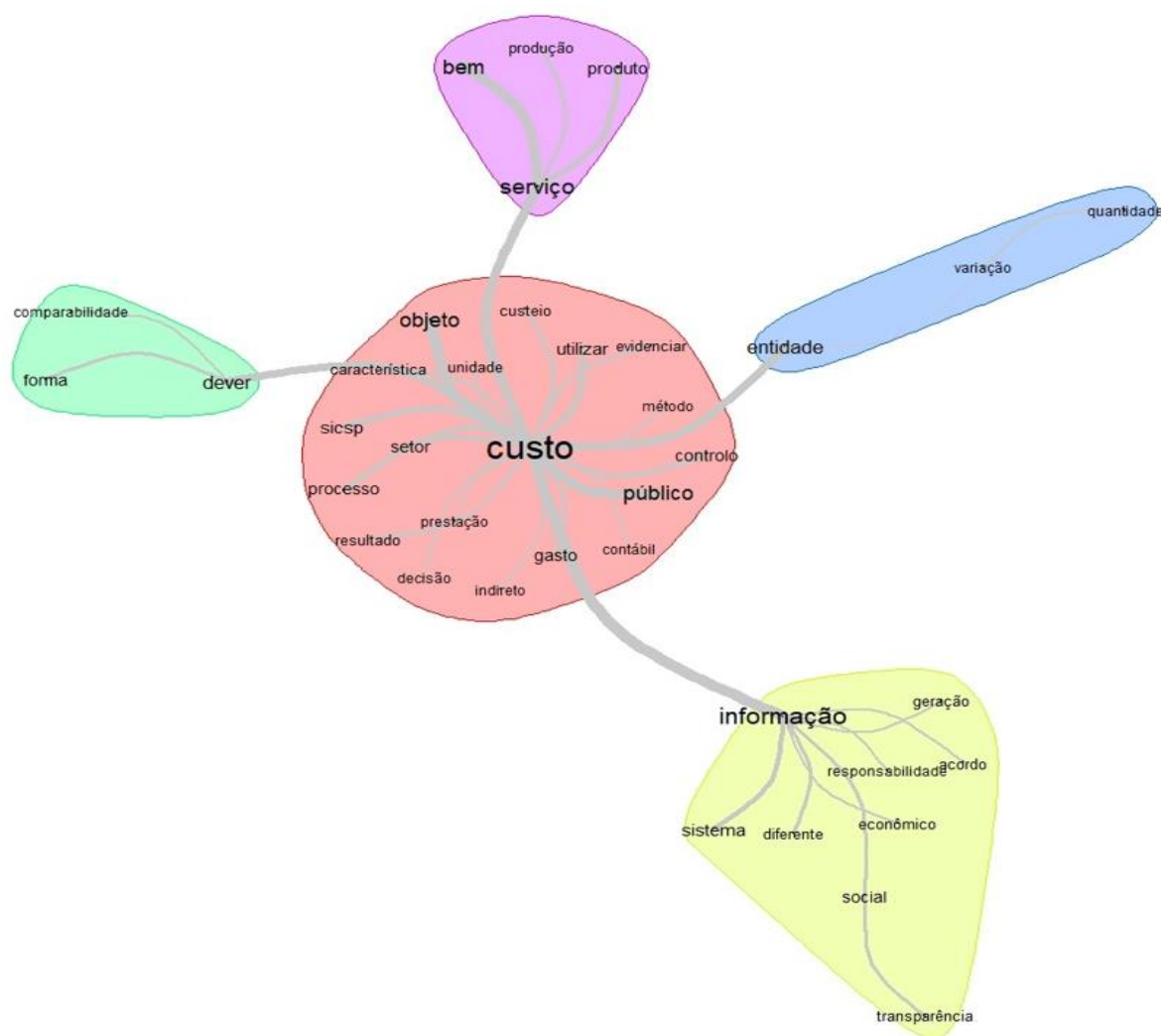


Figure 3 Similitude of NBC T 16.11

In Figure 3, it says: production, good, product, service, comparability, form, duty, quantity, variation, entity, object, costing, characteristic, unity, utilize, evidenciate, sicsp, sector, cost, method, process, public, control, provision, result, accounting, waste, decision, indirect, information, generation, responsibility, agreement, system, different, economic, social and transparency.

Figure 3 shows the main co-occurrences between the words and the connection between the terms present in the text of corpus 1, the word cost connects with all subgroups.

Thus, morphologically, the graph's backbone consists of "cost", "information", "good or service", "entity", and "duty". According to the co-occurrence tree, the results indicated that among the pairs of associations the relationships are stronger between the words: cost – information, cost – good or service.

The similitude analysis in Figure 3 generated four (4) groups, the most expressive of which revealed a strong relationship between the terms "information" and "good or service". The main lexical community was generated by the term "information" which contains the terms: "system", "responsibility", "economic", "social", "transparency", "agreement", "generation" and "different". The term "good or service" produces a community that aggregates

“production” and “product”.

Next, Figure 4 shows the co-occurrence tree of corpus 2.

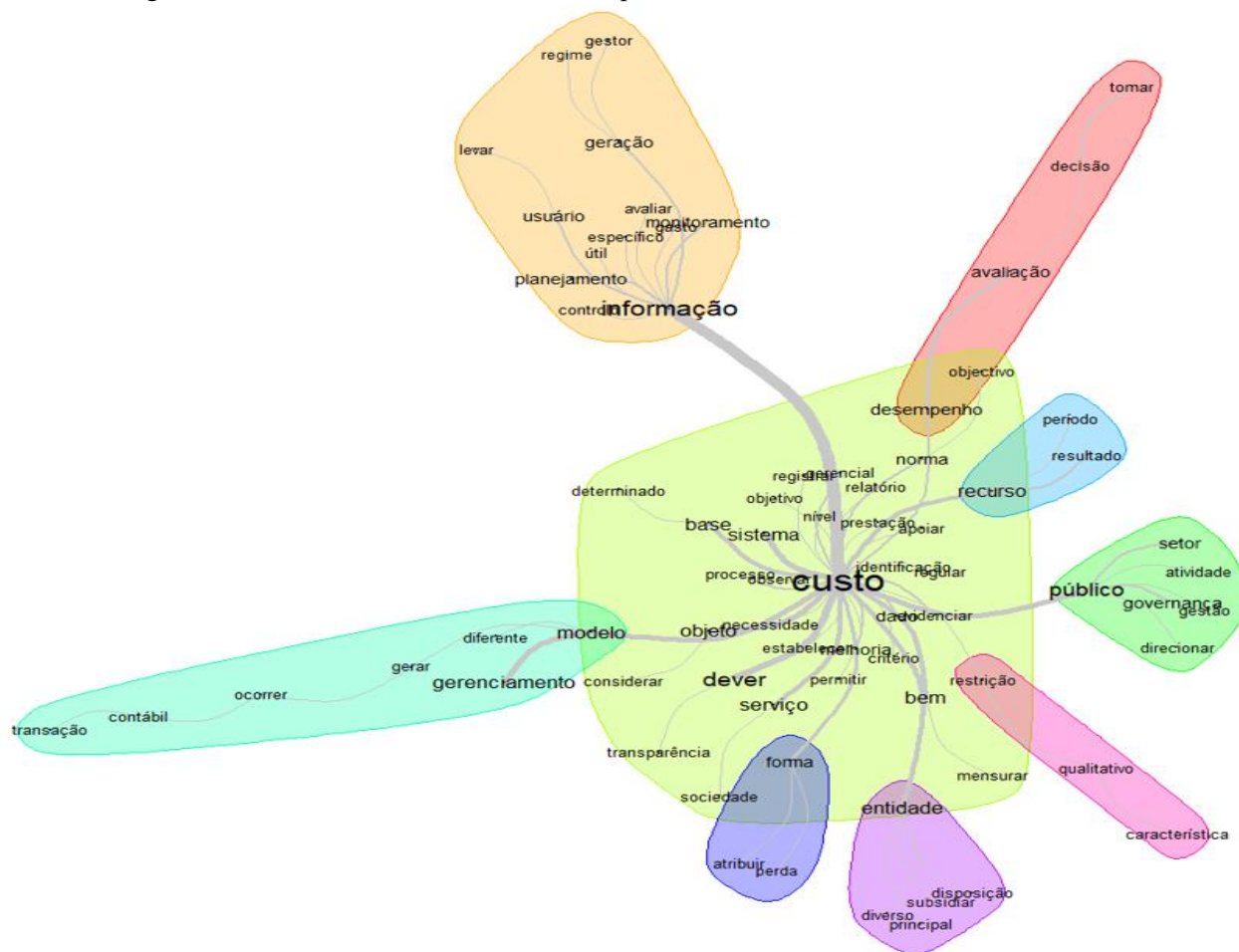


Figure 4 Similarity of NBC T SP 34

In Figure 4, it says: manager, scheme, management, take, user, evaluate, monitoring, specific, useful, planing, expense, information, control, decision, evaluation, objective, performance, transaction, accounting, occur, generate, different, management, model, form, assign, loss, entity, disposition, subsidize, diverse, main, restriction, quantitative, characteristic, determinated, standart, register, managerial, report, objective, level, base, system, provision, support, process, observe, identification, data, highlight, necessity, objective, stablish, improvement, criteria, duty, consider, good, service, allow, transparency, society and measure.

Figure 4 shows the main co-occurrences between the words and the connection between the terms present in the text of corpus 2, the word cost connects with all subgroups. The same occurred with the text of corpus 1, that is, both in NBC tsp 16.11 and in NBC T SP 34, the central term is “cost”.

In turn, morphologically, the backbone of the graph consists of “cost”, “information”, “model”, “management”, “performance”, “public”. According to the co-occurrence tree, the results indicated that among the pairs of association the relationships are stronger between the words: cost – information, cost – performance, cost – model, cost – management, cost – public.

The similarity analysis in Figure 4 generated eight (8) groups, the most expressive of which revealed a strong relationship between the terms “information”, “model” and “management”. The main lexical community was generated by the term “information” that contains the terms: “planning”, “monitoring”, “user”, “regime”, “manager”, “agreement”, “expenditure”, “useful” and “control”.

4.4 Word Cloud

The third processing performed in Iramuteq was the Word Cloud, which is the grouping and graphic organization of words according to the frequency that appears in the texts of each of the analyzed norms. Although the Word Cloud is a feature that adds little to the interpretation of the data, it combined with the results of the frequency table, better informs about the characteristics of the content.

And, according to Calassa, Penso, & Freitas (2015) it becomes useful in presenting the results obtained in a previous lexicometric treatment. This is the case with this research.

Thus, this method is seen as a simple lexical analysis. In this study, two hundred and sixty-seven (267) active forms were used in the processing of NBC T 16.11 (corpus 1), while in NBC T SP 34 (corpus 2) there were three hundred and seventy-one (371) active forms, most often in the corpus.

Thus, it is considered that words with larger fonts become the most relevant because they have been used more often. The results can be seen in Figure 5.

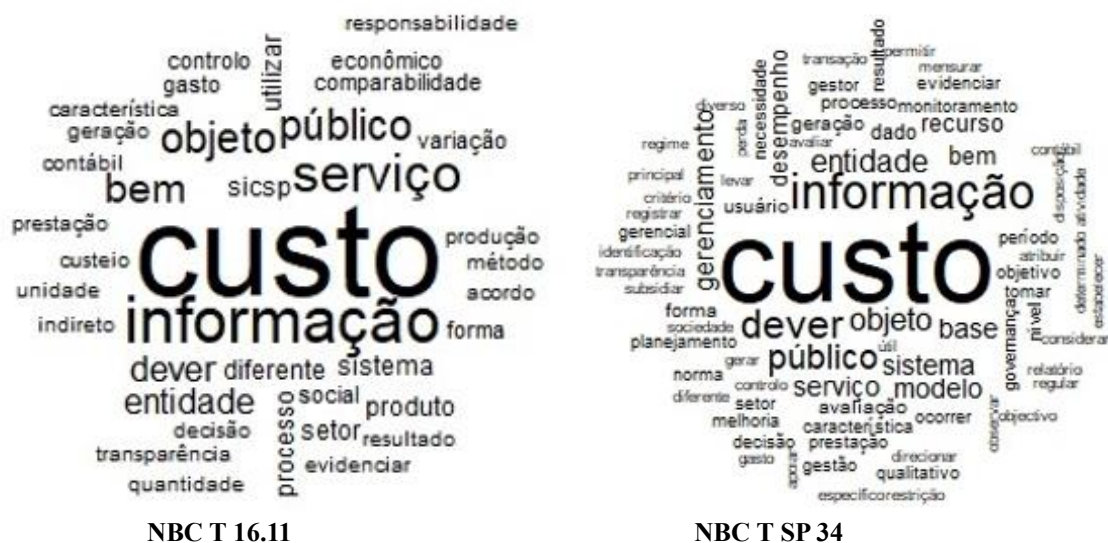


Figure 5 Word cloud (corpus 1 - NBC T 16.11 and corpus 2 - NBC T SP 34).

In Figure 5, on the left, it says: cost, information, duty, different, system, entity, process, social, product, decision, transparency, quantity, evidential, result, sector, control, utilize, economic, comparability, public, object, good, service, production, method, accord, form, unity, indirect, accounting, generation, characteristic, waste, provision, variation and costing. On the right, it says: transaction, manager, measure, evidential, diverse, scheme, generation, process, monitoring, data, resource, evaluate, entity, good, accounting, take, user, information, cost, main, criteria, register, social, identification, transparency, subsidize, form, society, planning, standard, generate, contract, different, sector, improvement, decision, management, waste, duty, object, base, useful, public, system, service, model, evaluation, characteristic, provision, direct, qualitative, specify, restriction, period, attribute, take, disposition, given, activity, consider, report, regular, objective, management, associate, necessity, performance.

result, observe, governance, result, allow, level and assign.

The comparison of word clouds, presented in Figure 5, reveals that “cost” is the word with the highest incidence, indicated by the largest size and centralized position, revealing that its frequency establishes strength relationships in the classification.

When looking at the clouds as a whole, it can be seen that the greatest concern revolves around the word “information”, which is the biggest point of similarity in the vocabulary between the norms.

Thus, starting from this point for a more accurate analysis, this signaling of similarity with the word “information”, ends up revealing what can be considered as the main difference between them, or in general the most relevant modification promoted by the new standard (NBC T SP 34), when compared to the standard still in force (NBC T 16.11).

This perception starts from the focus that NBC T 16.11 gives to the word “information”, when it highlights “cost information for management purposes”, establishing characteristics and attributes listed below: (a) relevance; (b) utility; (c) opportunity; (d) social value; (e) reliability; (f) specificity; (g) comparability; (h) adaptability; and (i) granularity.

It should be noted that these attributes are directly related to the Theory of Accounting, as they are qualitative characteristics of information. Thus, the manager must be attentive to the operationalization of this cost standard, within the public sector, with regard to the accounting criteria of measurement, recognition and disclosure.

In addition, when applying the aforementioned standards, aspects focused on the qualitative characteristics of accounting information, relevance, reliable representation, understandability, timeliness, comparability and verifiability (MCASP, 2021), should also be considered.

In turn, NBC T SP 34 brought the word “information” under another approach, aimed at the perspective of being an instrument of public governance, of using cost information as a “tool to assist the planning, decision-making, monitoring, performance evaluation, transparency, accountability and accountability processes”.

In this sense, it evolves into a concern with accountability, which is also anchored and has a direct relationship with the Theory of Accounting. For Bovens, Goodin & Schillemans (2014) the term accountability in the public sector can be seen under the focus of accessible information, issues of public interest, and also report to accounting perspectives and standards, implying the ability to account for matters in the public domain.

Finally, it is important to use in content analysis a set of distinct possibilities for the treatment of qualitative data based on lexicometry using Iramuteq. For, a pure and simple indication of classes, themes or categories exercised by the software is not enough for a consistent analysis, as well as the use of said system does not exempt the researcher from positioning himself before the corpus. Thus, associating these results with qualitative analysis contributes to stimulate collaborative work among the subjects involved and instrumentalizes the necessary robustness to generate support for the researchers' view of the object under analysis. Thus, for research such as this, content analysis complements and deepens the discussion on the theme to be addressed.

In view of the above, it is possible to affirm that the content analysis with the use of a software for the observation of textual corpus, allows to add to the literature review a statistically validated examination. And, the use of lexicometry, according to Leblanc (2015) allows to identify regularities, trends and discursive styles, and can be oriented both to the formal dimensions of the material, as to the semantic contents that can be identified in the analyzed communicative events.

5. Conclusion

The present study aimed to identify the main characteristics of Brazilian cost standards in the public sector. To this end, their content was compared, the main characteristics were identified and the similarities and differences were analyzed. Thus, it was possible to achieve the answer to the research problem.

In summary, based on the evidence found based on the comparison between the texts of NBC T 16.11 and NBC T SP 34, it was identified that in NBC T SP 34, thirteen (13) characteristics were inserted that were not contained in NBC T 16.11, namely: a) users of cost information; b) generation of cost information; c) contextualization of the cost system; d) obligation of the cost system; e) implementation of the cost management model and the cost information system; f) responsibility centers; g) comparative analysis; h) cost management model; i) definition of cost objects; j) cost classification; k) allocation of costs; l) disclosure; and m) cost management in the public sector.

On the other hand, only five (05) characteristics contained in NBC T 16.11 did not remain in NBC T SP 34, they are: a) attributes of cost information; b) disclosure of cost information; c) indirect cost distribution quota; d) variation in production capacity; and income statement (IS).

With regard to the similarities between the characteristics contained in both standards, the following points stand out: objective, definitions, characteristics of the information of costs, integration with other organizational systems and implementation of the cost system (subsystem).

Thus, it was observed in NBC T 16.11 characteristics more restricted to cost accounting, focused on measurement and control, limited to specific issues of government accounting. In NBC T SP 34, innovative characteristics focused on the broader managerial approach were identified.

Thus, when comparing these standards, it is observed that they have similarities regarding formal aspects of Accounting Theory, such as the adoption of the accrual basis. However, the new standard presents a significant change of focus by emphasizing cost information as an instrument of public governance, in the generation of public value.

In general, it can be observed that the analyzes obtained by the different lexicometric techniques, in which the occurrences that make up each of the texts are recognized (NBC T SP 16.11 and NBC T SP 34), were essential to identify the thematic blocks, organizing the perceptions in relation to what was proposed by each of the standards.

In this sense, presenting the most cited words within their place, in each standard analyzed, allowed a greater appropriation of the text, in addition to seeing some relevant contributions and modifications.

For future research, studies focused on possible costing methods are suggested, in order to highlight their advantages and disadvantages for the context of the Brazilian public sector.

References

- Aranha J. A. M., Dias A. M., and Ítavo L. C. V. (2016). "Proposta de Critério de Alocação de Custos Indiretos na Pecuária Bovina de Ciclo Completo", *Revista de Economia e Sociologia Rural*, Vol. 54, No. 4, pp. 653-666.
- Bovens M., Goodin R. E. and Schillemans T. (2014). *The Oxford Handbook of Public Accountability* — Google Play (First), New York: Oxford University.
- Brasil. Lei nº 4.320, de 17 de março de 1964. Estatui Normas Gerais de Direito Financeiro para elaboração e controle dos orçamentos e balanços da União, dos Estados, dos Municípios e do Distrito Federal. Recuperado de: http://www.planalto.gov.br/ccivil_03/leis/14320compilado.htm.
- Brasil. Decreto-Lei nº 200/67. Dispõe sobre a organização da Administração Federal, estabelece diretrizes para a Reforma Administrativa e dá outras providências. Recuperado de: http://www.planalto.gov.br/ccivil_03/Decreto-Lei/Del0200.htm.

- Brasil. Constituição da República Federativa de 1988. Diário Oficial da República Federativa do Brasil. Brasília, nº 191-A, de 05 de outubro de 1988. Recuperado de: http://www.planalto.gov.br/ccivil_03/constituicao/ConstituicaoCompilado.htm.
- Brasil. Lei Complementar nº 101, de 04 de maio de 2000. Estabelece normas de finanças públicas voltadas para a responsabilidade na gestão fiscal e dá outras providências. Diário Oficial da República Federativa do Brasil, Brasília, 05 de maio de 2000. Recuperado de: http://www.planalto.gov.br/ccivil_03/leis/lcp/lcp101.htm.
- Beuren I. M., Sousa M. A. B. and Raupp F. M. (2003). “Um estudo sobre a utilização de sistemas de custeio em empresas brasileiras”, in: *Congresso Internacional de Custos-Cic*, Punta del Este, Uruguay.
- Bonacim C. A. G. and Araújo A. M. P. D. (2010). “Gestão de custos aplicada a hospitais universitários públicos: a experiência do Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto da USP”, *Revista de Administração Pública*, Vol. 44, No. 4, pp. 903-931.
- Calassa G. D. B., Penso M. A. and Freitas L. G. (2015). “Redução de danos na visão dos profissionais que atuam no CAPS AD II do Distrito Federal”, *Psicologia em Pesquisa*, Vol. 9, No. 2, pp. 177-187.
- Camargo B. V. and Justo A. M. (2013). “Iramuteq: Um Software Gratuito para Análise de Dados Textuais”, *Temas em Psicologia*, Vol. 21, No. 2, pp. 513-518.
- Carneiro A. F., Silva Neto J. M., Locks R. and Dos Santos M. M. A. (2012). “Custos na Administração Pública: revisão focada na publicação de artigos científicos a partir da promulgação da Lei de Responsabilidade Fiscal”, *Revista Contemporânea de Contabilidade*, UFSC, Florianópolis, Vol. 9, No. 18, pp. 3-22.
- Collatto D. C., Nascimento A. P. D. and Lacerda D. P. (2016). “Interações, convergências e inter-relações entre Contabilidade Enxuta e Gestão Estratégica de Custos: um estudo no contexto da Produção Enxuta”, *Gestão & Produção*, São Carlos, Vol. 23, No. 4, pp. 815-827.
- Coronetti J., Beuren I. M. and De Sousa M. A. B. (2012). “Os métodos de custeio utilizados nas maiores indústrias de Santa Catarina”, *Revista Eletrônica de Gestão Organizacional*, Vol. 10, No. 2, pp. 324-343.
- Hair J. F., Black W. C., Babin B. J., Anderson R. E. and Tatham R. L. (2009). *Análise multivariada de dados* (6th ed.), Porto Alegre, Bookman.
- Hilderbrand E. (1995). “Sistema de apropriação e análise de custos para a empresa florestal.” 1995. Dissertação de mestrado. Pós-graduação em Engenharia Florestal do Setor de Ciências Agrárias, Universidade Federal do Paraná.
- International Federation of Accountants (IFAC) (2000). *Perspectives on Cost Accounting for Government: International Public Sector Study*, New York, IFAC.
- Kami M. T. M., Larocca L. M., Chaves M. M. N., Lowen I. M. V. and Souza V. M. P. (2016). Trabalho no consultório na rua: uso do software Iramuteq no apoio à pesquisa qualitativa, *Esc Anna Nery*, Vol. 20, No. 3.
- Kremer A. W. and Richartz F. (2011). “Desenvolvimento de um modelo de custeio híbrido para empresas prestadoras de serviço por encomenda”, in: *Anais do Congresso Brasileiro de Custos-ABC*.
- Kupfer D. and Hasenclever L. (2013). *Economia Industrial: fundamentos teóricos e práticos no Brasil*, 2 ed. Rio de Janeiro: Elsevier.
- Leblanc J. M. (2015). “Proposition de protocole pour l'analyse des données textuelles: Pour une démarche expérimentale en lexicométrie”, *Nouvelles perspectives en sciences sociales (NPSS)*, Vol. 11, No. 1, pp. 25-63.
- Leone G. S. G. (2009). *Curso de contabilidade de custos: contém critério do custeio ABC* (4th ed.), Editora: Atlas.
- Lovato E. L., Oliveira A. G., Guimarães I. A. and Catapan A. (2016). “Sistemas de informações de custos no setor público no Brasil: uma análise da percepção dos usuários sob o enfoque da gestão governamental”, *Revista globalización, competitividad y gobernabilidad: revista cuatrimestral: GCG*, Washington, D.C.: Georgetown University's Latin America Leadership Program, ZDB-ID 2525542-3, Vol. 10, No. 1, pp. 16-41.
- MCASP (2021). *Manual de Contabilidade Aplicado ao Setor Público* (9th ed.), Tesouro Nacional. Brasília: CFC.
- Marchand P. and Ratinaud P. (2012). “L'analyse de similitude appliquée aux corpus textuels: les premiers socialistes pour l'élection présidentielle française (septembre-octobre 2011)”, *Actes des 11eme Journées internationales d'Analyse statistique des Données Textuelles*. JADT, pp. 687-699.
- Matias-Pereira J. (2016). *Manual de metodologia da pesquisa científica* (4th ed.), Editora: Atlas.
- Mauss C. V. and Souza M. A. (2008). *Gestão de Custos aplicada ao setor público: modelo para mensuração e análise da eficiência e eficácia governamental*, São Paulo: Atlas.
- Niyama J. K. and Silva C. A. T. (2008). *Teoria da Contabilidade*, São Paulo: Atlas.
- Reinert, M. (1990). “Alceste une méthodologie d'analyse des données textuelles et une application: Aurelia de Gerard de Nerval.” *Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique*, Vol. 26, No.1, pp. 24-54.

- Rodrigues L. F. and Sallaberry J. D. (2013). “Aspectos legais e contábeis da prestação de contas eleitorais para as eleições de 2012: uma análise empírica à luz da legislação vigente.” *Revista Brasileira de Contabilidade*, No.199, pp. 61-75.
- Rosa F. S., Silva L. C. and Soares S. V. (2015). “Aspectos de convergência da contabilidade no setor público: um enfoque sobre a implantação do sistema de custos segundo a percepção de contadores municipais do estado de Santa Catarina”, *Contabilidad y Negocios: Revista del Departamento Académico de Ciencias Administrativas*, Vol. 10, No. 19, pp. 27-42.
- Rossi F. M., Cohen S., Caperchione E. and Brusca I. (2016). “Harmonizing public sector accounting in Europe: thinking out of the box”, *Public Money & Management*, Vol. 36, No. 3, pp. 189-196.
- Salem A. (1986). “Segments répétés et analyse statistique des données textuelles”, *Histoire & Mesure*, Vol. 1, No. 2, pp. 5-28.
- Salviati M. E. (2017). “Manual do Aplicativo Iramuteq (versão 0.7 Alpha 2 e R Versão 3.2.3)”, Planaltina. Disponível em: <http://iramuteq.org/documentation/fichiers/anexo-manual-do-aplicativo-iramuteq-parmaria-elisabeth-salviati>, Acesso em? mar 2022.
- Scarpin J. E., Eidt J. and Boff M. L. (2011). “Métodos para apropriação de custos conjuntos: uma aplicação na indústria madeireira”, *Organizações Rurais & Agroindustriais*, Vol. 10, No. 1, pp. 1-12.
- Sinigalli E. S. L., Urbina L. M. S. and Alves J. M. (2009). “O custeio ABC e a contabilidade de ganhos na definição do mix de produção de uma metalúrgica”, *Production Journal*, Vol. 19, No. 2, pp. 332-344.
- Souza M. A., Lisboa L. P. and Rocha W. (2003). “Práticas de contabilidade gerencial adotadas por subsidiárias brasileiras de empresas multinacionais”, *Revista Contabilidade & Finanças*, Vol. 14, No. 32, pp. 40-57.