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Editorial

Dear reader,

Differently from the past editorials, I want to start this Editorial in a somewhat different manner.

In the past three years, I was very happy to take part in the Editorial Board of the Revista de Educação e Pesquisa em Contabilidade (REPeC) - a scientific journal held by the Brazilian Academy of Accountancy (Abracicon), with the support of the Federal Accounting Council (CFC). During the first year (2016), I served as the associate editor under the coordination of Prof. Valcemiro Nossa, Ph.D., former editor-in-chief of REPeC. In the period 2017-2018, I had the honor to replace him and continued as the editor-in-chief of REPeC. This has been a period of great learning that has offered the opportunity to work with high-level researchers and excellent people.

At the end of my first mandate as editor-in-chief (2017-2018), I have taken the difficult decision not to continue being part of this great team. Therefore, I hereby extend my gratitude to everyone who has contributed to this work, starting with Maria Clara Cavalcante Bugarim, the chairwoman of Abracicon, and everyone I could always count on: all editors I was happy to work with, including Felipe Ramos Ferreira, Gerlando Augusto Sampaio Franco de Lima, Paulo Roberto da Cunha, Márcia Maria dos Santos Bortolucci Espejo, Valcemiro Nossa and Vinícius Gomes Martins. I also extend my sincerest gratitude to all authors, reviewers and the backend team at Abracicon and CFC, who have believed in my work. Thank you so much!

Over these three years, I have tried to keep up the good work of the previous editors. From the strategic changes, such as the implementation of ahead of print and the increased number of articles per issue, to the structural changes, such as the new abstract structure and the new electronic platform, I have tried to offer my contribution to REPeC's successful history. Over two years as the editor-in-chief, nine issues have been published, including eight regular issues and one special issue to celebrate the journal's ten-year anniversary, participating directly in the publication of more than 60 articles.

On this occasion, I wish all possible success to Prof. Gerlando Augusto Sampaio Franco de Lima, Ph.D., currently the associate editor of REPeC, who will become the editor-in-chief in 2019. His excellent academic and professional records speak for themselves. I am confident that he will do a great job. I wish him all the best and put my experience at his disposal.

Thus, we conclude 2018 with the fourth and final issue of REPeC in 2018, (v. 12, n. 4), which consists of 7 (seven) original scientific articles, which are summarized next:

The first article, titled “**Implications of OCPC 07 for the Form of the Explanatory Notes: a Study in Processed Food Companies**”, was written by *Régis Barroso Silva, Vera Maria Rodrigues Ponte, Márcia Martins Mendes De Luca, Edilene Santana Santos* and *Sylvia Rejane Magalhães Domingos*. Its goal was to analyze the Brazilian companies’ behavior in view of the regulators’ current disclosure guidelines, considering the shape of their notes to the financial statements in the framework of the publication of OCPC 07. The authors analyzed the aspects of size, readability and similarity of the notes and verified that the disclosure of OCPC 07 only influenced the readability. The companies that launch ADRs, participated in the New Market and were audited by the Big Four presented larger notes to the financial statements when compared to the other companies. The time since they went public is inversely associated with the size of the notes to the financial statements, offering evidence that the companies’ know-how provokes more assertive disclosure by considering only the aspects that are relevant to the information users.

Jailson Manoel Silva Duarte and *Josedilton Alves Diniz* authored the article titled “**Public Expenditures and Productivity in Medium and High-Complexity Health Services in the Brazilian States**”, which verified the extent to which the volume of public health spending has influence the increased efficiency and productivity of medium and high-complexity services in Brazilian states. The main findings evidenced that the states with the largest average resource volume could not be considered the most efficient, indicating that there may exist a negative relationship between the growth of public spending and efficiency in the services offered. In addition, in the states that increased their health spending, between 2009 and 2015, the productivity was not directly proportional to the resource volume used.

“**Externalization: does the Academy Answer the Doubts of Society?**” was the third study published and was written by *Gabriel Gruber Bandeira, Luiz Henrique Figueira Marquezan* and *Carlos Alberto Diehl, Maicon Manoel Benin*. Based on the Brazilian context that debates on the potential impacts of the externalization of organizational activities, in view of the imminent political decision, the authors address the current discussions on externalization through the results of academic empirical studies. Therefore, they analyzed the articles published in Brazilian Business Administration and Accountancy journals between 2011 and June 2015. Then, after establishing the most frequent topics in the discussions on the theme in Brazil, based on approaches in the media, an analysis was developed from the perspective of the Stakeholder theory. The results show the very significant academic production on the topics addressed. The evidence strengthens the viewpoint against externalization more than the defenders of the practice.

The fourth article, titled “**Institutional Theory: a Bibliometric Analysis in Accounting Research**”, by *Igor Pereira da Luz, Felipe Veck Lisboa, Carlos Eduardo Facin Lavarda* and *Ernesto Fernando Rodrigues Vicente*, identifies how the studies based on Institutional theory have been developed in Accounting research. The authors used seven databases and selected a Bibliographic Portfolio with 148 articles on the theme. The study found (i) 27 theoretical and 121 empirical studies; (ii) most studies are qualitative; (iii) the most used techniques were semistructured interviews and document analysis; (iv) the majority used New Institutional Sociology; (v) the authors who stood out in the currents were Burns and Scapens (2000) (OIE), Williamson (2000) (NIE) and DiMaggio and Powell (1983) (NIS); (vi) Agency theory and Structuration theory were the most frequent besides Institutional theory; and (vii) the suggestions for future studies point towards changes in the data collection and analysis technique used in research, change in the context analyzed, exploration of heterogeneous environments, use of longitudinal studies and quantitative methods.

“**Learning styles and the performance of internships in Accounting**” by *Lucas Merotti Barbosa* and *Kelly Cristina Mucio Marques*, was the fifth study published, aiming to discover the impacts of learning styles on the performance of students who took compulsory and non-compulsory internships in Accounting. The learning styles of 247 students were measured using Kolb’s Learning Style Inventory, while the students self-assessed their performance. The authors found that the students’ performance does not differ among the types of internship and that the students’ learning style does not affect their performance during the internship. These results go against the expectations and indicate that the students who fit into any learning style can successfully use the supervised internship component in their curriculum.

The sixth study was written by *Verônica Andréa Lima Gouveia*, *Tatiane Gomes Silva*, *Natan Szuster* and *Fortunée Szuster* and is entitled “**Disclosure in View of Companies’ Increasing Intangibility: Book Value x Market Value**”. The analysis focused on whether, as a result of the companies’ growing intangibility, Accounting has worked to develop ways to keep up the utility of accounting information for investment decision making. The authors analyzed this evolution in the past 15 years on the main North American stock exchanges and found that, between 2001 and 2016, the ranking of the largest companies in terms of market value changed from other economic sectors to the technology sector. The five largest global companies in 2016 were: Apple, Alphabet (Google holding), Microsoft, Amazon and Facebook. The results evidence that the companies’ equity is inferior to their market value. The market considers that part of the difference is due to the lack of accounting recognition of the companies’ intangible assets, mainly in the new scenario of the digital economy.

The seventh and final study is titled “**The Regulatory Modes and their Relations among Accountancy Students**”, by *Valter da Silva Faia* and *Juliana Almeida Trevisan*. The study departed from the Regulatory Mode theory by Kruglanski, Thompson, Higgins, Atash, Pierro, Shah and Spiegel (2000), in which individuals present two self-regulatory functions. The authors attempted to associate the students’ regulatory modes with aspects of vocational education in undergraduate Accountancy programs, such as satisfaction with the course, academic performance and professional career aspects. The analysis of 94 students from an undergraduate Accountancy program revealed that the students’ regulatory mode of locomotion was positively associated with their satisfaction and performance in the course. The locomotion profile also revealed a positive association with the intention to be professionally active in accounting, especially in opportunities that value the conquest of professional experiences, personal satisfaction and promotion through career plans.

Finally, I want to thank you all for your attention in the past years and I wish a long and fruitful trajectory to REPeC!

Prof. Orleans Silva Martins, Ph.D.
Editor-in-Chief

Implications of OCPC 07 for the form of the explanatory notes: a study in processed food companies

Abstract

Objective: Analyze Brazilian companies' behavior towards the regulatory entities' current disclosure instructions, considering the formal aspects of their notes to the financial statements, in view of the publication of OCPC 07.

Method: The form of the notes to the financial statements was studied by means of content analysis, considering the aspects of size, readability and similarity. Companies were analyzed from the segment of processed foods, which were listed on the Brazilian stock exchange between 2010 and 2016. The surveyed data were analyzed using the test of difference of means and multiple linear regression.

Results: Only the readability of the notes to the financial statements was affected by the disclosure of OCPC 07. Companies that issued ADR, participated in the New Market and were audited by the Big Four present larger notes to the financial statements in comparison with the other companies. How long ago they went public is inversely associated with the size of the notes to the financial statements, evidencing that the companies' know-how provokes more assertive disclosure by covering only the aspects relevant to the information users.

Contributions: No impacting effects on the quality of the financial information in the context of the companies in the research segments were observed that can be attributed to the disclosure of OCPC 07.

Key words: OCPC 07. Disclosure level. Notes to the financial statements.

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1. Introduction

Under normal conditions, the size of the notes to the financial statements can be used as a proxy for companies' level of disclosure (Santos, 2016). In this sense, it is considered that the same factors traditionally associated with the level of disclosure act to influence the size of these documents. About the disclosure process, technical instruction OCPC 07 (CPC, 2014) provides a set of guidelines on the basic requirements that entities have to observe when disclosing their financial reports. This document establishes that, following the international tendency, the entities need to adjust the disclosure in order to highlight only the relevant information.

Materiality, an important feature of information relevance, involves aspects of the magnitude and nature of the economic fact. The magnitude aspect is related to its representativeness in the scope of the financial statements, considering the quantitative context. Regarding the aspect of nature, the determinant element of the materiality of the event is not necessarily related to the quantifiable representation of the event, but certainly to the type of event that is intended to be disclosed.

In this context, the understanding of materiality becomes fundamental for the financial statements to reach the level of utility demanded by the users. These documents can be considered the main source of accounting communication, offering the best interpretation for the economic events that affect the entities in a systematized way (Takamatsu, Lamounier & Colauto, 2008). The understanding of these statements is facilitated through the notes to the financial statements, considered as important reports that compose the financial statements, being, therefore, the focus of this research. Thus, financial statements can be considered as fundamental tools in disclosure since, in addition to evidencing the quantitative information contained in financial reports, they also disclose, in the notes to the financial statements, qualitative elements directly related to the disclosure process (Campos & Lemes, 2013).

Regarding the notes to the financial statements, the European Financial Reporting Advisory Group (EFRAG) (2012) clarifies that these have the same purpose as the actual financial statements, being integral and interdependent parts. Therefore, these documents should provide a description of the items presented in the statements that are relevant at the time of disclosure.

Considering the issues presented, supported by the current and increasing discussion on the information quality of the notes to the financial statements, this study proposes to answer the following question: **After the issuing of OCPC 07, what changes can be perceived in the form of Brazilian companies' notes to the financial statements, considering their aspects of size, readability, and similarity?**

In order to respond to the issue outlined herein, the main objective of the study is to analyze the behavior of Brazilian companies towards the regulatory entities' current disclosure instructions, considering the formal aspects of their notes to the financial statements in view of the publication of OCPC 07.

As a way to achieve the general objective, the following specific objectives were defined: (i) to analyze the form of the notes to the financial statements disclosed by the companies in the subsector processed foods listed on the Brazilian stock exchange with respect to the size, readability and similarity, confronting the years before and after the issuing of OCPC 07 and (ii) to investigate the existence of proximity and clustering among the presence of OCPC 07, the variables related to the form of the notes to the financial statements and the control variables selected in the literature.

Regarding methodological procedures, this study is characterized as exploratory, adopting a quantitative approach, considering the use of statistical techniques for data analysis. The form of the notes to the financial statements was studied using representative variables for the size, readability, and similarity of these documents.

In order to meet the objectives outlined, the dependent variables were first compared using the Difference of Means test, considering the year 2014 as a parameter for OCPC 07. Subsequently, these same variables were tested together with explanatory variables of the disclosure previously surveyed in the literature, considering the presence or absence of OCPC 07 and using multiple linear regression as the technique.

The approach considered in this work is relevant because the notes to the financial statements are proving to be important elements to improve the quality of the information companies disclose. Thus, the understanding of how the form of these documents is behaving enables the implementation of improvements that impact the quality of this information. The research, therefore, contributes to reinforcing the studies on the quality of accounting information, demonstrating how companies in the selected segment have been behaving in the light of the current instructions Brazilian and foreign entities have established regarding the relevance of the economic facts disclosed.

Although the transition process to international accounting standards has already been the subject of frequent discussions in the literature (Gatsios, Silva, Ambrozini, Assaf Neto & Lima, 2016; Gonçalves, 2016; Lima, 2010; Oliveira & Lemes, 2011; Tavares, 2016), studies that explore the improvement or evolution of this transition with a focus on increasing informational quality and in the form of notes to the financial statements are still scarce.

With regard to the subsector selected for the research, it is worth mentioning that, according to the National Confederation of Industry (CNI) (2014), it bills an average of R\$ 400 billion per year and, when adding the beverage sector, per annum, it reaches R\$ 480 billion, corresponding to approximately 10% of Gross Domestic Product (GDP), employing around 20% of all workers working in the Brazilian manufacturing industry.

This paper is structured in five sections, including this introduction. The second section presents the literature review, addressing information quality, materiality and previous studies on the subject. The third discusses the methodological criteria used in the study, including the typology, population selection, sample formation and the phases aimed at achieving the objectives outlined. The following chapter summarizes the results obtained after data collection and processing. The fifth and final section brings the conclusion and the final considerations about the results of the research, as well as suggestions for future research.

2. Literature Review

2.1. Quality of accounting information

The quality of the accounting information is reflected in the corporate accounting reports so that, the less manipulation of the results and the greater the transparency of the information, the greater its quality (Coelho, Niyama & Rodrigues, 2011). In this sense, the informational quality corresponds to the fulfillment of the desirable attributes of the information published to the users, whose main interest is to know the company figures (Coelho & Lopes, 2007).

Understanding the quality of accounting information requires prior knowledge of the needs of those who use it though, who are basically investors and creditors (Hendriksen & Van Breda, 1999), followed by other user groups such as market analysts and researchers.

In order to increase the quality of the information disclosed, companies have raised the level of adherence to international standards, implying an increase in the amount of information evidenced both in Brazil and in other countries that have adhered to IFRS. Martins (2011) attributes the increase in the volume of information in the financial statements mainly to the accumulation of disclosure requirements.

With respect to the financial statements, it has been observed that, in general, companies surpass what is required by law, often disclosing unnecessary information (Murcia & Santos, 2010), a practice that reduces quality and generates general concern about the disclosure of irrelevant information and the increase in the length of the notes to the financial statements.

In view of this, Brazilian and international regulators have been working together to establish guidelines that will assist financial statements preparers in disseminating relevant information, thus improving information quality, such as Efrag (2012) and Iasb (2013).

Hendriksen and Van Breda (1999) clarify that relevance is achieved when the information disclosed provides support to users' decisions, helping to fulfill one of the main purposes of Accounting. According to Fasb (1999) and Camargo and Alberton (2015), this process departs from the preparers of the financial statement' understanding of the concept of materiality, which gives the process a considerable degree of subjectivity.

These issues eventually lead companies to disclose information about non-material items, directly implying the form of the disclosed documents and making the statements disclosed by the companies gain more volume, generating higher elaboration costs. Efrag (2012) adds that the adoption of this practice distances the statements from good communication, giving users information without relevance.

In general, it is perceived that, in order to improve the quality of financial information, the current debates mean that materiality should act as a guide in the definition of disclosure elements, avoiding deviations from its main objective, which is the provision of high-quality information to the users.

2.2. Form of the notes to the financial statements

OCPC 07 (CPC, 2014) establishes the main criteria related to the form of notes to the financial statements and accounting disclosure. Martins, Oliveira, Niyama, and Diniz (2014) emphasize that their creation was based on the need to promote the disclosure of relevant and material information, perceived by the CPC. In addition, OCPC 07 (CPC, 2014) highlights important questions about the form of financial statements, specifically regarding the size, readability, and similarity of notes to the financial statements.

With regard to size, it is known that, after the adoption of international accounting standards, there has been a significant increase in the volume of information disclosed through notes to the financial statements, not only in Brazil but also in several other countries. The excess of disclosure generates a generalized concern on the part of the regulating entities with respect to informational quality (Martins, 2011).

On this theme, Amorim, Brito, Costa, Gonçalves, and Silva Júnior (2015) clarify that the size of the documents can be studied through the application of different metrics. OCPC07 draws attention to some textual features, including word morphology, as measurement parameters, in view of the frequent and recent discussions about the notable increase in the size of notes to the financial statements.

In the context of OCPC 07 (CPC, 2014), the number of words, pages, characters, phrases, and syllables can be defined as variables in the size of notes to the financial statements. Besides these, the amount of complex words, represented by those that contain more than three syllables, is also considered a proxy of the size of the notes to the financial statements.

As regards readability, it is known that companies communicate with the market through financial statements, which are read and interpreted by their different users, including Silva and Fernandes (2009), who report that the ease of reading these reports can be measured using different readability indices.

In this sense, the information disclosed through the financial reports will be reliable, relevant and timely when they are easy to read and understand because, as Smith and Taffler (1992) establish, readability is related to content, but its comprehension depends on the interpretation of each reader.

Medeiros (2015) suggests that a good report should present its information directly, to facilitate reading and contribute to the general increase in information quality. Studies on readability in financial reporting argue that complex financial statements negatively affect the information environment (Bloomfield, 2002; Hirshleifer & Teoh, 2003; KPMG, 2011; Miller, 2010; Monga & Chasan, 2015). The literature also points to a range of metrics that enable the study of readability in scientific texts (Amorim *et al.*, 2015).

According to the literature, the Flesch and Fog indexes are outstanding because they have already been adapted and applied in other Portuguese studies (Loughran & McDonald, 2014; Martins, Ghiraldelo, Nunes & Oliveira Júnior, 1996), and were therefore adopted in this research as proxies for the readability of the notes to the financial statements.

The Flesch index considers the number of syllables per word and the number of words per phrase, measuring the degree of readability of financial reports on a scale ranging from zero to one hundred, where values close to zero indicate texts that are difficult to read, while those close to one hundred indicate texts that are easy to read.

The Fog index, on the other hand, assumes that the difficulty of reading the text will increase with the number of words per sentence and the use of complex words (with more than three syllables). Previous studies such as Biddle, Hilary and Verdi (2009), Dougal, Engelberg, García, and Parsons (2012), Lawrence (2013), Lehavy, Li and Merkley (2011), Li (2008) and Miller (2010) have already applied the Fog index in the analysis of financial reports. Also Biddle *et al.* (2009) define it as an adequate readability measure for financial statements.

It is worth mentioning that the Fog index is a measure of readability presented in several scientific studies that discuss this theme in the financial area. Li (2008), for example, related the readability of annual reports to firm performance in a sample of more than 55,000 reports published between 1994 and 2004 using the Fog index. In the same context, Lehavy *et al.* (2011) and Miller (2010) found evidence that the readability of financial reporting affects the decisions of information users.

In relation to similarity, OCPC 07 (CPC, 2014) emphasizes that the literal repetition of excerpts from other documents has been noticed in the notes to the financial statements, such as regulations, laws or even previously disclosed notes to the financial statements (by the same company or others), a practice that should not be adopted. About this theme, Santos (2016) analyzed the similarity among the notes to the financial statements, aiming to identify changes in the copying-pasting of excerpts from the model note the audit company disclosed after the issuing of OCPC 07. As a result, the findings showed that, despite the instructions, the companies did not change the level of similarity in the notes to the financial statements when comparing the years 2013 and 2014.

3. Method

This research is classified, as regards nature, as quantitative, given the statistical treatment applied to the variables; regarding the purposes as exploratory, since it covers the appreciation and explanation of the characteristics of a subject or question (Collis & Hussey, 2005) and regarding the means as documentary (Martins & Theóphilo, 2009), when using the financial statements disclosed by the selected companies as a means of investigation.

The option to adopt a single subsector is intended for the selection of a set of companies with similar characteristics, permitting the comparative analysis between them. In this sense, the sample defined for the study joins the Brazilian companies listed on the BM & FBOVESPA, currently denominated B3, belonging to the subsector processed foods, as this subsector presents growth and representativeness in the Brazilian economy (Rigo, Godoy & Scarpin, 2016; & Fregonesi, 2010).

Regarding the temporal range of the study, it is considered that the changes of form in the notes to the financial statements may be due to a possible learning curve over time. Thus, the study opted to consider in this evaluation the whole period between 2010 and 2016, 2010 being the year the literature treats as full IFRS (Santos, 2011) and 2016 the most recent year regarding the availability of financial reports at the time this research was developed. Chart 1 explains the annual behavior of each company in the sample regarding the disclosure of the notes to the financial statements during the period considered.

Company	Year								Total
	2010	2011	2012	2013	2014	2015	2016		
Biosev S. A.	×	×	✓	✓	✓	✓	✓	5	
Brasil Foods S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Conservas Oderich S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Excelsior Alimentos S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Forno de Minas Alimentos S. A.	×	×	×	×	✓	✓	✓	3	
J. Macedo S. A.	✓	✓	✓	✓	✓	✓	✓	7	
JBS S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Josapar Joaquim Oliveira S. A. Participações	✓	✓	✓	✓	✓	✓	✓	7	
Laep Investments Ltd.	✓	✓	✓	✓	×	×	×	4	
M. Dias Branco S. A. Indústria e Comércio de Alimentos	✓	✓	✓	✓	✓	✓	✓	7	
Marfrig Alimentos S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Minerva S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Minupar Participações S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Ráizen Energia S. A.	×	×	×	✓	✓	✓	✓	4	
São Martinho S. A.	✓	✓	✓	✓	✓	✓	✓	7	
Total	12	12	13	14	14	14	14	93	

Legend: ✓ Notes to the financial statements published; × Notes to the financial statements unpublished

Source: Elaborated by the author.

Chart 1. Disclosure of notes to the financial statements by the companies in the sample

The year 2014, when OCPC 07 was issued and its instructions were adopted, was taken as the milestone. The information was then segregated into two distinct periods, one before (2010-2013) and the other after (2014-2016) the issuing of that regulation for comparative purposes. This segregation was intended to evaluate the possible effects of OCPC 07's publication on the disclosure of financial information.

Regarding the variables, taking as a starting point the reading and interpretation of OCPC 07, the aspects that synthesize the main highlights addressed in this instruction were identified, regarding the form of the notes to the financial statements, being: size, readability, and similarity. Based on these aspects, their respective variables were defined, whose operation, acronyms and tools used are described in Chart 2.

	Variable	Abr	Operation	Theoretical Background	Tool
Size	Pages	PAGS	Count of number of pages	Santos (2016)	Word Counter Tool
	Words	PLVR	Count of number of words		
	Characters	CRCT	Count of number of characters		
	Phrases	FRSS	Count of number of phrases		
	Syllables	SLBS	Count of number of syllables		
	Complex words	PCPL	Count of number of words with more than three syllables		
Readability	Flesch index	IFSH	$206.835 - (1.015 \times ASL) - (84.6 \times ASW)$, ASL being the index between the number of words and the number of phrases in the text and ASW being the index between the number of syllables and the number of words in the text.	Martins <i>et al.</i> (1996)	Word Counter Tool
	Fog index	IFOG	$0.4 \times (MWP) + 40 \times (PCW)$, MWP being the mean words per phrase and PCW being the percentage of complex words.	Loughran and McDonald (2014), Martins <i>et al.</i> (1996), Santos (2016)	
Similarity	General similarity	SGER	Percentage of similarity of the notes to the financial statements with the Web	Santos (2016)	DOCxWEB
	Similarity with pronouncements or laws	SPLE	Percentage of similarity corresponding to other CPC standards or laws		
	Similarity with other notes to the financial statements	SONE	Percentage of general similarity with other notes to the financial statements of the same company in previous years, and of other companies in the same subsector.		
	Similarity with earlier notes to the financial statements of same company	SNEM	Percentage of similarity with the notes to the financial statements of the same company, but from previous years.		
	Similarity with notes to the financial statements of other companies	SNED	Percentage of similarity with the notes to the financial statements of other companies in the subsector.		

Obs. Elaborated by the author (2017).

Chart 2. Chart of variables for formal aspects of notes to the financial statements

After selecting the variables related to the form of the notes to the financial statements, we proceeded to the collection process, which was done through documentary analysis. Data analysis was performed through content analysis, as recommended by Chizzotti (2006) and Bardin (2011). The notes to the financial statements and the additional information about the companies were extracted from BM & FBOVESPA's B3 website on 03/27/2017.

The counting of the variables related to the size of the notes to the financial statements was done with the help of the electronic application called Word Counter Tool, which standardizes the documents before the analysis, regarding the style and size of the source, removal of page breaks and all the original formatting, as well as the spacing between lines and paragraphs.

The readability of the financial statements disclosed by the companies was analyzed based on the two indexes already used in previous surveys that evaluated financial reports: the Flesch (Martins *et al.*, 1996) and Fog Indices (Biddle *et al.* (Lehavy *et al.*, 2011, Li, 2008, Miller, 2010).

Due to the need to investigate the occurrence of similarity between the documents and, consequently, the literal repetition of excerpts from other documents, such as CPC regulations, Law 6.404/1976 and other notes to the financial statements, by the same company (from previous years) or different companies, the study used the tool DOCxWEB, developed to identify plagiarism in academic studies. This tool compares the documents inserted with other publications on the Internet and also with each other, calculating the percentage of authenticity, in addition to providing a report detailing the electronic addresses where parts equal to the documents searched were found.

It is important to point out that, in this study, the percentage of the authenticity calculated by DOCxWEB was considered as similarity, both in relation to the general publications made available on the internet and the other notes to the financial statements analyzed.

Considering that research on the form of notes to the financial statements is still incipient in the literature, the definition of the hypothesis for this study was raised considering previous studies involving disclosure, which identified, in the majority, low degree of compliance with the requirements (Mapurunga, Morais, Ponte, Rebouças & Carneiro, 2015; Santos, Ponte, Mapurunga & Ribeiro, 2014).

Given these findings, the hypothesis for the study was the absence of statistically significant changes in the form of notes to the financial statements, considering the aspects of size, readability, and similarity when comparing the years before and after the issuing of OCPC 07.

In order to analyze and compare possible changes in the form of the notes to the financial statements due to OCPC 07, a test of differences between the mean Kruskal-Wallis and Mann-Whitney coefficients was applied. The purpose of this study was to investigate the existence of significant differences with respect to the formal aspects of the notes to the financial statements between the years selected for the study, comparing the periods before and after the issuing of OCPC 07, launched in 2014.

In order to achieve the objectives of the research, we chose to use multiple linear regression to identify how the form of the notes to the financial statements is explained by the control variables selected in the literature and by the presence or absence of OCPC 07. Therefore, dependent variables such as size, readability, and similarity were considered. The models tested in the survey are shown in Chart 3.

Form of the notes to the financial statements	Model 1	$SIZE = \beta_0 + \beta_1NMAR + \beta_2ADBF + \beta_3TYCP + \beta_4IADR + \beta_5OCPC + \epsilon$
	Model 2	$READ = \beta_0 + \beta_1NMAR + \beta_2ADBF + \beta_3TYCP + \beta_4IADR + \beta_5OCPC + \epsilon$
	Model 3	$SIML = \beta_0 + \beta_1NMAR + \beta_2ADBF + \beta_3TYCP + \beta_4IADR + \beta_5OCPC + \epsilon$

Obs. NMAR = Participation in New Market; ADBF = Audited by Big Four; TYCP = Time since going public in years; IADR = Issuer of ADR; OCPC = Dummy of OCPC 07 (in which 0 = absence of OCPC 07 and 1 = presence of OCPC 07); SIZE = Size of notes to the financial statements (single factor); READ = Readability of notes to the financial statements; SIML = Similarity of notes to the financial statements (general similarity).

Obs. elaborated by the author.

Chart 3. Regression models applied

Regarding the control variables adopted in the research, these involve the corporate governance policy and some specific characteristics of the companies, such as time since going public, audit firm and trading securities in foreign markets. These variables are defined in detail in Chart 4.

Variables	Abr	Operation	Theoretical Background	Source
Time since going public	TYCP	Time, in years, corresponding to the period when the company stock is traded in the stock exchange	Oliveira (2013), Póvoa and Nakamura (2014).	
Corporate governance segment	NMAR	Dummy variable representing the company's participation in the New Market	Cunha and Ribeiro(2008),	Registration Form
Audit firm	ADBF	Dummy variable reflecting whether the company is audited by the Big Four	Ghoul, Guedhami and Pittman (2016) and Silva and Costa (2016).	
Trade in external markets	IADR	Dummy variable representing companies traded in foreign markets	Costa, Goldner and Galdi (2007), Santos, Ponte, Holanda and Adachi (2016)	NYSE website

Obs. elaborated by the author.

Chart 4. Variáveis de controle levantadas na literatura

It is also important to clarify that the data collected in this study, regarding the form of the notes to the financial statements and their size, readability and similarity were processed using spreadsheets via Microsoft Excel and Statistical Package software for the Social Science (SPSS) version 22.

4. Results

This section presents the results obtained after processing the data collected for the form of the notes to the financial statements, considering their size, readability, and similarity. At an initial moment, we performed the descriptive and inferential analysis of the representative variables of size, as presented in Table 1.

Table 1

Descriptive and inferential statistics of size of notes to the financial statements variables

Moment related to issuing of OCPC07	Variable	Mean	Median	Standard Deviation	Min	Max
Before	PAGS	54.0	57.0	32.7	9.0	118.0
	WRDS	26,628.5	27,336.0	16,264.2	4,412.0	57,072.0
	CRCT	157,612.0	167,151.0	93,889.7	26,130.0	339,850.0
	PRSS	5,405.6	4,939.0	3,537.1	576.0	12,590.0
	SLBS	51,444.9	54,634.0	30,533.8	8,447.0	111,478.0
	WCPL	7,424.5	8,263.0	4,233.2	1,238.0	16,082.0
After	PAGS	52,2	47,0	32,0	10,0	120,0
	PAGS	52.2	47.0	32.0	10.0	120.0
	WRDS	26,170.8	23,238.0	16,263.7	5,363.0	59,775.0
	CRCT	158,,860.1	141,147.0	96,520.0	33,670.0	349,797.0
	PRSS	6,024.4	5,633.0	4,075.9	806.0	16,317.0
	SLBS	50,415.8	44,258.0	30,329.4	10,833.0	113,464.0
WCPL	7,168.5	6,452.0	4,183.1	1,565.0	15,782.0	

Obs.: PAGS = Number of pages; WRDS = Number of words; CRCT = Number of characters; PRSS = Number of phrases; SLBS = Number of syllables; WCPL = Number of complex words (with more than three syllables).

Obs. research data.

Table 1 shows a reduction in the average number of pages, words and complex words. On the other hand, there is an increase in the average number of characters and phrases. These results may demonstrate changes in the language used in the notes to the financial statements, as companies would be using more accessible terms for information users by reducing the use of complex words, which may reflect the increase in the number of characters and, consequently, of phrases, given the need for more clarification on the economic events evidenced. Regarding the number of pages and words analyzed, the findings of this study corroborate Santos (2016), who also found evidence of a reduction in the size of the notes to the financial statements.

Considering the inferential analysis of the data, it was observed that these variables have similar characteristics and behaviors. Therefore, we chose to apply factor analysis to obtain a single factor that is better able to represent the size of the notes to the financial statements. For this procedure, the initial criterion of existence of correlation between the variables was observed, as presented in Table 2.

Table 2

Correlation matrix between size variables

	Variable	PAGS	WRDS	CRCT	PRSS	SLBS	WCPL
PAGS	Correlation	1.0	0.9	0.9	0.9	0.9	0.9
	Sig. (1-tailed)		0.0	0.0	0.0	0.0	0.0
WRDS	Correlation	0.9	1.0	0.9	0.9	0.9	0.9
	Sig. (1-tailed)	0.0		0.0	0.0	0.0	0.0
CRCT	Correlation	0.9	0.9	1.0	0.9	0.9	0.9
	Sig. (1-tailed)	0.0	0.0		0.0	0.0	0.0
PRSS	Correlation	0.9	0.9	0.9	1.0	0.9	0.9
	Sig. (1-tailed)	0.0	0.0	0.0		0.0	0.0
SLBS	Correlation	0.9	0.9	0.9	0.9	1.0	0.9
	Sig. (1-tailed)	0.0	0.0	0.0	0.0		0.0
WCPL	Correlation	0.9	0.9	0.9	0.9	0.9	1.0
	Sig. (1-tailed)	0.0	0.0	0.0	0.0	0.0	

Legend: PAGS = Number of pages; WRDS = Number of words; CRCT = Number of characters; PRSS = Number of phrases; SLBS = Number of syllables; WCPL = Number of complex words (with more than three syllables).

Determinant: 1.99E-011

N = 92

Source: research data.

Table 2 shows the adequacy of the technique employed as the variables presented correlation values higher than 90.0% in all pairs. Fávero, Belfiore, Silva, and Chan (2009) point out that a proportion higher than 70.0% in these correlations establishes the ideal conditions for applying factor analysis.

Based on the initial condition, confirmation of the feasibility of applying this technique also required verification of the Kaiser-Meyer-Olkin (KMO) and Bartlett sphericity tests. The application of the KMO statistic generated 0.8, confirming the existence of a high correlation between the variables as values closer to one are favorable to the application of the factor analysis (Fávero *et al.*, 2009). Bartlett's sphericity test, applied to verify the hypothesis that the correlation matrix is the matrix-identity, pointed to the rejection of the hypothesis (p-value = 0.0), reinforcing the existence of a correlation between the variables and indicating the adequacy of the data to the application of factor analysis.

After the application of the validation tests, we determined the total variance explained and the initial values of each variable. The results are shown in Table 3.

Table 3

Total explained variance

Componente	Initial eigenvalues			Sums of extracted squared loadings		
	Total	% of variance	cumulative %	Total	% of variance	cumulative %
PAGS	5.8	98.1	98.1	5.8	98.1	98.1
WRDS	0.0	1.5	99.6			
CRCT	0.0	0.16	99.8			
PRSS	0.0	0.12	99.9			
SLBS	0.0	0.02	99.9			
WCPL	0.0	0.00	100.0			

Legend: PAGS = Number of pages; WRDS = Number of words; CRCT = Number of characters; PRSS = Number of phrases; SLBS = Number of syllables; WCPL = Number of complex words (with more than three syllables).

Extraction method: Principal Component Analysis

Source: research data.

Table 3 presents the eigenvalues ranked by size, demonstrating the variance explained by each factor, that is, how much each factor can explain the total variance. Fávero *et al.* (2009) point out that the sum of the eigenvalues obtained results in the number of variables submitted to factor analysis, that is, six variables in this case. Table 3 also shows that the single factor obtained can explain 98.1% of the variance in the original data, considered a satisfactory result, so that it is able to explain with robustness all previously selected size variables.

The extracted factor is then used to represent a new variable representative of the size of the notes to the financial statements, composing the other analyses performed in this study. Subsequently, the Kolmogorov-Smirnov and Shapiro-Wilk tests of normality were applied, obtaining evidence to reject the normality hypothesis of the data regarding the size of the notes to the financial statements.

Considering non-compliance with the normality criterion, the Mann-Whitney Non-Parametric test was used to identify statistically significant differences between the mean size of the notes to the financial statements before and after the OCPC07, according to Table 4.

Table 4

Test of differences of means

	SIZE
Mann-Whitney's U	1025.0
Wilcoxon W	1886.0
Z	-0.1
Significance Sig. (2-tailed)	0.8

Obs. SIZE = Size of notes to the financial statements (single factor).

Clustering Variable: OCPC 07.

Obs. research data

Table 4 shows that there is no statistically significant difference between the averages of the size of the notes to the financial statements when comparing the periods before and after the issuing of OCPC 07. Based on this finding, it can be inferred that, although OCPC 07 instructs companies to reduce the amount of information in the notes to the financial statements, their actual compliance is not yet clear.

When identifying an average reduction of 10.0% in the size of the notes to the financial statements of the non-financial companies listed on BM & FBOVESPA between 2013 and 2015, Santos (2016) clarifies that the decrease identified was not generalized. Thus, for the processed food sector, this reduction was not identified.

As regards the readability of the notes to the financial statements, this was evaluated considering two variables already tested in other studies on financial reporting, in this case the Flesch (Martins *et al.*, 1996) and Fog indices (Loughran & McDonald, 2014; Martins *et al.*, 1996; Santos, 2016). Table 5 presents, initially, the descriptive and inferential statistics of the variables selected for readability, showing the comparison between the period before and after the issuing of OCPC 07.

Table 5

Descriptive statistics of readability variables

Index	Moment related to issuing of OCPC 07	Mean	Median	Standard Deviation	Min	Max
Flesch	Before	9,5	9,8	1,2	6,9	12,4
	After	9,5	9,3	2,4	7,2	22,5
Fog	Before	13,6	13,7	1,3	10,7	16,8
	After	13,0	13,3	1,0	10,9	15,2

Obs. research data.

When comparing the periods before and after OCPC 07, according to Table 5, the Flesch readability averages increased, which, in principle, may imply the increase of legibility. The Fog index has decreased and may reflect readability improvements, as lower values are those with better levels.

Regarding the normality test, this showed that only the Fog index has a normal distribution. Once this criterion was defined and, as the distribution of the data corresponding to these variables presented different behaviors, the difference of means tests were applied separately. Table 6 presents the difference of means test applied for the Flesch index.

Table 6

Test of differences of means: Flesch Index

	Flesch Index
Mann-Whitney's U	861.5
Wilcoxon W	1722.5
Z	-1.4
Significance Sig. (2-tailed)	0.1

Obs. Clustering variable: OCPC 07

Obs. research data.

According to Table 6, the Mann-Whitney Non-Parametric test, applied to the Flesch index, showed that no statistically significant differences (p -value = 0.1) were observed between periods before and after the OCPC 07, which generates evidence that the readability estimated by the Flesch index of these documents has not yet followed the CPC guidelines.

In spite of the Fog index, considering that this variable presented a normal distribution of the data, the Levene test for equality of variances was first applied, which presented p -value = 0.1, permitting the acceptance of the null hypothesis, indicating the homogeneity of the population variances. Table 7 presents the Difference of Means test applied to the Fog index, given these conditions.

Table 7

Test of differences of means: Fog Index

	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean difference	Standard error of difference	95% Confidence Interval of Difference	
						Inferior	Superior
Assumed equal variances	2.0	90	0.0	0.5	0.2	0.0	1.0

Obs. research data.

Regarding the Fog index, Table 7 shows that the perceived differences between the readability averages are statistically different (p -value = 0.0) when comparing the periods before and after the issuing of OCPC 07. The result indicates that the readability of the documents was considerably improved after the disclosure of that legislation.

Santos (2016) also applied the Fog index, identifying a drop in readability after the issuing of OCPC 07, contrary to the findings of the study. The result found here may represent a step forward in terms of enhancing the quality of information in the notes to the financial statements, signaling the effect of OCPC 07 over a longer time span.

Loughran and McDonald (2014), in a research on the readability of the 10-K reports, found improvements in readability between 1994 and 2011, corroborating the findings of this study. The authors used the Fog index as a proxy for readability, analyzing more than 66,000 reports. It is important to clarify that the international discussion about the informational quality of accounting-financial reports, including the volume of information, has been occurring since mid-2011 and this result may be associated with those discussions.

The similarity of the notes to the financial statements was analyzed considering two main foci, namely: similarity with pronouncements or laws and similarity with other notes to the financial statements, which, in turn, was subdivided into two categories: similar to the notes to the financial statements of the same company, but from previous or subsequent years; and similar to the notes to the financial statements of the other companies in the selected subsector. Table 8 distinguishes the result of the descriptive and inferential statistics for the similarity percentages of the documents.

Table 8

Descriptive and inferential statistics for similarity

Analysis categories for similarity	Moment related to issuing of OCPC 07	Mean (%)	Median (%)	Variance (%)	Standard deviation(%)	Min (%)	Max (%)
1 General Similarity (SGER)	Before	36.4	30.0	355.9	18.9	18.0	99.0
	After	34.8	28.0	404.4	20.1	15.0	99.0
1.1 Similarity with pronouncements or laws (SPLÉ)	Before	6.0	5.5	6.5	2.5	2.7	17.4
	After	6.4	6.0	9.5	3.1	1.9	14.5
1.2 Similarity with other notes to the financial statements (SONE)	Before	4.9	4.3	3.8	1.9	2.5	12.5
	After	5.0	4.6	5.5	2.3	1.8	10.8
1.2.1 Similarity with other notes to the financial statements of the same company (SNEM)	Before	2.8	2.3	2.0	1.4	1.0	7.7
	After	2.8	2.4	2.2	1.5	0.9	7.0
1.2.2 Similarity with other notes to the financial statements of different companies (SNED)	Before	2.1	1.9	0.7	0.8	1.0	4.7
	After	2.3	1.9	1.7	1.3	0.5	6.3

Obs. research data.

Table 8 shows a reduction in the percentage of general similarity when comparing the periods before and after OCPC 07, indicating that there was a drop in the literal repetition of other documents, such as pronouncements, laws and other notes to the financial statements. Although the general similarity has shown a reduction, however, two subcategories showed an increase after the issuing of OCPC 07. The percentage of similarity of the notes to the financial statements with accounting pronouncements or laws and the percentage of similarity with the notes to the financial statements of different companies increased, signaling that companies seem to follow similar drafting standards in formatting notes to the financial statements.

With regard to the similarity of the notes to the financial statements, Santos (2016) made a similar comparison, using the model note made available by the audit firm. The author also found signs of reduction in the general similarity, corroborating the result of this research.

Proceeding with the analysis regarding the similarity of the notes to the financial statements, the data do not present normal distribution. After defining the normality of the data, based on this result, the Mann-Whitney Non-Parametric test was applied to compare the means obtained, as explained in Table 9.

Table 9

Test of means of similarity variables

	SGER	SPLA	SONE	SNEM	SNED
U de Mann-Whitney	989,5	964,0	1011,5	1041,0	1019,0
Wilcoxon W	1850,5	2290,0	2337,5	1902,0	1880,0
Z	-0,4	-0,6	-0,2	-0,0	-0,2
Significance Sig. (2-tailed)	0,6	0,5	0,7	0,9	0,8

Obs. SGER = General similarity; SPLA = Similarity with pronouncements or laws; SONE = Similarity with other notes to the financial statements; SNEM = Similarity with other notes to the financial statements of the same company; SNED = Similarity with other notes to the financial statements of different companies. Clustering variable: OCPC 07
 Obs. research data.

Table 9 shows that there were no statistically significant changes in the similarity averages after OCPC 07, allowing us to infer that the guidelines established in this regulation have not yet been consolidated, that is, even after OCPC 07, the similarity averages calculated before and after its launch remain statistically unchanged, signaling the companies' lack of adoption of the guidelines.

Santos (2016) also studied the similarity of the notes to the financial statements in a sample of all the non-financial companies listed on BM & FBOVESPA. The result showed an almost imperceptible improvement of similarity when comparing the notes to the financial statements of the companies with the auditor's model note, considering the financial years 2013 and 2014.

It is worth noting that OCPC 07 (CPC, 2014) recommends that the notes to the financial statements should not contain, as far as possible, the repetition of facts, policies and other information, so as not to divert the users' attention.

Considering the inferences resulting from the analysis of the form from the perspective of the size, readability and similarity of the notes to the financial statements, it was decided to test, through multiple linear regression, the explanatory capacity of OCPC 07 and variables commonly used in studies about disclosure about the form of notes to the financial statements, aiming to meet the second specific objective of the research. This step resulted in three models, the results of which are shown in Table 10.

Table 10

Regression analysis

Model 1	SIZE = $\beta_0 + \beta_1\text{NMAR} + \beta_2\text{ADBF} + \beta_3\text{TYCP} + \beta_4\text{IADR} + \beta_5\text{OCPC} + \varepsilon$		
Model 2	READ = $\beta_0 + \beta_1\text{NMAR} + \beta_2\text{ADBF} + \beta_3\text{TYCP} + \beta_4\text{IADR} + \beta_5\text{OCPC} + \varepsilon$		
Model 3	SIML = $\beta_0 + \beta_1\text{NMAR} + \beta_2\text{ADBF} + \beta_3\text{TYCP} + \beta_4\text{IADR} + \beta_5\text{OCPC} + \varepsilon$		
	SIZE	READ	SIML
NMAR	0.4 (2.4)**	-0.4 (-1.3)	-0.1 (-3.5)**
ADBF	0.3 (2.5)**	-0.4 (-1.5)	0.1 (3.0)**
TYCP	-0.0 (-6.0)**	-0.0 (0.9)	0.0 (0.2)
IADR	0.9 (5.8)**	-0.3 (-0.8)	0.3 (6.2)**
OCPC	-0.0 (-0.7)	-0.4 (-2.0)**	-0.0 (-0.4)
Constant	-0.0	13.9 (34.1)**	0.2 (4.7)**
N	92	92	92
F	57.7**	5.3**	8.3**
Prob>F	0.0	0.0	0.0
R ²	0.7	0.2	0.3

Obs. NMAR = Participation in the New Market; ADBF = Audited by Big Four; TYCP = Time since going public in years; IADR = Issuer of ADR; OCPC = Presence of OCPC 07; SIZE = Size of the notes to the financial statements (single factor); READ = Readability of the notes to the financial statements (Fog index); SIML = Similarity of the notes to the financial statements (general similarity). (**) = 5% significance level. Value between parentheses: result of t text.
 Obs. Research data.

According to Table 10, the explanatory power of the model that considers size as a dependent variable, using the single factor obtained through factor analysis, reaches 77.1%. The independent variables in the New Market, audited by Big Four and ADR issuers have a significant positive association with the size of the notes to the financial statements. These results corroborate the findings of Santos (2016), who also identified a correlation between the issuing of ADRs, participation in the New Market and the size of notes to the financial statements, along with other explanatory variables such as size and sector. On the other hand, the time since going public had a significant negative association with the size of the notes to the financial statements, allowing to affirm that the size of the documents tends to drop with the time since going public and the companies' expertise. Regarding the effect of OCPC 07 on the size of the notes to the financial statements, there was no significant association, leading to the conclusion that the regulation does not explain the size variations in the notes to the financial statements.

Regarding readability, Table 10 also shows that the explanatory power for the model was calculated as 23.7%, highlighting the significant and negative association with the explanatory variable related to the presence of OCPC 07. The result confirms the findings of the difference of means test, which had already demonstrated the improved readability when comparing the periods before and after the issuing of OCPC 07. The issuing of this instruction is inversely associated with the readability, as lower Fog indices imply greater readability and, consequently, the presence of OCPC 07. It should be noted that the Fog index was used in this stage of the research to represent the readability of the documents because it presented statistically significant differences when comparing the periods before and after OCPC 07, a result not obtained for the Flesch index.

This finding may indicate that the perceived changes in the readability of notes to the financial statements are directly related to OCPC 07. Regarding the other variables selected for this model, it is observed that they did not present significance, therefore not being associated with readability. Santos (2016) also analyzed the readability of the notes to the financial statements, obtaining results that corroborate those of this study, when identifying that more than half of the companies listed on BM & FBOVESPA showed readability improvements between 2013 and 2014.

With regard to similarity, the selected independent variables have explanatory power of 32.6%. Table 10 shows that companies audited by Big Four and ADR issuers had a significant positive association with the similarity of the notes to the financial statements, leading to the inference that their notes to the financial statements ended up registering a higher percentage of similarity. Copying-pasting is facilitated when audit firms disclose a model structure of notes to the financial statements for guidance (Santos, 2016). On the other hand, the participation in the New Market had a significant negative association, pointing to an inverse relationship between this listing segment and the similarity in the notes to the financial statements. Thus, companies that adhere to stricter corporate governance standards (New Market participants) show a lower percentage of similarity between the notes to the financial statements. Regarding the other variables selected for this model, i.e. the time since IPO and the presence of OCPC 07, the results did not appoint significance, so these variables are not associated with the similarity between the notes to the financial statements.

In general, analyzing the aspects surveyed for the form of the notes to the financial statements, there is a limited influence of OCPC 07 on the quality of financial information within the companies in the segment of processed foods. Although there were no changes in the form of the notes to the financial statements impacted by the OCPC 07, this study found relevant interactions with respect to the control variables raised in the literature, explained below.

Regarding the size of the notes to the financial statements, a positive correlation with the issuing of ADR was observed, which leads to the conclusion that the internationalization process ends up exposing companies to an increasing demand for information, given the needs and the complexity of the external market, also motivated by greater enforcement by supervisors.

The participation in the New Market, another variable that presented a positive correlation with the size of the notes to the financial statements, is related to the fact that the companies participating in this group are subject to compliance with corporate governance practices beyond those already required by the market and by the supervisors, generating a greater volume of information that should be evidenced in the financial reports.

It was also found that the fact that the company is audited by one of the Big Four is also positively correlated with the size of the notes to the financial statements, as these audit firms disclose a model note, serving to guide companies in the preparation of their own notes to the financial statements.

With regard to the time since the IPO, there was an inverse correlation with the size of the notes to the financial statements, which is possibly related to the companies' know-how, acquired with the medium and long-term market experience, leading to a drop in the size of notes to the financial statements by disclosing only useful facts to stakeholders.

Concerning the similarity of the notes to the financial statements, higher rates of copy-paste have been found for ADR issuers and those audited by Big Four, a practice further facilitated by the disclosure of notes to the financial statements, according to the auditor's model, as mentioned previously, which generates a tendency to standardize the accounting reports, creating greater similarity between the companies' notes to the financial statements.

Despite the participation in the New Market, this variable negatively influences the similarity, evidencing that the adoption of the governance practices ends up becoming a differential to the extent of reducing the similarity between the companies' notes to the financial statements.

In general, the study contributes to the enrichment of Accounting literature, proposing an approach that considers qualitative aspects of the notes to the financial statements (size, readability, and similarity) that are at the center of the current discussions on the quality of accounting information. In addition, it is important to understand how companies are behaving towards OCPC 07 determinations and what factors directly impact the form of the notes to the financial statements.

5. Conclusion

The aim in this study was to analyze the behavior of Brazilian companies in the face of the regulators' current disclosure guidelines, considering the formal aspects of their notes to the financial statements, in view of the publication of OCPC 07. The aspects related to the form of the notes to the financial statements were drawn up based on the guidelines stipulated by OCPC 07, segmented in size, readability, and similarity, and the periods before and after OCPC 07 were compared later by means of a difference of means test. In addition, explanatory variables that signaled some connection with the form of the notes to the financial statements were tested in the literature on disclosure, using multiple linear regression.

The readability of documents analyzed after OCPC 07 was improved, specifically in the Fog index, reflecting improvements in the disclosure criteria the companies adopted. There were no significant changes in the size and similarity of the notes to the financial statements between the periods compared, reflecting that, despite the improvement in readability, companies still need to move forward in other aspects related to the form of these documents, showing only what is relevant to users. Therefore, the hypothesis formulated for this study was partially met.

The analysis of the explanatory capacity of the variables surveyed in the literature was performed through Multiple Linear Regression tests, which demonstrated a significant association between the presence of OCPC 07 and the readability of the documents, proving the inferences obtained in the difference of means tests.

In conclusion, after analyzing the aspects surveyed for the form of notes to the financial statements, we can identify a limited influence of the OCPC 07 on the quality of the financial information in the scope of the companies in the segment of processed foods, with regard to the size, readability, and similarity. It is worth mentioning that this study considers the companies belonging to a single subsector and that, therefore, the results cannot be generalized, given the specifics of each subsector and segment of operation and, consequently, of each operational context.

As a limitation of this research, we highlight the approach of a specific economic segment, which results in a reduced sample. In this sense, the results presented here reflect the behavior of a group of companies with similar operational contexts, so that extending the findings to other sectors and/or subsectors requires special attention. Finally, for future research, we propose the analysis of larger samples, concentrating more sectors and subsectors. We also recommend international comparisons in order to understand how Brazil fits into the global context.

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Public Expenditures and Productivity in Medium and High-Complexity Health Services in the Brazilian States

Abstract

Objective: Verify to what extent the volume of public expenditures in health has influence the efficiency and productivity gains of medium and high-complexity services in the Brazilian States.

Method: Based on Data Envelopment Analysis (DEA) and Malmquist's Productivity Index, a theoretical-empirical study was developed with a quantitative approach, using the Brazilian states that disclosed information in Datasus between 2008 and 2015 as analysis units.

Results: The main findings evidenced that the states with the mean highest resource volume could not be considered the most efficient, indicating that there may exist a negative relationship between the growth of public expenditures and the efficiency in the services offered. In addition, in the states that increased their spending in health between 2009 and 2015, the productivity was not directly proportional to the resource volume used.

Contributions: The research offers empirical elements that evidence the need to seek better outcomes for the health system, in the context of medium and high-complexity care, based on the efficiency and productivity gains offered, in principle without liberating new resources for the sector.

Key words: Public Expenditures. Public Health. Efficiency. Productivity.

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1. Introduction

The Brazilian health system, established in the Federal Constitution of 1988 (Brazil, 1988), sought roots in the principles of equality and universality to allow anyone, regardless of contribution, to have access to health. From that moment on, the public health services underwent a process of decentralization to favor comprehensive care and health care for those who needed it (Brazil, 1990), resulting in one of the most important conquests in the social field, at a time when Brazil sought its redemocratization (Marques & Mendes, 2012).

In order to guarantee greater access, the Unified Health System (SUS) was structured in blocks of financing according to the specificities of its actions and services agreed upon (Brazil, 2007). The block of financing of the medium and high complexity procedures consumes most of the resources (Junior & Mendes, 2015) because it is inserted in an area that demands the use of cutting-edge technology and professionals with higher qualification. In recent years, however, access to this type of service has been pointed out as one of the obstacles to the integrality of SUS (Spedo, Pinto & Tanaka, 2010), as it has prioritized only basic care and directed the other services to the private initiative (Santos & Gerschman, 2004; Spedo *et al.*, 2010).

Law No. 8.080 / 1990 (Brazil, 1990) assigns, as a priority, the operationalization of these services to the federal states, which require a higher percentage of expenditures in more specialized actions, with a high operational cost and a high technological standard (Junior & Mendes, 2015). It has been observed, however, that states have to face some challenges in order to make the execution of these services feasible. Piola and Vianna (2002), Santos (2007), Koerich, Drago, Andrade, and Erdmann (2016) showed that these challenges may be related to the low amount of resources applied in the sector.

On the other hand, studies have pointed out that the problem in the health sector is not only related to the volume of expenditures (Gupta, Davoodi & Tiongson, 2001; Makuta & O'Hare, 2015; Novignon, Olakojo & Novignon, 2012), being a necessary condition, but not enough to improve the quality of services (Giuffrida, 1999). The amount of resources applied can be an important factor in determining quality, but it is not a guarantee that the services offered will positively impact the health indicators (Gupta *et al.*, 2001). Therefore, the efficiency in the use of these resources has been pointed out as one of the aspects that also needs to be considered in order to achieve the desired health improvements (Giuffrida, 1999; Makuta & O'Hare, 2015).

Considering the constitutional responsibilities defined for the Brazilian states in the execution of medium and high-complexity services, it is necessary to verify the level of efficiency of public health expenditures in these entities and to what extent resources are sufficient to meet the demands of the population. Thus, to allow the efficient management of public resources to increase the productivity of the goods and services offered to the population, without the need to increase the amount of resources allocated, the following research problem is proposed: **To what extent does the increase in public expenditures influence the increase of efficiency and productivity of health services of medium and high complexity in the Brazilian states?**

This study aimed to verify the extent to which the volume of public expenditures has influenced the increase of efficiency and productivity of medium and high-complexity health services offered by the Brazilian states. It is justified in view of the need to empirically observe whether the proposed improvement to the health system, especially in terms of medium and high complexity, rests on the need to raise public expenditures (Koerich *et al.*, 2016; Piola & Vianna, 2002; Santos, 2007), or if the efficiency in the execution of these services, accompanied by increased productivity, are essential elements to add improvements to the system (Gupta *et al.*, 2001; Makuta & O'Hare, 2015; Novignon *et al.*, 2012).

Therefore, this study presented empirical evidence that indicates the possibility of finding improvements for the health system without, in principle, allocating new resources to the SUS. Although many argue that increasing revenues would be the most viable solution for public health in the Brazilian states, this study shows that, first, it is necessary to improve the public spending of resources already available, increasing productivity through management efficiency, and not necessarily through the increase of revenues.

At the same time, the study motivates a reflection on the importance of using accounting information from the public sector, together with socioeconomic variables, to determine the ability of the government to act upon the society's health demands. And, with this information, to present to the public manager the priorities that need to be observed when setting public policies that effectively optimize the public expenditures, aiming to reduce the health problems in Brazil.

2. Literature Review

The literature on public health expenditures has sought to understand the relationship between the amount of resources employed and how it affects the quality of services and the specific health indicators. Filmer & Pritchett (1999) evaluated the impact of public expenditures and economic, educational and cultural factors in determining the mortality rate of children under five years old in developing countries. They noted a gap between the apparent potential of expenditures to improve health conditions and the current health performance in those countries, suggesting that the amount of resources is not the most important factor in improving the quality of a country's health.

Gupta, Verhoeven, and Tiongson (2003) estimated the impact of health spending on poor countries. They showed that these countries have a significantly lower health status than developed countries. They concluded that health in the poorest regions is more heavily affected by public expenditure than in rich countries. The results show new evidence that public expenditures are more important for the poor, so that increasing the level of health spending by one percent would reduce child mortality by two or more deaths in those countries. Nevertheless, the results indicate that the increase in public spending alone is not enough to improve the health status.

Bokhari, Gai, and Gottret (2007) corroborated this evidence by studying the impact of government expenditures on health outcomes using as a measure of quality the under-five mortality rate and the maternal mortality rate. Using an instrumental variable technique, they estimated the average elasticity of the mortality rate for children under five years of age in relation to public health expenditure reaching - 33%. As for maternal mortality, the mean elasticity was around - 50%.

These pieces of evidence have suggested, empirically, that there is no direct relationship between the quantity of resources and the quality of health. Little has been discussed about this relationship though, according to Beauvais and Wells (2006), who reviewed the literature produced in the period from 1980 to 2005 and sought to distinguish which aspects of health financing affect different dimensions of quality. They identified, in this period, 16 empirical studies analyzing how the finances of health organizations affect quality. The authors observed limited research, investigating whether the behavior of additional factors modifies the relationship between finance and quality.

In order to find the determinants of the impact of public spending on health in developing countries, Makuta and Hare (2015) analyzed the quality of governance in health conditions in 43 sub-Saharan African countries. The results confirmed the hypothesis that public health expenditure has no statistically significant impact on the improvement in health outcomes. But by inserting the governance variable into the model, the impact of the health expenditures improved the results by about 17 to 19 percentage points. These results, according to the authors, can be attributed to the increase in efficiency due to the presence of a better governance index.

As can be seen, there is evidence that increased public expenditures may not result in improvements in the health system. This opens the possibility to investigate whether the amount of resources alone is a determinant factor to increase productivity in public health services, or whether the efficient management of these resources would be one of the preponderant factors to ensure better quality in health outcomes.

2.1 Efficiency of Public Expenditures and Productivity in Health

Health quality, according to Donabedian (1988), can be classified under aspects of structure, process, and outcomes. As a structure, quality denotes the attributes by which medical care takes place, that is, they are material, human, and organizational resources. As a process, it indicates what is actually done to ensure medical care. They are the patient's activities in the search for improvements in his health conditions and the professionals' actions in the implementation of a treatment. The outcomes, then, correspond to the effects of health actions on the life of patients or the population.

Based on these aspects, the quality of health can be evaluated through the attributes of efficacy, effectiveness, efficiency, optimization, acceptability, legitimacy and equity (Donabedian, 2003). A structural quality assessment was chosen for this study though, based only on the efficiency attribute applied to the context of public spending on medium and high-complexity health in the Brazilian states.

Efficiency is the ability to reduce service costs without decreasing the improvement of health conditions (Donabedian, 2003). Thus, efficiency is increased for a given level of costs when the health conditions of the population gain increasing improvements. In that sense, efficiency can be observed by verifying the level of goods and services produced and offered to the population (Donabedian, 2003), that is, by observing whether the resources are organized and managed to minimize the service costs, as well as if the staff, supplies and equipment are paid at values representing their best alternative cost (Aday, Begley, Lairson & Slater, 2004).

Two fundamental approaches are generally used to measure the efficiency of a production unit and can be based on parametric methods or non-parametric models (Seiford & Thrall, 1990). Those that use parametric methods are the most common, although they have the disadvantage of using a previously known functional relationship for the production technology and the assumption of normality for the distribution of inefficiency terms (Seiford & Thrall, 1990).

Non-parametric methods are usually elaborated through Data Envelopment Analysis (DEA): a tool developed by Charnes, Cooper, and Rhodes (1981, 1978) that was constructed based on Farrell's productive efficiency (1957) and expanded to measure the efficiency of a Decision Making Unit (DMU) based on multiple inputs and multiple products, not requiring a functional relationship between the variables and the efficiency of a DMU. It can also be measured relative to all others with the simple restriction that DMUs are at or below the efficiency frontier (Seiford & Thrall, 1990).

Farrell (1957) pointed out that the efficiency of a production unit is composed of two components: technical efficiency, which demonstrates the ability of a DMU to obtain the maximum output from a set of inputs; and allocation efficiency, which reflects the ability of a firm to use the inputs in an optimized proportion, given their respective prices and production technology. According to Farrell (1957), production technology is the set of inputs that has the capacity to generate a product. These two measures are combined to determine the overall economic efficiency of a decision-making unit (Coelli, Rao, O'Donnel & Battese, 2005).

A DMU is considered to be 100% efficient if and only if the performance of other DMUs does not indicate that some of its inputs or outputs can be improved without the need to reduce some of its inputs or products (Cooper, Seiford & Zhu, 2011). Thus, efficiency does not require knowledge of the prices of inputs or products, concentrating only on the different inputs and outputs. Thus, to determine the efficiency of the states in offering medium and high complexity health products and services, it is not necessary to obtain the prices of the inputs used, only data related to the expenses and services offered.

It should be noted, however, that the performance of a DMU might change over time. Therefore, measuring these changes may be relevant to understand how entities have changed over time and how they have been impacted by technological change, or to see if improvements in DMU results can be attributed to their own initiatives, which drove them to improve their performance in relation to the existing technology (Bogetoft & Otto, 2011). The main methodology to verify the efficiency dynamics over time, according to Begotoff and Otto (2011), is the Malmquist Index, because it does not use prices to aggregate the different inputs and products.

The Malmquist Index (Malmquist Productivity Index), developed by Caves, Christensen and Diewert (1982), based on Malmquist (1953), is constructed by measuring the radial distance of the output and input vectors observed between two periods, relative to the change in the technology of the DMU. As the distance can be oriented according to the inputs and outputs, this index can measure the productivity by looking at the outputs based on the maximum level of products that were produced using a certain vector of inputs and a given production technology related to the level of observed products. When directed at the inputs, the productivity index is related to the level of inputs needed to produce a vector of outputs relative to a reference production technology.

Empirically, several studies have used these indicators to evaluate productivity in health services. Färe, Grosskopf, Lindgren, and Poullier (1997) compared productivity growth in the health sector for a sample of member countries of the Organization for Economic Cooperation and Development, based on the Malmquist productivity index. According to them, it is more advantageous to use this indicator, as one can work with multiple inputs and multiple products without the need to know the prices of the inputs and outputs used. This makes the method viable to work with the productivity of health systems.

Giuffrida (1999) used this index to analyze the UK health system. The author evaluated the change in productivity by decomposing the indicator into three parts: index of change in pure technical efficiency change, change of efficiency of scale and technological change; and concluded that the increase in productivity can be attributed to the improvement in pure technical efficiency and in the positive change in scale efficiency. Nevertheless, technological change was not significant. Allin, Grignon, and Want (2016) observed high levels of inefficiency in the Canadian health system. They perceived the possibility, based on the available resources, of presenting improvements in the outcomes by about 18 and 35%, reducing the rates of mortality by treatable causes. In addition, they found that the inefficiencies were related to three aspects: management factors (such as hospitalizations), public health factors (such as obesity and smoking) and environmental factors, such as mean income of the population.

Souza and Barros (2013), when evaluating the efficiency in the allocation of public resources destined to hospital care in the Brazilian states in 2009 and 2010, used as input variables hospital care expenses and as outputs the number of beds, the number of professionals in the health area and the number of health facilities. They concluded that only six states were considered efficient in 2009 and seven of them were 100% efficient in 2010, that is, most states failed to maximize the outcomes of the services offered to the population.

Also using the efficiency and productivity measures, other studies aimed to disclose the aspects of quality in healthcare: Ferrari (2006), Löthgre and Tambour (1999), Lyroudi, Glaveli, Koulakiotis, and Angelidis (2006), Sola and Prior (2001), and others. This shows that the literature has put great emphasis on measuring productivity in health services. This study broadens this discussion by making use of public sector accounting information in Brazil to measure the efficiency and productivity of the medium and high-complexity health system and to relate them to the increase in public spending on health in the Brazilian states.

3. Method

To answer the research problem, a theoretical-empirical study was carried out, using quantitative methods to analyze the extent to which the increase in the level of public expenditures influences the efficiency and productivity of the medium and high-complexity health services. Thus, the states of the Federation and the Federal District, whose public health information was available in the Department of Information Technology of the Brazilian Unified Health System (Datasus), were adopted as the unit of analysis.

The analysis considered the data from 2008 to 2015, during which data in Datasus were classified according to the Agreement process of Guidelines, Objectives, Targets, and Indicators for 2013-2015 (Brazil, 2013) and organized by a historical series from 2008 to 2015. Therefore, it was decided to use this period to maintain the uniformity of data and the definitions of the indicators available in the Datasus system.

In the first phase of the study, an analysis was developed of the efficiency of the Brazilian states in relation to the public health expenditures in the medium and high-complexity care category. For this purpose, DEA was used, which, according to Lobo and Lins (2016) and Hollingsworth (2003), is the method most frequently chosen to discuss health efficiency. The model of Banker, Charnes, and Cooper (1984) was adopted, with a focus on outputs, as public health services are not expected to reduce resources, but to maximize the goods and services offered to the population based on a set of inputs already available (Marinho & Façanha, 2001).

The variables used in the DEA model were selected to encompass the most relevant aspects highlighted in the literature and which can be used to evaluate the provision of health services in the medium and high complexity modality. The number of inputs and outputs was also checked in order not to exceed the basic DEA assumptions that condition the number of variables to the number of DMUs: Hollingsworth and Peacock (2008) recommend that the amount of DMU should not be less than three times the number of input and output variables. In this way, the model was developed with two input variables and two output variables, as shown in Table 1:

Table 1
Description of input and output variables for the DEA model

Variável	Descrição	Fundamentação
Total Expense (TE)*	Input variable corresponding to the sum of Hospital and Outpatient Expenses funded by the Fund of Strategic Actions and Compensations (FAEC) and the expenses funded by the MAC - Medium and High Complexity Hospital and Outpatient.	(Evans, Tandon, Murray & Lauer, 2000; Marinho, 2003)
Number of Establishments (NE)	Input variable corresponding to the Number of hospital and outpatient Establishments of medium and high-complexity under the responsibility of the States and maintained by the FAEC and MAC.	(Queiroz, Silva, Figueiredo & Vale, 2013; Ribeiro, 2008)
Hospital Procedures (HP)	Outpatient variable corresponding to the number of hospital procedures in the SUS, by place of hospitalization, approved per year of care per Unit of the Federation.	(Marinho, 2003; Souza, Scatena & Kehrig, 2016).
Outpatient Procedures (OP)	Outpatient variable corresponding to the number of outpatient procedures in the SUS, by place of hospitalization, approved per year of care per Unit of the Federation.	(Marinho, 2003)

Obs.: * The Total Expense amounts were deflated using the General Price Index - Internal Availability, a method developed by the Getúlio Vargas Foundation (FGV).

Source: Elaborated by the authors (2016).

After analyzing the efficiency of the Brazilian states in terms of public expenditure on medium and high-complexity procedures, the next step was to assess the behavior of these expenditures over the period, noting if there was a growth in the volume of resources applied and if this impacted the increase in the productivity of the goods and services offered.

Initially, the percentage difference between the resources expended in 2008 and 2015 was calculated. Thus, one can identify the states that increased the amount of resources in that period and, then, a comparative analysis was developed, using a test of means between the most efficient states and those that had the highest percentage increase in resources. Hence, it can be inferred if the average growth of resources was accompanied by a significant increase in the efficiency of the expenditures in medium and high-complexity services.

In the second stage of the study, the productivity of the States was calculated in relation to public expenditures in the health services through the Malmquist Productivity index. According to Färe, Grosskopf, Norris, and Zhang (1994), this indicator, developed by Caves, Christensen and Diewert (1982), based on Malmquist (1953), is used to make comparisons in several situations, being constructed through the distance function of inputs and output, where input-based approaches require that DMUs maximize revenues and output-based approaches serve to minimize costs.

Färe *et al.* (1994) specified an output-oriented model for the Malmquist Index of Productivity Change, considering the productivity at point related to the production at point adopting the following equation:

$$M_0^{t+1}(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t)} \frac{D_0^{t+1}(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^t, y^t)} \right]^{\frac{1}{2}} \quad [1]$$

This index corresponds to a geometric mean between two outputs, so that the values obtained that are higher than 1 (one) will be considered a positive increase in the productivity of the DMUs. Thus, in the approach adopted in this study, the respective productivity index was determined for each state, considering that there was an increase in the production of goods and services when the Malmquist index, calculated by equation [1], was higher than 1. Thus, indicators were obtained for several aspects of productivity, according to Coelli *et al.* (2005):

Variation in Technical Efficiency: this is the change in the technical efficiency index of each state in the period based on the inputs used, considering constant returns of scale;

Technological Variation: corresponds to the change in the production frontier, permitting the identification of the increase in productivity because of the improvement in the production technology used by each entity of the state;

Variation in the Pure Technical Efficiency: corresponds to the variation in the productivity of the states based on the technical efficiency calculated based on variable returns of scales, that is, it is the increase of the services offered based on the inputs used;

Variation in Scale Efficiency: represents the change of efficiency based on the production scale, making it possible to identify if a state entity operates at its optimal level of production relative to other entities;

Total Productivity of Production Factors: the Malmquist index, which defines the total productivity of a DMU, combining the measurement of technical efficiency with the efficiency of scale.

After defining the productivity indices for each state, the percentage change in productivity and health expenditures was determined. For this purpose, the Horizontal Analysis technique was used, which, according to Martins, Diniz, and Miranda (2012), is an important tool to analyze the evolution of the accounts in the financial statements over time. In this work, we used the value of public expenditures on medium and high-complexity care and the respective variation over time in each state of the Federation, based on the year 2008. Finally, a comparative study was developed between the variables, testing whether the means were considered equal and statistically significant. Thus, the goal was to identify if an average increase in the level of resources would tend to be statistically equal to an average increase in the productivity of the services performed.

4. Results

Analyzing public health expenditures in the period 2008 to 2015, we observed disparities in the mean value the states applied in the sub-function medium and high-complexity care. During this period, there was a state that spent only R\$ 53 million, as can be seen in Table 2, while others used more than 9 billion. These values may reflect regional differences in Brazil (Albuquerque, Viana, Lima, Ferreira, Fusaro & Iozzi, 2017), showing that, in some locations, there is a greater concentration of health facilities with a higher degree of specialization to attend to the more complex services, demanding a higher percentage of resources.

Table 2

Descriptive statistics of variables in 2008-2015

Variable	Mean	Standard Deviation	Minimum	Maximum
Total Expense*	1.187.677	1.666.779	9.096.352	53.093
Number of Establishments	1.086	1.351	6.094	68
Hospital Procedures	426.843	492.235	2.507.111	24.703
Outpatient Procedures	44.008.825	65.374.565	404.188.787	2.461.161
State Population	7.252.559	8.503.830	44.396.484	412.783

Obs.: * Amounts in thousand reais.

Source: organized by the authors based on Datasus (2016) data.

The number of hospital and outpatient establishments also showed disparities, so that the state with fewer public centers for medium and high-complexity care has only 68 units. On the other hand, there are states with about six thousand hospitals and outpatient clinics. Therefore, in the collected data, it is observed that it is a heterogeneous sample with particularities inherent to each entity. Considering that the method used to measure efficiency was based on DEA with variable returns of scale (which reconciles different levels of production scale), however, this disparity did not influence the results of the research.

The per capita values of these variables, according to Table 3, depict public expenditures considering the demographic effects in the states. According to Varela, Martins, and Fávero (2012), a lower population density can cause a rise in the costs of providing health services because it requires greater effort to reach even the population farthest away. Thus, this evaluation pointed out that the average Total Expenditure per capita varies from 69.25 *reais* to 219.34 *reais*, indicating that there are states, proportionally to the number of inhabitants, with a lower amount of expenditures on medium and high-complexity services.

Table 3

Descriptive statistics of variables in per capita amounts for the period 2008-2015

Variable	Mean	Standard Deviation	Minimum	Maximum	Median
Total Per Capita Expense	149,86	30,71	69,25	219,34	146,24
Number of Establishments*	0,22	0,28	0,01	1,57	0,15
Hospital procedures*	5,99	0,86	3,94	7,82	6,01
Outpatient procedures	5,77	1,50	3,45	9,68	5,33

Obs.: * Amounts per 1000 inhabitants.

Source: organized by the authors based on Datasus (2016) data.

Another variable that reinforces some of the weaknesses of the medium- and high complexity health system in the Brazilian states was the Number of Establishments, which reached 0.01 per thousand inhabitants (data referring to the State of Rio de Janeiro, followed by Paraíba with a minimum value of 0.02). Thus, in the previous eight years, on average, in these states, 1 (one) health establishment of medium and high-complexity is available for every 100 thousand inhabitants, data that corroborate the findings of Souza and Barros (2013), who listed Rio de Janeiro between the states with the greatest dispersion between the number of inhabitants and the number of health facilities in 2009. There are signs that there are more patients in medium and high-complexity establishments demanding health services.

The other variables followed the trend towards inequality between the states, with highly discrepant maximum and minimum values. It was also recorded that the average number of hospital procedures was lower than the median, and the standard deviation was lower than one unit. Thus, there are indications that, amidst inequalities in the amount of resources, states are obliged to carry out, proportionally, the same amount of services. Thus, there may be state entities whose health systems are overloaded, having to meet a demand greater than their capacity and, therefore, they need to be more efficient in the use of resources.

4.1 Efficiency of the States in Medium and High-Complexity Health Services

After characterizing the variables, the Brazilian states' efficiency in offering medium and high-complexity health services is discussed. Efficiency measures corresponding to each year were obtained, according to Figure 1. On average, there was an increase in efficiency during the period, with 2013 being the year with the highest efficiency index in public expenditures.

In 2008 and 2009, the states of Rondônia, Amazonas, Roraima, Pará, Amapá, Ceará, Bahia, and São Paulo were on the border of efficiency, with a 100% score. As from 2010, Rio de Janeiro became part of this group and, in the years 2013 and 2014, Paraíba and Goiás also presented themselves technically efficient. Based on these results, it is observed that most of the efficient states are located in the North, confirming the findings of Souza and Barros (2013).

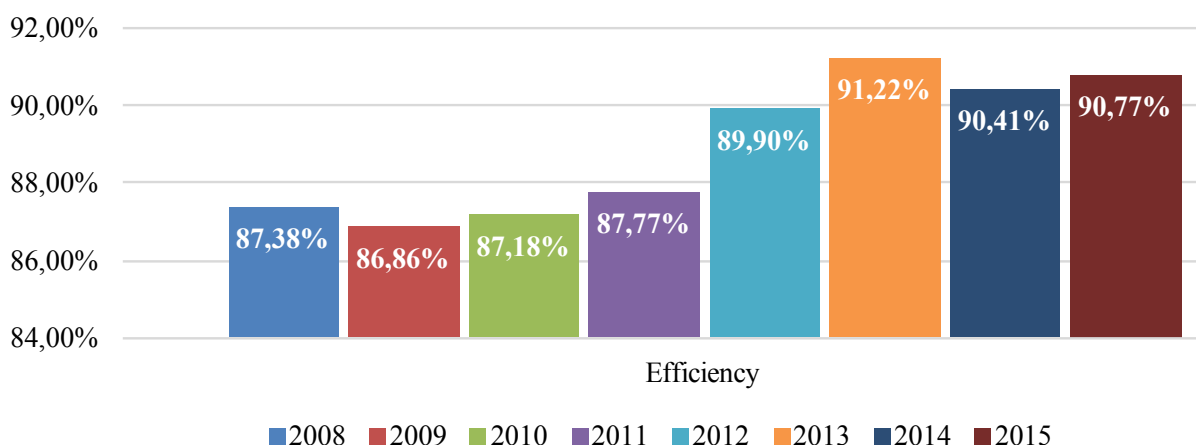


Figure 1. Mean Efficiency of the States in 2008 - 2015

In order to observe if the increase in the public health expenditures in the sub-function medium and high-complexities is somehow related with the efficiency in the use of these resources, the test of means between these variables was executed. Therefore, a group was created with the most efficient states, that is, the states whose efficiency scores were greater than or equal to the median efficiency values (89.7%, non-tabulated data) and another with the inefficient states (with scores lower than 89.7%). Then, the average per capita expenditures in each of these groups were compared. The Kolmogorov-Smirnov test for Independent Samples, presented in Table 4, showed that, at a significance level of 5%, there are indications that the average efficiency of the states that have spent most differs from the efficiency of those who have spent fewer resources.

Table 4

Kolmogorov-Smirnov test for efficiency and health expenditures in the Brazilian states

Groups	Test Statistics	P-value
States considered inefficient ^a	0,028	0,919
States considered efficient ^b	-0,381	0,000
Combined (Kolmogorov-Smirnov)	0,381	0,000

Obs: (a) corresponds to the States with below-median ($E < 89.7\%$) efficiency (E); (b) corresponds to the States with above-median efficiency ($E > 89.7\%$);

Source: elaborated by the authors based on the research data (2016).

In the first line of Table 4, we test the hypothesis that the group of states defined as inefficient does not contain a lower value for health expenditures than the group considered efficient. With a 2.8% difference between the frequency and p-value distributions of 0.919, there are strong indications that lead to the non-rejection of the null hypothesis. Therefore, there is evidence to conjecture that inefficient states were not necessarily those that spent less.

Corroborating these observations, the second line of Table 4 verifies the hypothesis that expenditures are greater for the group of efficient states. The results suggest that the set of states considered to be efficient did not carry out higher amounts of per capita spending. The smaller difference between the two variables (-0.381) and the p-value of the distribution (0.000), at the level of 5%, motivate the need to reject the null hypothesis that there is equality between the means of these variables. Therefore, it should be assumed that the distributions are statistically different, indicating that it cannot be concluded that the efficient states are those that spend the highest amount of resources.

The descriptive statistics of per capita expenditures and the efficiency ratios for the two groups (Efficient and Non-Efficient) support these results, according to Figure 2. It can be verified that, among the inefficient states, the average per capita expenditure on health, in the category of medium and high-complexity care, was higher than in the group of Efficient States. Nevertheless, the states that used 12% less public resources managed to be 20% more efficient.

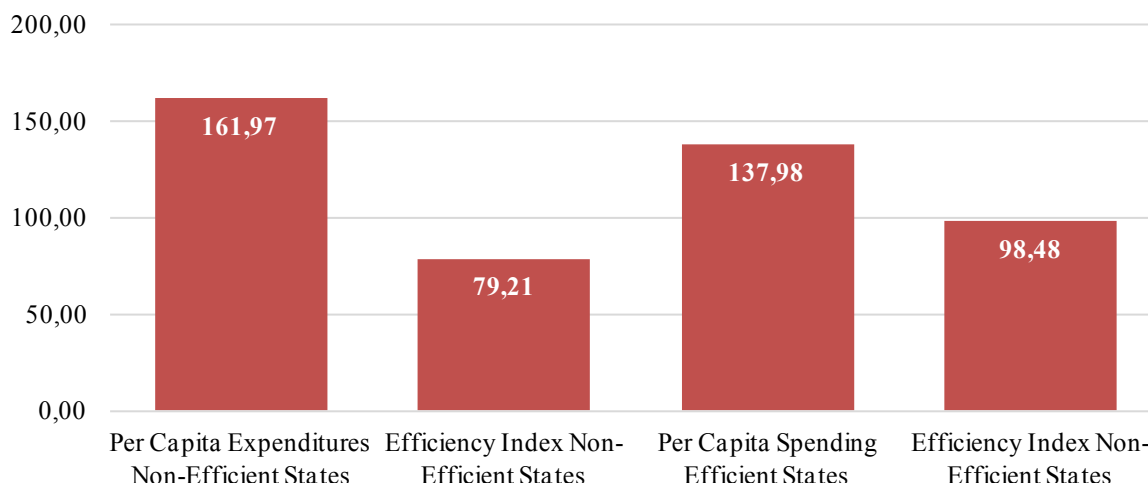


Figure 2. Efficiency and Public Expenditures of Efficient and Non-Efficient Groups

Based on these results, it can be inferred that higher efficiency is not necessarily related to a higher amount of available resources, which corroborates the results proposed by Filmer and Pritchett (1999), Gupta *et al.* (2003), Bokhari *et al.* (2007) and Makuta and O'hare (2015). At the same time, these results point out that the states with the highest amount of resources in per capita terms may figure among those with the lowest efficiency. This suggests that outpatient and hospital services could be expanded at the medium and high-complexity level in those states without allocating any new resources to the sector.

These findings may indicate some fragility in medium and high-complexity public health care. Given the essential importance of these services, a higher level of efficiency was expected in their execution, as the sector has more qualified human resources and technologically more sophisticated equipment. The results have pointed in another direction though, showing signs of inefficiency in the SUS between 2008 and 2015, even in those entities that received a larger volume of resources.

4.3 State Productivity in Medium and High-Complexity Health Services

After analyzing the efficiency in relation to the public expenditures on medium and high-complexity health services, the change of productivity of the states in the period 2008-2015 is discussed. Table 5 shows the mean values for the period 2008 to 2015.

Table 5

Malmquist Productivity Index for the Brazilian states in 2008-2015

Year	Variation in Technical Efficiency	Technological Variation	Pure Efficiency	Scale Efficiency	Total Productivity
2009	0,979	0,939	0,994	0,985	0,919
2010	1,002	1,106	1,003	0,999	1,108
2011	1,014	1,022	1,007	1,007	1,036
2012	1,010	1,067	1,026	0,984	1,077
2013	0,999	1,020	1,016	0,983	1,019
2014	0,977	1,049	0,990	0,987	1,025
2015	1,018	1,084	1,005	1,013	1,103

Source: research data.

Based on the Malmquist index, five measures of productivity were obtained: Variation in Technical Efficiency, Technological Variation, Change in Pure Technical Efficiency, Change in Scale Efficiency and Variation in Total Productivity of the Factors. It is observed that there were no results in 2008, as the Malmquist Productivity Index uses the first year of the series as a basis to calculate the indicators. For the following years, there was an increase in the Technical Efficiency variation, from 0.979 to 1.018. This result implies that Brazilian states increased productivity by 1.8% in the services offered because of the increased efficiency in the execution of public expenditures.

For the technological variation, the most significant increase was 10.6% in 2010 and the other years, except in 2009, showed a growing variation. This can be interpreted considering that there were improvements in the production technology, that is, in the inputs used by hospitals and clinics that provide medium and high-complexity services. On the other hand, the efficiency of scale did not show significant modifications, with a drop between 2012 and 2014 and a small increase in 2011 and 2015. Thus, it was verified that the states are working below their productive capacity, with the possibility of expanding services only by the increase in the production scale.

Finally, total productivity increased by around 10% in the years 2010 and 2015, while this result was less significant in the other periods, ranging between 1.9% and 3.6%; in 2012, total productivity increased by 7.7% in relation to 2008. This shows that the states, despite increasing productivity, did not continue with this performance over the periods, evidencing possible weaknesses in the management of the health resources.

After using the horizontal analysis technique for public health expenditures in the medium and high-complexity services and for the total state productivity, two different moments of the series were chosen to compare the behavior of these variables. 2010 was chosen as the starting year because the base year of the horizontal productivity analysis was 2009. And, to close off the analysis, the year 2015 was chosen. Figure 3 shows the variation of total expenditure and productivity in relation to the baseline year of the horizontal analysis.

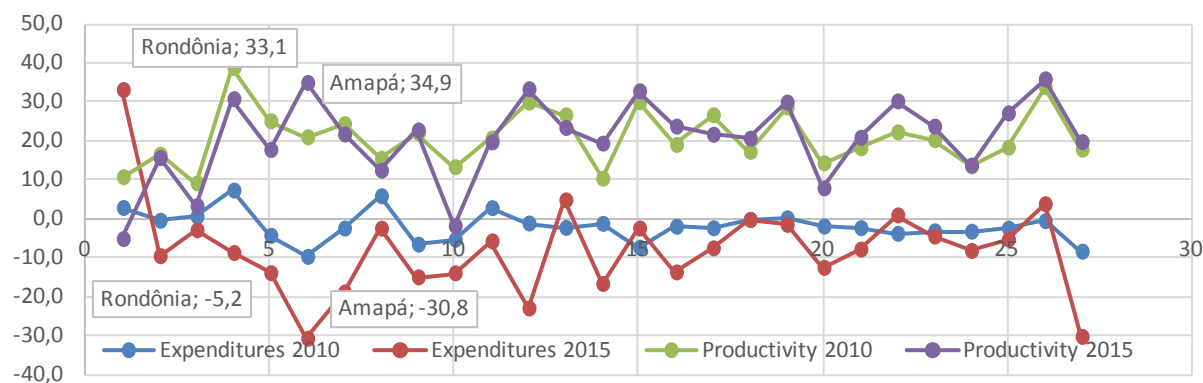


Figure 3. Relation between Expenditures and Total Productivity between 2009 and 2015

This analysis revealed how the variation in Health Expenditures occurred and the variation in Total Productivity indices for each state. To exemplify how this behavior took place, we chose the data referring to the State of Amapá, which showed the lowest change in expenditures in 2015 compared to the base year 2009 of the horizontal analysis. For this state, it was verified that, in 2010, expenditures dropped by 9.7% in relation to the baseline (2009), but productivity grew by 20.9%. In 2015, despite a 30.8% reduction in spending, this state increased its productivity by 34.8%. This points to the existence of a non-proportional relationship between public spending and productivity, so that, with the reduction of resources, the states have to meet their demands by seeking management alternatives to meet the needs of the population.

When the same analysis was performed for the State of Rondônia, a disproportionate behavior was found between expenses and productivity. While the resources used by this state increased from 2.8% to 33.1% in relation to the base year (2009), the productivity index decreased from 10.7% in 2010 to 2.8% in 2015, once again indicating that there is no direct relationship between expenditure and productivity. Thus, there are signs that increasing public spending on health does not necessarily make the entity more productive and in better conditions to offer more services.

To expand the scope of this discussion, the Non-Parametric test of Means was carried out, verifying the hypothesis that the states with the highest average growth in per capita expenditures on medium and high-complexity health services have the same average growth in the Malmquist Total Productivity Index. Table 6 presents the Kolmogorov-Smirnov test results for this relationship.

Table 6

Kolmogorov-Smirnov test for productivity and health expenditures in the Brazilian states

Groups	Test Statistics	P-value
States that did not increase their expenditures between 2008 and 2015	0,167	0,654
States that increased their expenditures between 2008 and 2015	-0,148	0,718
Combined (Kolmogorov-Smirnov)	0,167	0,963

Source: elaborated by the authors

Considering that the statistical null hypothesis was defined as that there are no differences between the average growth of expenditures and the average growth in productivity, the Kolmogorov-Smirnov Non-Parametric test showed that there is a 16.7% probability that there is no equality between these averages. In addition, the p-value of 0.963 indicates the possibility that, at the 5% level, the null hypothesis is not rejected. Therefore, there is not enough statistical significance to confirm that an average increase in spending is accompanied by the average increase in the Productivity index. Therefore, once again, it is evident that, within the scope of the medium and high-complexity subfunction in the states of the Federation and under the limitations defined by the choices of variables used in the DEA model adopted in this study, it is not expected that increasing public spending will increase the productivity of the services offered. As a consequence, it is not expected that there will be a direct and proportional relationship in the increase in the number of services offered to the population.

5. Final Considerations

This study aimed to verify the extent to which greater public spending influences the increased efficiency and productivity of medium and high-complexity health services in the Brazilian states. The basic assumption to carry out this research was to consider that, to improve the SUS, it is not enough to increase the level of health spending, but the efficiency in the use of these resources is another aspect that needs to be considered. Thus, based on the Data Envelopment Analysis and the Malmquist Productivity Index, a theoretical-empirical study was developed with a quantitative approach, using as a unit of analysis the Brazilian states that provided information in the Datasus system between 2008 and 2015.

The main results pointed to inequality in health expenditures among the Brazilian states so that Total per capita Expenditure presented great variation. Even so, it can be observed that, in entities with the lowest relation between health expenditures per inhabitant, the performance was similar to the entities that had the highest expenditure per capita. This reveals a possible inefficiency in the use of public resources so that States with fewer resources had to make a management effort to maintain the level of outpatient and hospital care in the standards of the states that spent the most.

In addition, it was observed that, in the entities that spent more, the efficiency in the services offered, on average, remained below the efficiency frontier. This shows that there was no balance between the growth of expenses and the number of services offered. This became more evident when verifying whether the average expenditure and the average efficiency could be considered statistically equal. The tests indicated that there was no statistical significance to corroborate this hypothesis. This reveals the trend that the state with the highest health expenditure is not always the most efficient.

When the productivity was evaluated, the results resembled those of the efficiency study. In the states that increased spending between 2009 and 2015, the impact on productivity was not directly proportional to the resource used. Some of them even increased the Productivity index, but most of them revealed a reduction in this indicator. Finally, the hypothesis test revealed no equality between the per capita expenditure averages and the Total Productivity index.

Given these results, it is noticed that many challenges still need to be overcome in the SUS to ensure that states perform better in medium and high-complexity services. There are signs that the resources used are insufficient to change the health status of the population. In a period of fiscal crisis and reduction in public spending though, as has been happening in Brazil, it is expected that management measures be taken to improve the use of resources, making health services more efficient and less costly for the public sector. Therefore, it is hoped that improving public management in the states will increase productivity and expand the supply of health services, broadening access to the services and improving the quality of Brazilian public health.

Therefore, in this perspective, using available accounting information on the public sector, this study contributes to public health policy makers, showing the need to improve the SUS based on complementary measures that make the services more efficient and less costly for the contributing citizens. At the same time, this study offers methodological resources to public accounting researchers, which can be used in the assessment of public policies in different sectors to identify the productivity of the states in the use of public resources.

Although the results presented here can serve as the base for other efficiency and productivity analysis studies, the limitations found in the development process should be highlighted. The health sector was only addressed in the medium and high-complexity context at the state level, without considering the role the cities play. Therefore, in future studies, we suggest including the participation of municipal entities in the development of primary health care services

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Externalization: does the Academy answer the doubts of society?

Abstract

Objective: Based on the Brazilian scenario that discusses the potential impacts of the externalization of organizational activities, in view of the imminent political decision, the objective in this study is to address the current discussions on externalization through the results of academic empirical studies.

Method: Therefore, the articles published in Brazilian Administration and Accountancy journals between 2011 and June 2015 were surveyed and analyzed. The 44 articles analyzed were collected from the journals ranked under Qualis A1, A2 and B1, using the words: externalization and outsourcing. Then, the most frequent themes in the discussions on the theme in Brazil were determined, based on media approaches, and analyzed from the perspective of the Stakeholder theory.

Results: The results show that highly significant academic production exists on the discussed themes and that the evidence strengthens the viewpoint against externalization more than the defenders of the practice.

Contributions: The study contributes to the discussion on the theme in view of the emerging nature of the theme in the Brazilian society, consolidating different empirical evidences that go against the current political decision, and enables social groups to substantiate their discussions and decisions.

Keywords: externalization. outsourcing. bibliographic study.

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1. Introduction

With the processing and approval of the Bill of Law 4.330 (2004) in the chamber of deputies in April 2015, which regulates outsourcing in Brazil, the discussion on this topic has become frequent in news and social network media. Based on political discussions with a clear polarization of positions and defense of interests, the final text was enacted by the President of the Republic in March 2017 (Law 13.429, 2017). Outsourcing, a concept linked to the transfer of internal activities to an external agent (Schneider, Diehl & Hansen, 2011) is the most common form of externalization and the term used in the media and beyond academic discussions and texts, is the base for this study.

Supporters of the new legislation, as the BBC journalist Luis Guilherme Barrucho (Barrucho, 2015) shows, argue that it aligns Brazil with the most modern labor practices in the world, putting an end to legal insecurity, increasing the competitiveness of companies and generating more jobs. On the other hand, those who are against approval claim that these regulations would lead to a reduction in employee salaries, a loss of service quality, an increase in occupational accidents, a reduction of rights and a worsening of working conditions. The topics of interest identified in the Brazilian media mainly involve externalization as a way of modernizing activities, with concerns related to the bond that the employee will have and consequences for himself, the direct employer and the contractor. Other themes are the union relations and the quality of the conditions to perform the job activity.

Around the world, outsourcing also figures on the discussion agenda. On the BBC website, journalist Natália Antelava (Antelava, 2015) tackles another point: the return of jobs to the United States. She notes that, in 2003, 150,000 jobs were sent out of the country, while 2,000 returned. In 2013, the number was 40,000 places out and 40,000 returning to the country. This return, according to the matter, was due to the demand for skilled labor. This was not without consequences for the Americans though. Robert Reich (Reich, 2015), former Secretary of Labor under the Clinton administration, reports in his blog that the flexible economy in force in the US, a response to low Chinese costs, results in a “hell” for workers’ lives: he refers to the practice of just-in-time scheduling, which, in short, means paying the worker only for the hours worked.

Analyzing the current situation of the discussions on externalization in Brazil and the US reveals a discrepancy in the phases of each. While, in Brazil, outsourcing is in the early stages, such as regulation, in the US, this discussion has already reached more advanced stages, such as the return of outsourced companies and measures to reduce the difference in labor costs between the US and destination countries of the outsourced companies. Activity externalization actions already take place in organizations in Brazil though, and scientific studies on their motivations and effects are found in the academic literature. Thus, discussions at the political level, in the media, in organizations and in society, can make use of that evidence, which is the central motivation of this study.

In the academy, empirical studies have addressed the practice as an option to reduce costs, such as Lacity and Hirschheim (1993b), Baron and Kreps (1999), Hoecht and Trott (2006). These defend the view of outsourcing based on the concept of externalization, focused on maximizing the wealth of the investor (organizational view), to the detriment of a broad approach, seeking to discuss the impacts for the company, employees, customers, suppliers, among others, which are affected by decisions to outsource or internalize activities, addressing different stakeholders.

In this sense, studies point out that there is dissatisfaction with externalization, including loss of control over activities (Veltri, Saunders & Kavan, 2008; Whitten and Leidner, 2006), supplier dependence (Alexander & Young, 1996) and risk of loss of employees’ identity with the company (Belcourt, 2006). In these, the cost reduction view permeated the analyses, but the relations with other actors can be identified, especially with the employees. This evidence points to the range of stakeholders, using the Stakeholders’ theory as a basis for research, considering the need for organizational decisions to consider the impacts on different interest groups.

Thus, the objective of this study is to address the current discussions about outsourcing through the results of empirical academic studies. In this way, it permits a broad reading of the effects of externalization, adopting the scientific view, compiling the results of several studies carried out in Brazil. This

approach permits contributions to the theme, presenting results that diverge from the political decision, and promotes a better base for the discussions and decisions of social groups, particularly organizational managers and employees. In addition, it contributes to the literature by addressing different aspects linked to externalization and by compiling studies that aim to clarify social demands. At the end, recommendations are provided to the stakeholders.

Besides this section, the study adopts the following division. In section 2, the literature review is presented, with studies on externalization and how it is perceived in the Stakeholder theory; section 3, methodological procedures, discusses the procedures used to develop the research; in section 4, results and discussions, the main outcomes are presented, including discussions on outsourcing in Brazil; in section 5, the final considerations are presented, followed by the list of studies analyzed.

2. Externalization according to Stakeholder theory

Initially, some definitions of externalization are needed for the sake of a better understanding and discussion. Externalization is the act of systematically replacing an activity, performed internally, by the execution by an external agent, counting on the contractor's technical support (Lacity & Hirschheim, 1993a). In addition, according to Besanko, Dravone, Shanley and Schaefer (2007), in the value chain, the decision between producing or buying services or products determines the internalization or externalization for the company, also seen as a form of operational management strategy (Schneider *et al.*, 2011), characterized by the contracting of third parties for the execution of works pertinent to the activities of the contracting companies.

In this sense, the term "externalization" is better suited to what is seen in the discussions in Brazil and presents a more comprehensive concept, being used in the study to the detriment of the term outsourcing, while "outsourcing" limits the concept to the transfer of internal activities to an external agent (Schneider *et al.*, 2011).

As a result of the work objective, the approach chosen was precisely to give voice to the primary groups of interest affected by these decisions: investors (organization) and employees. The Stakeholders theory considers that the effects of the company's actions should not be one-way, as proposed by theories that seek to maximize organizational performance and need to weigh uncertainties, losses and gains to the other groups that can receive those impacts. The fact that we consider the points of view of all those who are affected is not by chance, as these perspectives help managers to have a more complete view of their strategy, providing information that results in a more detailed analysis of organizational actions (Freeman & McVea, 2000).

Particularly in this study, at least the primary stakeholders (Donaldson & Preston, 1995) need to be perceived in view of the idea of outsourcing an activity, these being the company (proxy of the shareholder figure) and the workers. This perception can be reinforced, to the detriment of criticism against the theory, by the chain of studies on the theory of corporate strategies, discussing the alignment of the stakeholders' interests in order to be successful (Freeman & McVea, 2000). The theory seeks to counteract the notion of hierarchy of interests to be defended in an organization, and the reconciliation between the interests of organizations and workers seems to be the central axis of the discussions on the externalization of activities. With this more comprehensive analysis premise, the research discusses some evidence in a less restricted focus, trying to identify the multiple impacts of these decisions.

This broad view is necessary because the focus of the research targets the financial interests of the organizations, as the externalization appeared with the primary objective of reducing costs, particularly against the background of the theory of Transaction Costs. In this sense, empirical studies, such as Lacity and Hirschheim (1993a), show that cost reduction is one of the main benefits of externalization, and the company's secondary activities are more suitable alternatives for this. The search to identify activities conducive to externalization became relevant and the focus of research, as in Baron and Kreps (1999), who developed a model for the diagnosis of main and secondary activities.

In line with this view, Hoecht and Trott (2006) argue that externalization was confined to peripheral services, unrelated to the company's core business. The externalization of these activities became one of the main reasons for cost reduction though (Jennings, 1997; Quélin & Duhamel, 2003). Nevertheless, Quélin and Duhamel (2003) look for factors indicative of conditions necessary to reduce costs, such as, for example, economies of scale in the externalized company. This can be achieved when the company develops the same activities for several others (Belcourt, 2006).

Another point is that externalization allows the manager to share the risk of committing resources, providing mobility, by not using capital in an activity (Quélin & Duhamel, 2003). By opting for externalization, the company becomes lighter, responsive to adapt to sudden changes, including, for example, information technology innovations that occur in short time frames. Engaging resources in the development of technologies to reach the same market level may be impracticable, in which case externalization promotes access to technology and market expertise (Kakabadse & Kakabadse, 2002). Souza, Bacic and Rabelo (1995) point out that this strategic advantage is not limited to the flexibility to respond to future events, but also as a strategy to expand investment options. In the perspective of cost reduction and, consequently, in the company's perspective, one externalization alternative that represents a lesser capital effort results in resource savings and, consequently, cost reduction, in line with Alexander and Young (1996).

In addition, access to the best technology on the market is considered one of the effects of externalization, a potential cost reduction resulting from the gain of scale (Belcourt, 2006). Companies should not be obsessed with cutting costs and transferring their production though, as this may lead to loss of product innovation, resulting in implications for following market trends and innovations of competitors. Alternatively, the company should focus on developing products and services from the technology they master in combination with the market technology (Hoecht & Trott, 2006). Gilley, Greer and Rasheed (2004) found innovation related to externalizations of the human resources, training and payroll areas, demonstrating innovations in company performance and efficiency, such as know-how and new technologies, as a result of the expertise of the service provider.

On the other hand, the failures and risks related to the externalization need further analysis. Failures in this decision are related to the view of mere cost reduction, with problems in the relationships between the parties, in the quality of services and loss of control of the factors critical to the activity (Freytag, Clarke & Evald, 2012). Lacity and Hirschheim (1993a) emphasize that, if the objective is only cost reduction, an alternative to be considered is the restructuring of the company to provide the same service more efficiently.

This other aspect of externalization includes social risk, which consists in the loss of company identity, when the employees perceive that they lose value, affecting the service provision. In addition, there is a risk of technology transfer, which may lead to the creation of competitors (Belcourt, 2006) and the transfer of information among competitors served by the same company, facts that are mainly related to the externalization of key activities (Jennings 1997, Quélin & Duhamel, 2003).

In this sense, Hamel (1991) alerts to the loss of competitive differential, as the service an externalized company provides to the entire market transforms the differential into a standard, a situation Bower and Keogh (1997) observe. Also, related to the technological aspect, excessive reliance on core activities may lead to the loss of the contractor's know-how, resulting in stagnation in innovation (Quinn & Hilmer, 1994).

In addition, there is a need to hire the right supplier, who provides the service for a long time and advances in technology and market (Earl, 1996). On the other hand, a long-term contract can lead to the loss of the flexibility that externalization provides (Belcourt, 2006). Also, in studies such as Bielski (2006) and Shahani (2007), some controversy is shown in the sustainability of the production chain, questioning the ability of externalized companies to meet the chain's service demand.

In an opposite movement of the companies, the studies by Veltri *et al.* (2008) and Whitten and Leidner (2006) verified the desire for the internalization of externalized activities. This is mainly due to loss of control, bad relationships between companies and contractual problems. A recent example is found in Lenovo, through the incorporation of at-home after sales support (Li, Huang, Cheng, Zheng & Ji, 2014).

3. Methodological Procedures

3.1 Classification of research and material collection

Concerning the analysis of the published articles, this study is characterized as a bibliographical research, as it uses published theoretical references to obtain the scientific contributions on a subject (Cervo & Bervian, 2002), particularly on externalization. In order to do so, 44 publications were analyzed (Table 1), published between 2011 and June 2015, Brazilian articles, in order to verify if the subjects discussed by the Brazilian society, based on recurring subjects in the media, are also being discussed in the academy, analyzed from the viewpoint of Stakeholders theory, promoting a parallel between the discussions about outsourcing and the themes addressed by the academy in Brazil, collected in July 2015. The research procedures involved three phases

- a. Step 1: delimitation of the scope of analysis. It includes the theme (externalization) and the decision to use scientific journals, in accordance with the research objective, resulting in the selection of scientific journals by two criteria, quality (Qualis A1, A2 and B1 in the area Public and Business Administration, Accounting and Tourism) and nationality (Brazilian);
- b. Step 2: selection of articles, based on the words: externalization; outsourcing. The search was carried out through the ISSN of the selected journals on the Capes journal website;
- c. Step 3: data collection. After the first mappings, the authors and the themes used in the articles were verified, aiming to direct the theme. Next, the objectives, method and main contributions of the articles were mapped, in order to compare them with the themes discussed in the media.

Table 1

Brazilian articles on externalization 2011 – June/2015

Author(s)	Year	Title	Journal data
Albuquerque, Morais & Lima	2015	Contracting in health: an arena of dispute between public and private interests	Ciência & Saúde Coletiv, 20(6), pp. 1825-1834
Almeida, Morrone & Ribeiro	2014	Trends in incidence and mortality rates by occupational accidents in Brazil, 1998 till 2008	Cadernos de Saúde Pública, 30(9), pp. 1957-1964
Almeida & Porto	2014	Expertise maintenance: an interdisciplinary approach based on organizational learning, knowledge and memory	Informação & Sociedade: Estudos, 24(2), pp. 19-33
Assunção & Camara	2011	Job insecurity and accident production in tree harvesting	Caderno CRH, 24(62), pp. 385-396
Augusto, Souza & Cario	2013	Governance structures and strategic resources in distilleries in the state of Paraná: an analysis based on the complementariness of ECT and VBR	Revista de Administração, 48(1), pp. 179-195
Bandeira, Mello & Maçada	2012	Flexibility elements in logistic outsourcing contracts: the case of a telecommunications company	Produção, 22(2), pp. 237-248
Brito, Marra & Carrieri	2012	Discursive practices of outsourced workers and social constructions of exclusion identity	Revista de Ciências da Administração, 14(32), pp. 77-91
Calderón & Lourenço	2011	Private higher education: expansion of teaching labor cooperatives	Cadernos de Pesquisa, 41(143), pp. 642-659
Carnevali, Miguel & Salerno	2013	Application of modularity in the automobile industry: a survey-based analysis	Production, 23(2), pp. 329-344
Cerra, Maia, Alves Filho & Nogueira	2014	Supply chains of manufacturers in the automobile and white goods sectors-a comparative analysis through case studies	Gestão & Produção, 21(3), pp. 635-647
Furtado, Carrieri & Bretas	2014	Humor on the internet: workers use a new strategy to protest against resignations and outsourcing	Revista de Administração, 49(1), p. 33-44

Author(s)	Year	Title	Journal data
Giampaoli	2013	Social service in companies: consulting and service provision	Serviço Social & Sociedade, 114, pp. 266-289
Guimarães & Carvalho	2012	Outsourcing in long-term care-a risk management approach	Ciência & Saúde Coletiva, 17(5), pp. 1179-1190
Guiraldelli	2012	Farewell to the sexual division of work: gender inequality in the clothing production chain	Sociedade e Estado, 27(3), pp. 709-732
Hirata	2011	Recent trends of social and job insecurity: Brazil, France, Japan	Caderno CRH, 24(1), pp. 15-22
Lacorte, Vilela, Silva, Chiesa, Tulio, Franco & Bravo	2013	The bottlenecks of the network for the eradication of child-juvenile labor in jewel and costume jewelry production in Limeira – SP	Revista Brasileira de Saúde Ocupacional, 38(128), pp. 199-215
Magalhães, Carvalho	2011	Práticas gerenciais relacionadas à qualificação de trabalhadores terceirizados: um estudo de caso no setor de mineração	Organizações & Sociedade, 18(57), pp. 227-244
Neto & Saraiva	2011	Management practices related to outsourced worker qualification: a case study in the mining sector	Organizações & Sociedade, 18(57), pp. 227-244
Marcelino & Cavalcante	2012	Towards a definition of outsourcing	Caderno CRH, 25(65), pp. 331-346
Marsiglia	2011	Profile of primary health care workers in the city of São Paulo: North and Central regions of the city	Saúde e Sociedade, 20(4), pp. 900-911
Martins & Xavier	2011	Attributes of transport service in industry-retail relationship	Revista Brasileira de Gestão de Negócios, 13(39), pp. 193
Mathias, Kubota & Miguel	2012	An analysis of publications on modularity in the automobile sector in the main journals on production engineering in Brazil	Exacta, 10(2), pp. 223-236
Oliveira Neto, Contador, Shibaio & Vendrametto	2013	Ranking method for performance criteria and indicators for hiring logistic operators: case study in the metal sector	Exacta, 11(3), pp. 259-283
Osterne & Miranda	2014	Analysis of management models adopted at the Penitentiary Institute Professor Olavo Oliveira II (IPPOO-II) in shared management and by the state of Ceará	Revista Meta: Avaliação, 6(16), pp. 1-28
Padilha	2014	Disgust, humiliation and control in shopping mall cleaning in Brazil and Canada	Caderno CRH, 27(71), pp. 329-346
Paiva & Souza	2012	Maintenance outsourcing model contract: a principal-agent approach	Production, 22(4), pp. 796-806
Peixoto & Bastos	2012	Use and effectiveness of production and work management practices: a survey of the Brazilian industry	Revista Eletrônica de Administração, 18(2), pp. 372-399
Pessanha & Artur	2013	Labor rights and workers' organization in a context of changes in the job world: effects on health workers	Revista Ciência & Saúde Coletiva, 18(6), pp. 1569-1580
Pinto, Gouvêa & Oliveira	2014	Quality assessment of outsourced maintenance service in commercial buildings: the case of a public organization	Gestão & Produção, 21(2), pp. 389-403
Prado & Cristofoli	2012	Results of information technology outsourcing in Brazilian organizations	Gestão & Regionalidade, 28(84), pp. 77-88
Prieto & Miguel	2011	Adoption of the modular strategy by companies from the automobile sector and the implications for activity transfer in product development: a multiple case study	Gestão e Produção, 18(2), pp. 425-442
Sanchez & Martins	2013	Value perception in IT infrastructure outsourcing announcements: an event study involving Brazilian companies	Revista Base, 10(2), pp. 154-168
Santos & Campos	2013	Outsourcing model for supply management and IT service operation: multiple application cases	Gestão & Produção, 20(1), pp. 218-233
Santos, Moraes & Passos	2012	Performance and decision indicators on outsourcing in a public laboratory network	Revista de Saúde Pública, 46(3), pp. 456-465

Author(s)	Year	Title	Journal data
Saraiva & Mercês	2013	Outsourcing in maintenance management: case study of a mining company	Revista de Administração da Unimep, 11(1), pp. 1-24
Sato, Martins, Kato, Martins & Silva	2013	The outsourcing process of hotel services: motivations and theoretical background	Revista Brasileira de Pesquisa em Turismo, 7(1), pp. 129-148
Silveira, Martins, Lopes & Alves	2013	Antecedents of production efficiency in manufacturing activities: experiences from the Brazilian furniture sector	Revista de Ciências da Administração, 1(1), pp. 154-169
Souza & Rozemberg	2013	Educational macro politics and the micro policy of school management: repercussions in occupational health	Educação e Pesquisa, 39(2), pp. 433-447
Stal & Morganti	2012	Brazilian multinationals in information technology: software production and service outsourcing	RAI: Revista de Administração e Inovação, 8(4), pp. 182-205
Takahashi, Silva, Lacorte, Ceverny & Vilela	2012	Job insecurity and accident risk in civil construction: a study based on collective work analysis (CWA)	Saúde e Sociedade, 21(4), pp. 976-988
Tavares Neto & Godinho Filho	2013	Optimization by ant colony for the task sequencing problem in a single machine with permitted outsourcing	Gestão & Produção, 20(1), pp. 76-86
Tigre & Noronha	2013	From mainframe to cloud: innovations, industrial structure and business models in information and communication technologies	Revista de Administração, 48(1), pp. 114-127
Vanalle	2011	Client-supplier relationship: evidences from studies on the automobile sector	Exacta, 9(1), pp. 13-28
Vanalle, Santos & Santos	2011	Personnel management practices: a multiple case study in capital goods companies	Exacta, 9(2), pp. 179-196
Zilber & Koga	2011	Carbon credit market in Brazil and the role of intermediary agents: challenges and opportunities	Organizações Rurais & Agroindustriais, 13(1), pp. 139-153

Source: research data.

3.2 Analysis categories

The objective of this topic is to delimit the subjects that are discussed in the country, on the theme externalization, in the period parallel to the first vote of the bill in the Chamber of Deputies, establishing the following analysis categories, based on the perception of the primary stakeholders: investors (organizations) and employees. Therefore, reports were read about the topic of outsourcing (generic term used by the media), in the period before the collection of the articles (July 2015), when the doubts and discussions are similar. Here are some of these reports, from different media organizations, serving as the basis for defining the categories.

Initially, in its news website, the newspaper *Estadão* (Skaf & Freitas, 2015) points out the externalization of the company's end-activities as one of the controversial topics; entrepreneurs argue that it is impossible to modernize the economic activity without facilitating externalization.

Another controversial point raised by Marta Cavallini (Cavallini, 2015), on the website G1, is which company these employees are affiliated with. According to the aforementioned news item, the law determines the subsidiarity of the contracting company on the labor rights, but the labor rights would no longer be negotiated with the unions of the categories that originated the services provided, but rather with the trade union of outsourced workers. At this point, there is the matter of the worker's loss of identity, in relation to both the company and the professional category.

Another element raised by the opponents of the regulation is the allegation of an increase in occupational accidents, according to news from the *Diário do Centro do Mundo* (Outsourced, 2015). The news, linked to the website of the Central Única dos Trabalhadores (CUT), shows that occupational accidents with outsourced workers increase significantly due to the job insecurity, the increase in hours worked and a lack of individual protection equipment, as a result of changes in the work conditions. These claims may explain the loss of quality, loss of control and dissatisfaction of some companies with the externalized services. It would also explain some internalization decisions of companies, and some companies' mistaken misdiagnosis at the moment of the externalization, which can be identified in the studies mentioned, leading to the investigation of satisfaction with the results of the decision.

Based on these news items, along with the analysis of other media consulted, aiming to cover most of the media viewpoints with ideologies in favor of and against the theme, including the website of the newspapers *Estadão* and *Folha de S. Paulo*, and the magazine *Carta Capital*, the most discussed themes were verified, the categories of the study being:

- modernization of activities through externalization;
- employee affiliation (labor, company and union relationship);
- conditions for work activity;
- satisfaction with the externalization decision.

Some studies analyzed addressed more than one category, as the presence of one does not imply the exclusion of another. A secondary category was also analyzed, related to the positioning of the article, whether it is "favorable" or "unfavorable" to externalization, with intermediate scales of "neutral", "favorable neutral" or "unfavorable neutral".

To be classified as "favorable", the article should openly express in its results, when reporting on the option of externalization, that this is a way to "modernize the activities" for example, or "reduce the occupational accidents", or even "point out externalization as a correct decision". To be unfavorable, it should explicitly point out externalization as a cause of insecurity, increased accidents, inefficiency of the service, loss of bonding or inefficiency in modernizing the contracting company.

To be considered a "neutral" article, externalization should be mentioned as an alternative in the literature, without judging whether it is good or bad. The classification of "Favorable Neutral" is when the article mentions that externalization can be an alternative to improve the problems faced. This judgment is based on the literature and not on the results of the article itself. "Unfavorable Neutral" follows the same reasoning, however, inverse to the "Favorable Neutral", when there is some indication that the externalization is harmful, based on the literature, not verified in the article itself.

4. Results and Discussions

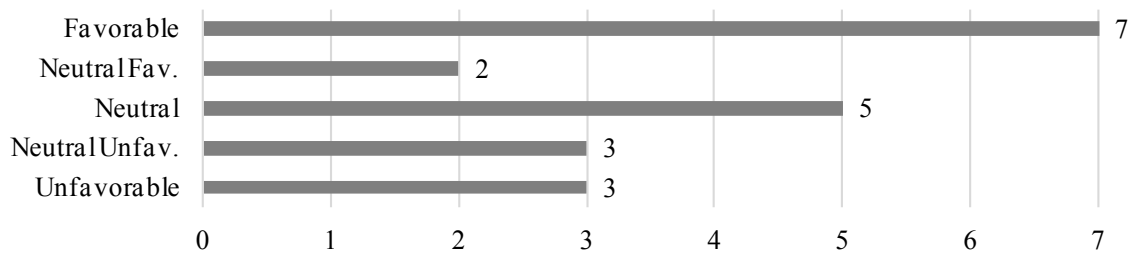
4.1 Scientific production on the theme

Journals A1, A2 and B1 were investigated, using the keywords described in the method, resulting in 24 journals, with at least one identified article and 65 publications in total. After reading the abstract and analysis of the articles, those publications were discarded in which: (a) the keyword was employed in a different sense than in the research, 15 articles, psychology studies for example; (b) 6 articles in foreign languages were also discarded because, although published in Brazilian journals, their focus is international. In total, 44 articles remained for analysis, only two of which did not discuss the analysis categories (topic 3.2).

The scientific production on the theme externalization peaked in 2013 and, from that point onwards, the production dropped by half in the next year, and to very little in 2015 (first semester), with only one article. The choice to maintain 2015 was due to the fact that the theme was strongly present in the media that year. In the next topics, the analysis categories are discussed.

4.2 Modernization through externalization

Modernization through externalization seems to be one of the most used arguments by its defenders, figuring in 20 articles, with the most favorable bias among the four categories. In 45% of these articles, the theme appeared with a positive bias, addressed as one of the solutions for innovations and an important factor for modernization of practices or new technologies. In Figure 1, the division of opinions on the theme is shown.



Source: research data.

Figure 1. Distribution of opinions on modernization through externalization (20 articles)

Even with a favorable bias, however, part of the articles points out failures in the search for modernization through externalization. One example is the study by Osterne and Miranda (2014), who carried out a research on the externalization of the administration of the prison system in the State of Ceará, in order to reduce costs. Externalization would be a way of managing the public good more efficiently, with the expectation that the know-how of the administrator would permit the reduction of costs that the public entity would not be able to adopt for some reason.

Nevertheless, the study found that not only the expected quality improvement did not happen, but there was insecurity of the public good managed. The reason for choosing externalization is to reduce the management cost of the state; on the other hand, the expected result was not achieved, as the modernizations of administrative practices brought by the concessionaire did not take place. The study by Quelin and Duhamel (2003) has already alerted on specific conditions for cost reduction by the service provider and, contrary to the allegations, it seems that the administrators did not reach the know-how to provide the service effectively.

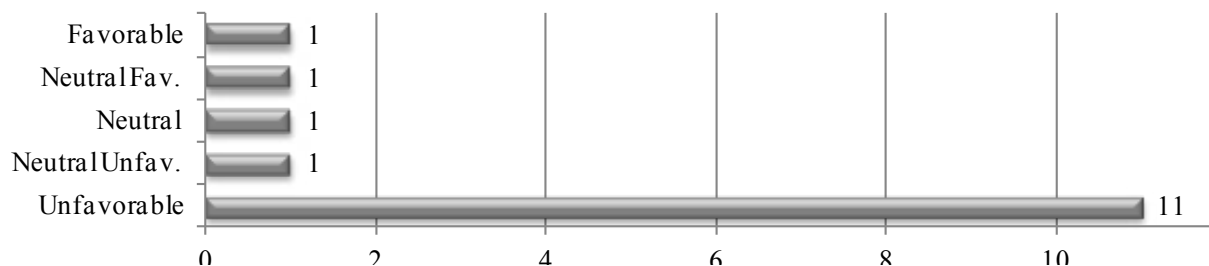
On the other hand, in the study by Martins and Xavier (2011), about the logistics of a supply chain, the findings showed that the inclusion of more links in the chain (more subcontractors) makes it more modern, agile and efficient; it also eliminates inventory maintenance costs by eliminating the need for specific infrastructure for this purpose, diluting the investment among the other members, a fact that confirms the spray view of investments risks as found in the study by Quelin and Duhamel (2003).

In the study by Carnevalli, Michael and Salerno (2013), the relationship between suppliers and companies in the automotive industry is explained, demonstrating that, when there is outsourcing, combined with the modularity technique, there is a reduction in the cost of installation, labor and fixed investment in the production line, which enhances the companies' investment power or, as seen, a dilution of the investment risk in modernization. Also, even if the dilution of the risk of problems in the assembly line is identified as an advantage, the cost reduction was the main factor of the externalization, without verifying its use by the companies for the modernization of their production factors. Also, it is important to highlight the risk of technology transfer and loss of know-how in this kind of situations (Belcourt, 2006; Jennings, 1997; Quélin & Duhamel, 2003).

More enlightening is the article by Oliveira Neto, Contador, Shibao and Vendrametto (2013), which deals with strategies for the outsourcing of logistics operators; the articles observes that externalization practices in Brazil are not up to date with practices in the rest of the world. While the priority here is to reduce costs, in other countries, there is concern about the alignment with the strategy of the company and the outsourced company. In view of this observation, it should be noted that these differences in research, a focus on cost reduction versus externalization with a strategic focus, suggest the success of externalization or its complete failure. In the first case presented in this topic, the government is involved while, in the second case, there are only private companies, and the difference between the cases and the success and failure deserve a more in-depth analysis, and a comparison between these two cases could contribute to the better understanding of the success elements of externalization.

4.3 Employment relationship

Another point both defenders and opponents of externalization discuss is the employment relationship. Among the articles analyzed, 15 address this theme, 11 with an unfavorable approach. Figure 2 shows the distribution of the positions.



Source: research data.

Figure 2. Distribution of opinions on employment bond (15 articles)

Figure 2 illustrates that the opinions expressed in the articles on the employees' relationship are largely unfavorable towards externalization. In their study, Calderón and Lourenço (2011) discuss the emergence of the hiring of higher education teachers by cooperatives, with the sole purpose of reducing costs. The research points out that the practice started in the State of São Paulo, with negative repercussions in the media of São Paulo, pointing towards the insecurity of the education system, a fact corroborated by the study. Although the quality of the supplier is an important factor for successful externalization (Earl, 1996), Calderón and Lourenço (2011) demonstrate a case of outsourcing of an end-activity with lower levels of agent quality due to training and preparation problems of the teachers, and of the company, due to the greater labor liabilities generated.

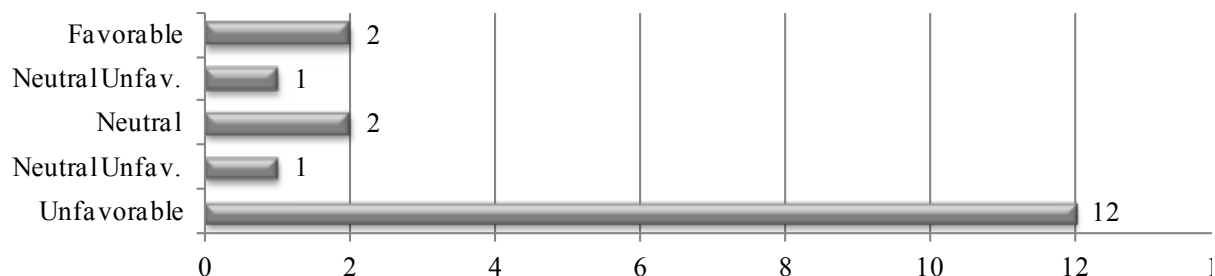
Another negative point highlighted by Lacorte *et al.* (2013), when analyzing a supply chain of jewelry and costume jewelry supplies, was the increase of child labor, in which the contracting companies claimed that they could not supervise their subcontractors, exempting themselves from the guilt. There was no improvement whatsoever in the employees' bond in this case, and, on the contrary, the study highlights the objective of cost reduction with reflections in risks of labor liabilities and, in the case of child labor, criminalization, with more severe legal processes.

The only article that indicates a favorable position about the labor relations was a literature review on the Brazilian automobile industry, which verifies the adoption of the modularity strategy as a benefit for the employment relationship, making the suppliers economically stronger, consequently suggesting the bond supplier-manpower as beneficial. The article does not go into detail on how the employment bond becomes better after the externalization though (Vanalle, 2011). It emphasizes the transfer of the extinguished functions in the outsourcing company to the suppliers and, as the study did not go into this detail, the proviso became necessary. Another highlight is the strengthening of the supplier, in line with Earl (1996).

In the study by Marsiglia (2011), in the area of health, aiming to survey the professional profile of the hospital workers in the city of São Paulo, in the comparison between a health service that adopted outsourcing and one without outsourcing, no disadvantages were found of one professional related to the other, presenting neutral results. Pessanha and Artur (2013), however, in a study on health professionals, found the difference in rights between contracted professionals and outsourced workers. This difference of rights is suggested as a form of labor cost reduction for hospitals and, in the study by Belcourt (2006), it figures as one of the causes of loss of identity with the company, entailing a reduction in the quality of the service provided.

4.4 Conditions for work activity

The working conditions, with emphasis on occupational accidents and the insecurity of working conditions, were discussed in 18 articles, also with high representativeness, and again with a large portion (12 surveys) being unfavorable to externalization. Their conclusions point to outsourcing as a cause of increased accidents and precarious conditions. Figure 3 shows the distribution of opinions in the articles.



Source: research data.

Figure 3. Opinions on occupational accidents and insecurity (18 articles)

Again, the vast majority of articles opposing outsourcing are highlighted. In the article by Asuncion and Camara (2011), it was verified that there was not only the insecurity of work in the lumber sector, but also the increase in accidents after the externalization, noting that contractors, focusing exclusively on cost reduction, often do not offer security equipment essential to the activities. Again, specific conditions are needed in the externalization to achieve cost reduction, without compromising employee safety, as observed.

The article by Hirata (2011) reinforces this view of insecurity as a result of excessive cost cutting, with the sole purpose of increasing corporate profits. The behavior of identity loss and employee dissatisfaction is highlighted in its approach. In this sense, Hoecht and Trott (2006) point out that the obsession with cost reduction is not the best way for companies, which could be solved by internal restructuring (Lacity & Hirschheim, 1993a).

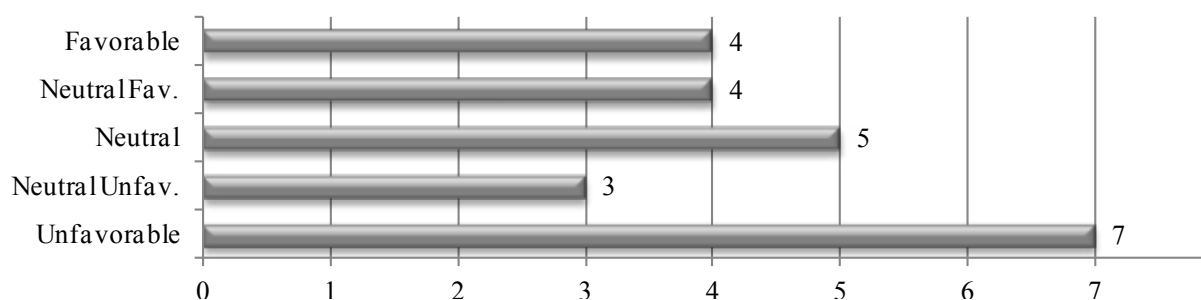
In Padilha's study (2014), interviews with outsourced employees from Brazil and Canada were used, verifying the insecurity in both countries, keeping similarities with the news addressed in the introduction of this article. In Brazil, the study addresses this insecurity as a consequence of the maximum cost reduction and the reduction of salary levels to the minimum wage. In Canada, another wage condition was verified, although the author did not demonstrate the Canadian wage reality for comparison.

In contrast to the others, the work by Almeida, Morrone and Ribeiro (2014) points out externalization as one of the factors that helped to reduce occupational accidents. This study is one of the few that raises the possibility of this correlation though. In summary, there is a lot of empirical evidence more favorable to relating the increase in accidents and job insecurity than to the reduction of these factors. This may be related to the companies' biased diagnosis, observing only the costs that would be reduced, neglecting other aspects of the decision (Freytag *et al.*, 2012).

4.5 Satisfaction with outsourcing

In total, 23 articles addressed the topic of satisfaction on outsourcing, being therefore the most commented topic in the surveys, with seven papers indicating dissatisfaction regarding externalization. The concern with the performance of externalization is a natural theme, as the company is interested in the quality of the contracted service, while the employees claim that the quality of the service provision drops, which is a strong argument against externalization, as the two parties dislike it. Figure 4 shows the distribution of opinions on the subject.

In the distribution, articles that speak unfavorably about the companies' satisfaction with the externalization stand out, that is, a negative experience. The same is true for the neutral articles, which alert on the risks of outsourcing and the care with the quality of the service provision.



Source: research data.

Figure 4. Distribution of opinions on satisfaction with externalization (24 articles)

The study by Magalhães, Carvalho Neto and Saraiva (2011) about the company Vale do Rio Doce presents the contractual concern with including clauses that focused on the quality of the contracted service, in lign with Bielski (2006), Earl (1996) and Shahani (2007), in the sense of safeguarding the quality. This concern with the quality, in Vanalle's study (2011), resulted in the satisfaction of the car manufacturers and outsourced suppliers, supporting the earlier study. Furthermore, Guimarães and Carvalho (2012) demonstrated, through a case study, that an approach with risk management, monitoring the externalization contract, can be an alternative to avoid dissatisfaction with the decision.

In the study by Santos, Moraes and Passos (2012), an analysis of outsourcing in the public health sector demonstrates that there was no significant improvement in costs in the provision of services. This finding goes against the study by Marsiglia (2011), which did not observe the insecurity resulting from externalization. It should be noted that the opinion refers to the satisfaction of the contracting company with the externalized company, so this opinion relates to the managers of the contractors. This observation shows that unsuccessful externalization is not occasional.

Among the unfavorable studies, Prado and Cristofoli (2012) stand out, focusing on the externalization of Information Technology (IT). Using questionnaires with users of externalized IT services, the great dissatisfaction of these users was verified; the users who invest more in IT externalization do not always achieve a better return in this sector. This study discusses a counterpoint to the expectation of externalization as a source of modernization, as there was dissatisfaction due to the lack of modernization. Their findings corroborate studies by Veltri *et al.* (2008) and Whitten and Leidner (2006) on dissatisfaction with externalization and the desire to return the activities to the company's direct management.

4.6 Consolidation of positions

It was found in the studies analyzed that only one of the current discussion points is favorable to externalization: the positive effects of modernization. There are still arguments against this statement though, like in the study on IT and in the experience with the externalization of the administration of the imprisonment system in Ceará. Among the articles favorable to externalization, except for the article by Almeida, Marrone and Ribeiro (2014), none of the articles address the employee's point of view, only referring to results for the company. Thus, if the objective was to "modernize" or "reduce costs" and this was achieved, a positive interpretation of the fact occurred. This unilateral view was not concerned with observing effects for the employees (of the contracting and contracted companies), tax collection, employment and income generation, environmental impacts, among other factors that would make the analysis multifocal, diverging from the line proposed by the Stakeholders theory.

On the other hand, the point of view of externalization critics, which deal much more with employment bond issues and the insecurity of working conditions, all studies point to negative factors in both subjects, some of which are related to the company's dissatisfaction with the externalized service due to the poor quality and precarious working conditions. Another important point is that most of the unfavorable studies point out that the perceived externalization, with the myopia of exclusively reducing costs as one of the causes of these negative factors, reinforces the need for a broad approach to the impacts on the participants in the externalization process.

Finally, there is a clear gap to be filled with new research, relating the main motive of externalization to the success or failure of this practice, that is, when the motivating factor of the decision can hamper the manager's judgment to detect the actual problem. Based on the theory discussed in this research, a multifocal approach is necessary to understand the quality of the decision, on the aspects of the motivation, of the analysis performed prior to the act, as well as on the maintenance of the processes in an externalized model.

One point that deserves particular attention is the association of insecurity with the exclusivity of the search for cost reduction, a fact that seems to be intrinsically linked to strategic cost management, as demonstrated by Souza *et al.* (1995). The company should adopt a strategic view on externalization, without remaining limited to a narrow view of cost reduction, requesting analyses structured by the Stakeholder theory.

5. Final Considerations

With the purpose of verifying if the aspects of externalization, before the moment of the political decision, on the discussion agenda in Brazil, are also topics of academic research at the national level, this study shows that, of the 44 articles identified, only two did not address the analysis categories highlighted in the research. Thus, it can be affirmed that the subjects under discussion in Brazil are also the focus of academic analysis, collaborating towards the synergy between science and society.

Analyzing the results of those studies, it was clear that the main objective of the companies, when adopting externalization, is the reduction of costs, apparently the only reason considered. This point of view is reinforced by the conclusions of the studies in that they detected an effective cost reduction by the companies, demonstrating such data or collecting the perception of the stakeholders in a unilateral view (company), which this research tried to endorse with effects on another stakeholder - the employee. Considering this behavior, it is evident that the companies that opted for externalization neglected other aspects of this decision, such as quality clauses, verification of supplier potential, impacts on labor relations, among others.

Another issue is the loss of control, which is highlighted in the articles that addressed the theme of "satisfaction with externalization", which point out that the lack of control over the service is one of the main causes of dissatisfaction. Solutions such as specific contractual clauses on quality levels are indicated for example. Also, tools linked to Interorganizational Cost Management could overcome such difficulties though. Shared control is possible even in market relations, and companies should envisage this in their contracts and researchers should consider them in new studies.

An item that deserves new studies is identified in Furtado, Carrieri and Bretas (2014), in which the authors analyzed workers' dissatisfaction with externalization. The reports indicate that the employees have been betrayed by the company, a feeling of "children abandoned by their mother", very similar to the Antelava report (2015), which showed a similar feeling among American workers.

Finally, the contribution of this study should be highlighted. In addition to raising this issue, it demonstrated that, if the scientific contributions deriving from research are not considered in their analysis, the discussions might result in the same consequences as in the USA. This subject is broad and there is still a lack of empirical evidence to demonstrate externalization as a mutual benefit for the company and the employees, apparently the two main stakeholders, due the direct impact of externalization and internalization decisions. A broader view may contribute to an increase in the legal security and modernization of companies, with beneficial effects on the quality of services provided and on the professional and business relationships, as the critics' arguments nowadays have more empirical evidence than those of the defenders.

In addition, in view of the analyses, the article contributes to the literature on externalization, compiling and comparing the responses of several studies on four different aspects. This broad view of externalization contributes to the discussions about its effects on different stakeholders, especially companies and employees, also entailing results for the consumers of products and services. Thus, it contributes to the society in its discussions, underlying opinions and decisions based on scientific analysis. Nevertheless, it is up to the academics to broaden their view when discussing this issue, reducing possible biases in the focus on cost reduction and in the exclusive view on the company or the worker.

The limitations of this study lie in the methodological choices, due to the qualitative approach and its data. Being an interpretation of articles, the data are secondary, which results in an "interpretation of an interpretation". Knowing these limitations, however, we tried to compensate this with greater rigor in the collection, treatment and analysis of the data.

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Institutional Theory: a bibliometric analysis in Accounting research

Abstract

Objective: Analyze how research based on the Institutional Theory has been developed in accounting research.

Method: For the search, the Knowledge Development Process-Constructivist was used, considering articles published between 1993 and 2018. Seven databases were used and a bibliographic portfolio was selected with 148 articles on the theme.

Results: The study found: (i) 27 theoretical and 121 empirical studies; (ii) most studies adopt a qualitative design; (iii) the most used techniques were semistructured interviews and documentary analysis; (iv) the majority used the New Institutional Sociology; (v) the authors who stood out were Burns and Scapens (2000) (OIE), Williamson (2000) (NIE) and DiMaggio and Powell (1983) (NIS); (vi) the Agency Theory and the Structuration Theory were the most frequent besides the Institutional Theory; and (vii) the suggestions for future studies indicate other data collection and analysis techniques, changes in the context analyzed, exploration of heterogeneous environments, use of longitudinal designs and quantitative methods.

Contributions: The study contributes by analyzing how the Institutional theory is being applied in studies from different Accounting research areas, identifying the main studies in each theoretical current, the methods use, suggestions for research and possible routes, thus serving as the theoretical base for future empirical research in this area.

Key words: Institutional Theory; Accounting Research; Financial Accounting; Management Accounting; Literature Review.

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1. Introduction

The turbulence in the environment (Vamosi, 2003), economic, social, organizational trends (Scapens, 2006), harmonization of standards (Irvine, 2008) and the bureaucracy the governments impose (Tagesson, 2007) are some of the factors that lead organizations not to remain static and undergo adaptations in their routines and processes (Zoni, Dossi & Morelli, 2012). This scenario has affected the institutional logics of organizations (Kantola & Järvinen, 2012) and how they develop and implement their strategies (Ma & Tayles, 2009), causing the institutionalization and deinstitutionalization of practices and artifacts in organizations (Russo, Parisi & 2016), leading to change processes in search of survival in a highly competitive environment (Zoni *et al.*, 2012).

The processes of change have attracted considerable attention from organizational research, exploring the aspects of resistance and the consequences of these changes (Angonese & Lavarda, 2014; Lukka, 2007). Several factors cause these alterations and also affect the organizations' accounting practices, both in the process of generating management information for decision making in search of more efficiency (Halbouni & Hassan, 2012) and in the accomplishment of the financial statements presented to investors and governments, who are influenced by external standards and pressures (Irvine, 2008; Phang & Mahzan, 2017).

DiMaggio and Powell (1983) point out that these changes are increasingly driven by bureaucratization, rather than by the search for organizational efficiency or effectiveness. This process has institutionalized the organizations' practices, making them more similar, such as the harmonization of accounting standards and the adoption of the International Financial Reporting Standards (IFRS) (Guerreiro, Rodrigues & Craig, 2012; Irvine, 2008; Judge, Li & Pinsker, 2010; Phang & Mahzan, 2017).

An institution can be characterized as a way of thinking that incorporates habits and becomes part of the routine of a group, in this case, the organizations and their accounting practices (Scapens, 2006). In this perspective of change and its institutions, a theoretical current that has gained strength and is being widely used in research is the Institutional theory. Institutional theory is based on the premise that organizations influence and are influenced by the context they are operating in. An institutional perspective can bring knowledge about the effects that dominant institutions and structural conditions exert on organizations' actions (Mantzari, Sigalas & Hines, 2017).

Institutional theory has been widely used in management literature, especially on new accounting technologies for management and its implementation (Lukka, 2007). In addition to management literature, the theory is increasingly used in financial accounting research to understand influences on the internal structures of organizations (Hassan, Rankin & Lu, 2014).

By consolidating several currents of the Institutional theory in accounting practice studies, the current and future challenge is to use this theoretically explored understanding to improve accounting practices and provide relevant and useful information to investors and managers as key users of accounting information (Guerreiro, Frezatti & Casado, 2006).

Given this context, the following research question emerges: **How has the current literature dealt with the Institutional theory in Accounting research?** Thus, the objective of this article is to analyze how the studies based on the Institutional theory have been carried out, in Accounting researches, aiming to produce knowledge in this area. In order to search for the most recent studies, the research was limited to the last twenty-five years.

To seek a better understanding of the use of this theory in accounting practices, it is important to find out how the theory is being applied in studies. Considering the need to build bridges between theories to expand analysis levels (Yazdifar, Zaman, Tsamenyi & Askarany, 2008), it is also important to identify which other theories are being applied together with the Institutional theory for the sake of a better understanding and analysis of the accounting practices in the organizational reality.

Thus, this study aims to contribute to the literature, analyzing how research has been carried out based on the Institutional theory, presenting data collection methods, theoretical currents used, other theories and suggestions for future research, contributing to the discussion of the accounting research literature and serving as a theoretical basis for future research.

This study is also justified by its originality as, after a survey in international databases, no articles were found, published in scientific journals, which analyzed how the Institutional theory is applied in Accounting research. The study also responds to Cunha, Santos, and Beuren (2015), broadening the bibliometric research of Institutional theory and Accounting to a larger number of databases and a wider scope within the topics of accounting research.

2. Theoretical Framework

In this section, the theoretical framework is presented which supports this study on the Institutional theory and its theoretical currents.

2.1 Institutional Theory

The Institutional theory arose from various authors' critique of the Neoclassical Economic Theory of the Firm, which considers the rational and maximizing behavior of individual decision makers (Guerreiro *et al.*, 2006). Its assumptions are based on the economic rationality of the individual and on the market equilibrium (Burns & Scapens, 2000).

The Neoclassical Economic Theory of the Firm reports on the changes caused in Accounting as a product of the rational behavior to optimize organizational profits through the generation of new information. It is based on mathematical models that take into account the total rationality of people in their choices (Guerreiro *et al.*, 2006).

The Neoclassical theory was one of the first theoretical bases in Management Accounting research. Subsequently, researchers began to use the contingency theory, especially in behavioral research in Accounting. As from the 1980s, however, researchers moved to the field of sociology and institutional economics for the study of management accounting (Zarifah & Siti-Nabiha, 2012).

From the divergence of these ideas and the change to a sociological focus, the Institutional theory began to develop, which considers Accounting as an institution that undergoes transformations deriving from both internal and external pressures and its function is to give meaning to a given social group.

Studies that attempt to explore the aspects of change, institutionalization, and deinstitutionalization of organizational practices have explored the Institutional theory in the following theoretical currents: Old Institutional Economics (OIE), New Institutional Economics (NIE) and New Institutional Sociology (NIS) (Scapens, 2006).

Old Institutional Economics (OIE) starts from questions related to the Neoclassical Economic theory. Instead of assuming a perfect equilibrium and total rationality, the current considers people's limited rationality and opportunism and attempts to explore the reason for this opportunism, and how it determines the types of economic behavior (Scapens, 2006).

OIE allows a closer view of the organizations and focuses on their internal pressures, seeking to understand what shapes the organizational practices (Scapens, 2006). The current recognizes that people operate in a social environment with institutionalized rules and values and tries to explore the institutions that shape behaviors within that environment. The focus is on the organizational environment and on this institutionalization at the micro level (Burns & Scapens, 2000; Scapens, 2006). Therefore, these practices are approached within the organizations through the institutionalization and deinstitutionalization of habits, routines, and rules (Burns & Scapens, 2000).

Burns and Scapens (2000) argue that habits are previously acquired individual characteristics of disposition or tendency to take action. Routines are patterns that are usually adopted by a group of people. Rules are the formalized procedures, while routines are the procedures that are actually already used. The aforementioned authors have elaborated a framework to study the changes in Management Accounting.

The framework begins with the coding of institutional principles in rules and routines. Then, the actors adhere to the rules and routines outlined in the initial stage. The third stage occurs when the behaviors are repeated, which leads to a reproduction of the routines. The last stage is the institutionalization of rules and routines, which were reproduced through the behavior of the individual actors and, thus, the rules and routines simply become the way things are. This being a cyclical process, the institutions will then be coded again in the rules and routines in course, which will shape new rules, and so on (Burns & Scapens, 2000).

The other theoretical approaches of the Institutional theory focus on the organizations' external environment. Both NIE and NIS address the external pressures, respectively economic and institutional, on the organizations and their practices. The currents try to understand the nature of these pressures, analyzing the organizations at the macro and micro levels. Despite the same focus, however, these two currents have very distinct approaches (Scapens, 2006).

New Institutional Economics (NIE) does not break the economic reasoning, but it assumes some elements that make the neoclassical model of the firm more restricted. Limited rationality and opportunism in people's interests are taken into account (Williamson, 2000). The focus is on the institutional environment and on this institutionalization, both at the micro and macro levels, in the attempt to explain the economic agents' behavior (Scapens, 2006).

Liszbinski, Kronbauer, Macagnan and Zardin Patias (2014) explain that the NIE focuses more on the economic relationships in the organizations' context and looks for explanations for the market equilibrium problem, as this is flawed, and the organizations try to provide these explanations by using tools that safeguard them against uncertainties.

The current uses economic reasoning to investigate the range of institutional arrangements and their properties. This reasoning is further explored to try and explain people's actions, the institutionalization of organizational practices in different environments; and is concerned with the structures used to rule economic transactions (Scapens, 2006).

The Institutional theory arose from the authors' critique of the Firm's Neoclassical Economic Theory that considers the rational and maximizing behavior of individual decision makers (Guerreiro *et al.*, 2006) and its assumptions are based on the economic rationality of the individual and the market equilibrium (Burns & Scapens, 2000).

The firm's Neoclassical Economic Theory reports the changes caused in Accounting as a product of rational behavior to optimize the organizations' profits through the generation of new information. It is based on mathematical models that take into account people's total rationality in their choices (Guerreiro *et al.*, 2006).

This institutionalization is directly linked to one of the basic concepts of the current, the Transaction Cost (Williamson, 2000). This was developed by Coase (1937) and means that every economic transaction has its costs, which may occur before or after this transaction. At this point, the institutions' importance comes in. The institutions are created to minimize uncertainties and reduce this limitation of people's rationality and opportunism (North & Hart, 2006; Williamson, 2000). In addition, they limit human interactions, structuring economic and social relationships and determining the price of these transaction costs (North & Hart, 2006).

The New Institutional Sociology, on the other hand, focuses on the organizational environment that shapes organizational structures and systems and on the pressures of this environment in organizations (Scapens, 2006). The current seeks to explore why organizations in similar situations become similar through socially institutionalized contexts and procedures (Meyer & Rowan, 1977).

Another point addressed by the current is the aspect of legitimation towards the environment, which would be linked to the acceptance of these socially institutionalized procedures. Organizations seek this legitimation because of the facilities it could bring in obtaining resources and survival in their environments (Meyer & Rowan, 1977).

DiMaggio and Powell (1983) explain that organizations tend to adopt the same practices and structures as other organizations in similar contexts, in response to the institutional pressures exerted on the organization. This process of homogenization of organizations is called isomorphism and has been used in several studies (Hassan, Rankin & Lu, 2014; Nurunnabi, 2015) to investigate the aspects of organizational change. DiMaggio and Powell (1983) classify isomorphism into three types: coercive isomorphism, mimetic isomorphism, and normative isomorphism.

Coercive isomorphism results from the formal and informal pressures exerted on an organization by stakeholders, which the organization depends on. Sources for coercion include governmental regulations and the social, cultural, and political pressures exerted on an organization (DiMaggio & Powell, 1983).

The second process of isomorphism is mimetic. Due to the uncertainties of the organizational environment, organizations tend to copy the practices of other organizations. When the technologies used are out of phase, when the objectives are ambiguous, or when the environment creates uncertainty, organizations can model themselves after other organizations (DiMaggio & Powell, 1983).

The last isomorphism is normative, which derives from the professionalization of the organizational agents. Professionalization is defined as the members' collective search to define the conditions and methods of their work; control "the production of producers"; and establish a cognitive basis and legitimation for their occupational autonomy (DiMaggio & Powell, 1983).

In the literature, some studies were found that develop a bibliometric analysis of the scientific articles and use the Institutional theory in Accounting research. Cunha, Santos, and Beuren (2015) analyzed articles that relate Institutional Theory to Management Accounting and found that the publications do not exceed two articles per year. The journals Management Accounting Research and Accounting Organizations and Society had the largest number of publications and most articles use the New Institutional Sociology.

Vailatti, Rosa, and Vicente (2017) analyzed the approaches and methods used in research that adopted the Institutional Theory to evaluate aspects of Management Accounting practices, from 2006 to 2015, with the New Institutional Sociology approach as the most frequent in the studies. These works were limited to Management Accounting studies though and we did not find in our research any review of all the research in Accounting linked to the Institutional theory.

3. Methodological Procedures

This section presents the methodological framework of the research, the selected intervention tool and the collection and data analysis procedures.

3.1 Methodological Framework

This study is characterized as descriptive (Richardson, 1999). Concerning the technical procedures, it is a bibliometric research (Chueke & Amatucci, 2015) with a quantitative approach to the problem (Richardson, 1999). The selected data collection tool was the structured bibliographic review process Knowledge Development Process-Constructivist (ProKnow-C), detailed under item 3.2.

3.2 Knowledge Development Process-Constructivist (ProKnow-C)

In order to meet the research objective, the tool ProKnow-C was selected, whose objective is to build knowledge on a given theme according to a constructivist view. Other objectives of the tool are to identify a relevant Bibliographic Portfolio (BP) on a given topic, perform a critical analysis and identify gaps in the literature on the subject (Ensslin, Ensslin & Pinto, 2013).

Proknow-C consists of four steps: selection of the Bibliographic Portfolio, bibliometric analysis, systemic analysis, and pointing out challenges for future research. In this research, the first two steps will be implemented. The first stage of Proknow-C, the selection of the portfolio, aims to define the BP, with articles considered relevant in the research area and which are aligned with the researcher's perception, according to predefined delimitations (Ensslin, Ensslin & Pacheco, 2012).

The other step that will be operationalized in this study, the Bibliometric analysis, is the quantification of the information and presentation of the characteristics of the publications (Ensslin, Ensslin & Pinto, 2013). In this step, the following variables were considered: (i) the type of research: whether it is theoretical or empirical; (ii) the research approach (qualitative or quantitative); (iii) the techniques used in the research; (iv) the theoretical current of the Institutional theory used to support the study: Old Institutional Economics (OIE), New Institutional Economics (NIE) or New Institutional Sociology (NIS); (v) the main authors cited, according to the theoretical currents; (vi) the other theories used to support the articles; and (vii) the suggestions for future research pointed out in the studies.

3.3 Data Collection Procedures

For the data collection procedure, a Bibliographic Portfolio (BP) was selected, putting the first stage of ProKnow-C in practice. The topic was divided into two research axes and the keywords that represented them were selected. The search command was chosen in the English language due to its larger number of results in relation to the other languages. English is also the language of the best global journals and was used in seven databases.

In order to search the literature for the most recent articles on the proposed theme, the search was delimited to the publications of the last twenty-five years, from 1993 to 2018. The articles that appeared were filtered according to their alignment, as follows: title alignment, abstract alignment, article availability, and full article alignment. Figure 1 shows the search and filter process of the BP.

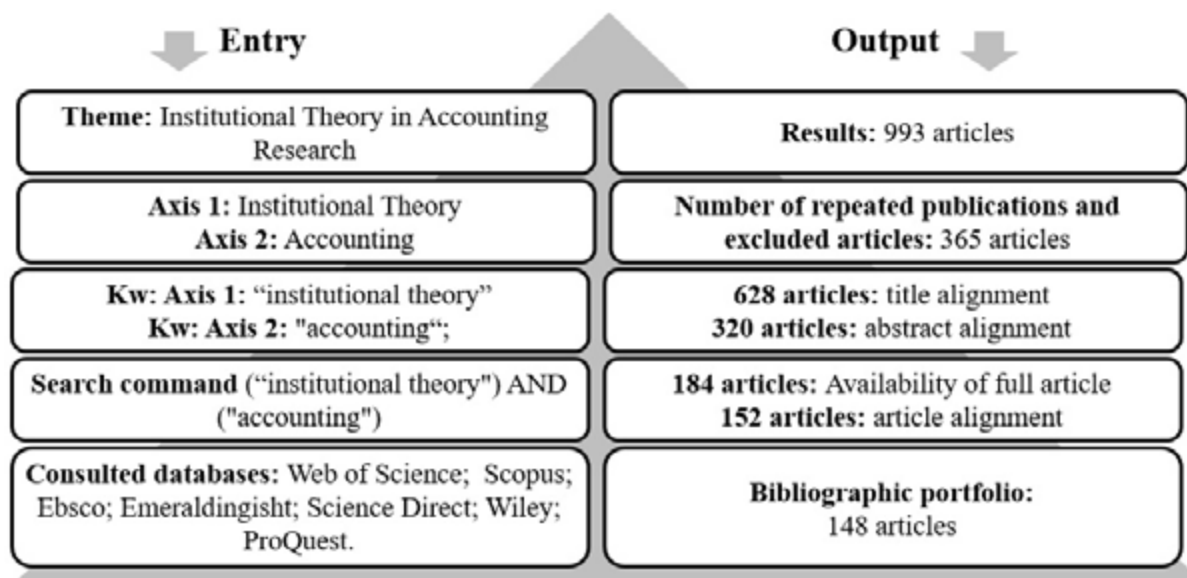


Figure 1. Data collection process

The data were collected on April 25th 2018. The BP on the literature fragment related to the selected theme Institutional theory in accounting research consisted of 148 articles.

3.4 Data Analysis Procedures

After defining the Bibliographic Portfolio (BP) on the topic “Institutional Theory” in Accounting research, composed of 148 articles, identified in the first stage of ProKnow-C, the second stage will be carried out, which is the bibliometric analysis of the articles.

The objective of the bibliometric analysis is to generate knowledge about relevant points of the theme under study and, for this purpose, some characteristics are selected for further investigation, through the identification of their occurrence and, then, through the search for additional information to support the researcher’s arguments.

For the analysis, the BP was separated into research areas and subareas, to facilitate the analysis according to common themes. The first area identified was Financial Accounting, in which articles on the following themes were classified: Accounting reform, Governance, Implementation of IFRS, Reporting, Public Accounting, Sustainability, and Auditing. The second research area is Management Accounting, which consists of articles dealing with Performance Evaluation Systems, Budgetary Practices, Management Control Systems, Costing Systems, Management Accounting Practices, and Environmental Accounting. The other articles, addressing general topics such as the accounting profession, accounting education, and accounting research practices, were classified as accounting research.

After separating the articles based on their research themes, the studies were analyzed according to their areas. The first analysis was intended to separate the articles into theoretical, where the theory is discussed, proven or revised, and empirical, seeking some practical proof or negation within the study. In relation to the theoretical articles, two research methods were identified, the theoretical essay and the literature review, in which scientific articles on the subject were analyzed. Regarding the literature review articles, the variables analyzed in these studies were searched for the knowledge of what was previously researched, serving as the basis for the analyses of this research.

In the analysis of the empirical articles, the same method used by Helden, Johnsen, and Vakkuri (2008) was used. For the identification of the research methods used, the studies that sought to explain some variable in a population by means of the study of a sample were classified as quantitative, while the studies that go deeper into a given case were classified as qualitative.

Subsequently, as one of the requirements for the article to be considered aligned was that the underlying theory was the Institutional theory, the articles were investigated to identify which theoretical current of this theory was used, being divided into Old Institutional Economics (OIE), New Institutional Economics (NIE) and New Institutional Sociology (NIS). After the identification of the theoretical current, we searched in the articles which model and which authors were presented as references in the studies, seeking the main authors of the theory.

Then, the articles were searched for the other basic theories presented in the articles in order to identify those theories that are being approached to the Institutional theory to develop and analyze the studies.

Finally, the research suggestions presented after the studies were analyzed in the articles, aiming to identify what has been appointed as possible gaps in the studies and in the theory, in order to point out possible routes for future studies.

4. Results

This section presents the research results of the bibliometric analysis for the variables, divided by the Financial Accounting, Management Accounting and Accounting Research studies, followed by the discussion of the results.

4.1 Bibliometric Analysis: financial accounting articles

First, the articles on Financial Accounting and Institutional theory were analyzed. The results are displayed in Figure 2.

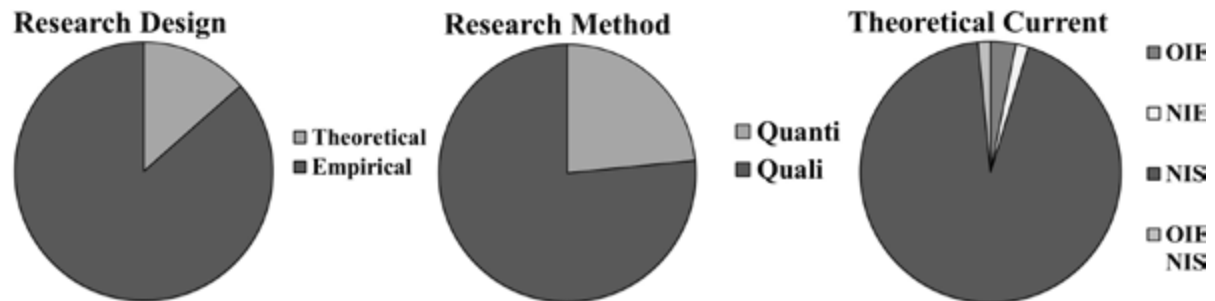


Figure 2. Analysis results – Financial Accounting articles

The portfolio of articles that discuss Financial Accounting consists of 74 articles, which were divided into theoretical and empirical articles, being 64 empirical studies and 10 theoretical articles.

The studies with a theoretical approach address aspects such as Corporate Governance, convergence with IFRS, sustainability, and reporting. The theoretical articles used two research methods: the theoretical essay, as used in Ball and Craig's work (2010), and content analysis (article analysis and document analysis), such as the study by Cohen, Krishnamoorthy and Wright (2008), which presents theories that may be useful in Corporate Governance research. In this work, in addition to the Institutional theory, the Agency Theory, the Resource Dependence Theory and the Managerial Hegemony Theory are approached.

The empirical articles were separated according to the approach and analysis of their variables. Most of the studies are qualitative and mainly use semi-structured interviews and document analysis for data collection, aiming to explore audit topics, convergence to international accounting standards (IFRS), changes in accounting practices in countries, public accounting, and sustainability. Among these articles, we highlight the studies by Touron (2005) which, based on the Institutional theory, focus on the reason why companies in France adhere to US GAAP; and the work of Albu, Albu, Bunea, Calu, and Girbina (2011), which, in the light of the Institutional theory, addresses the implementation of IFRS in Romania.

The quantitative empirical studies used statistical methods, based on data obtained from questionnaires, databases, and official documents. Judge, Li, and Pinsker (2010), which aimed to understand the reason why some countries adopt IFRS standards quickly, while others take more time or have not yet adopted those standards, use statistical regression techniques to evaluate the effect of the three isomorphic pressures in the adoption of IFRS, based on several databases.

It was also verified which theoretical current of the Institutional theory was used as a theoretical framework for the studies. Old Institutional Economics (OIE) was applied in only two studies (Alsharari & Abougamos, 2017; Jones, Baskerville, Sriram & Ramesh, 2017). It is noteworthy that the two articles are recent and used the concepts studied by Burns and Scapens (2000).

Irvine (2011), in addition to the OIE concepts of Burns and Scapens (2000), uses NIS to examine the process of change in an Australian nonprofit organization for accrual accounting. The decision to change was taken by institutional pressures, but the new system was not institutionalized.

With regard to the New Institutional Economics (NIE), this was used only in the article by Liszbinski *et al.* (2014), which adopted the theories proposed by North (1995) and Williamson (2000) as the theoretical basis. This article sought to relate how the regulations the companies adopted are impacted by changes in accounting practices, which in this study was the recognition of intangible assets. As explained by the authors of the article, the use of the Institutional theory is especially relevant due to the possibility of comparing the changes that occurred in the institution to a new formal regulatory structure that supports the new accounting procedures.

Most of the Financial Accounting articles used the New Institutional Sociology (NIS), using the institutional isomorphism approach and coercive, normative and mimetic pressures, related to Accounting issues. The studies by DiMaggio and Powell (1983), Covalleski, Dirsmith, and Michelman (1993) and Scott (2001) were the most referenced authors in these works. An example is the work by Irvine (2008), which applied NIS in the United Arab Emirates to verify which pressures (coercive, mimetic or normative) contributed to the adherence to international accounting standards in the country.

Other theories applied together with the Institutional theory were searched in the articles. The Agency theory was the most used in the BP studies, being applied in six studies. In addition, Pfeffer and Salancik's (1978) resource dependence theory was addressed in three papers; Giddens's Structuration theory (1984) and Watts & Zimmerman's Positive Accounting Theory (1978, 1979, 1986) were employed in two articles.

Finally, suggestions were sought for future studies, which were presented in Financial Accounting research. Great heterogeneity was observed, the most common suggestions being the change of the technique used in the research, the change in the context analyzed and the use of longitudinal studies. As most of the studies are based on the New Institutional Sociology, mainly in coercive isomorphism, research could focus on how the isomorphic factors influence the adoption of the IFRS, corporate governance and audit reports. Guerreiro *et al.* (2012), who developed the study in Portugal, also focusing on these factors, suggest the following research questions for the future: to what extent can the coercive and mimetic forces overcome the normative resistance in the adoption of the IFRS in other countries? To what extent does the coercive and mimetic behavior turn into normative behavior? Pilcher (2011), then, who studied the impact of the IFRS on the local government in the context of New Public Management, suggests that future research develop a longitudinal study to determine the problem the government experiences in the isomorphic convergence process. The studies can also look into how the governments respond to the isomorphic pressures of generally accepted accounting standards, using Oliver's conceptual model elaborated based on the Resource Dependence theory, as Carpenter and Feroz (2011) suggest. So as to make it possible, thus, to understand the evolution of the convergence process and how the change in the coercive, mimetic and normative values takes place in other contexts.

4.2 Bibliometric Analysis: management accounting articles

Next, the articles were analyzed that discussed themes related to Management Accounting, with the following results:

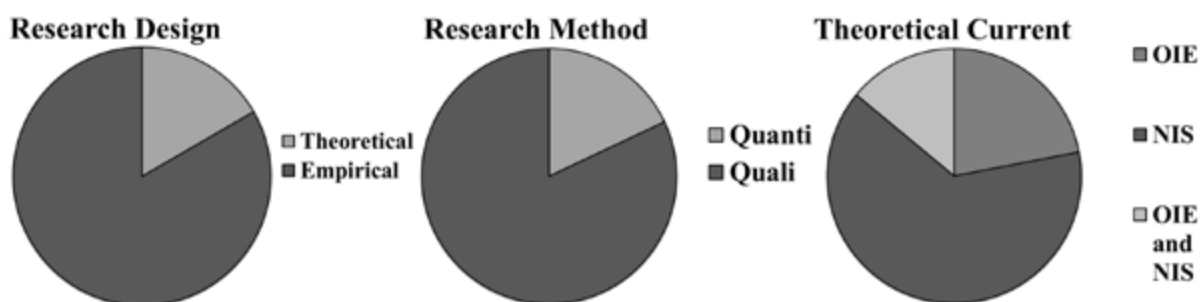


Figure 3. Bibliometric analysis results – Management Accounting articles

As in the Financial Accounting articles, the Management Accounting articles were divided between theoretical and empirical articles. We found 60 articles that use the Institutional theory and are related to Management Accounting, among which 10 were theoretical articles and 50 empirical articles.

Two research methods were found in the theoretical studies. The first method used was the theoretical test, which appeared only in the article by Guerreiro *et al.* (2006) which, in addition to the Institutional theory, adopted the Personality theory and organizational culture approach to investigate why organizations do not use the models developed in theory in practice.

The second research method was the literature review, analyzing the profile of scientific articles published in journals that discuss topics such as Performance Evaluation Systems, Budget and studies on general Management Accounting themes, analyzing variables such as authors, journals (Cunha *et al.*, 2015), research methods used (Helden *et al.*, 2008), theory underlying the studies (Helden *et al.*, 2008; Cunha *et al.*, 2015), and identifying theories, including the Institutional theory (Baxter & Chua, 2003).

Finally, among the theoretical studies, Alsharari, Dixon, and Youssef (2015) use Old Institutional Economics and the New Institutional Sociology, as well as Hardy's Mobilization of Power and Policy Framework (1996), to create a framework to explain management accounting change processes across multiple organizations. And the study by Scapens (2006), which analyzes the changes that have occurred in management accounting research in the last 35 years, with the support of the Institutional theory, besides developing a detailed review of the entire theory.

Regarding the empirical studies, articles were presented that discussed the change in performance evaluation systems, management control systems, budget practices, cost systems, management accounting practices, and environmental practices.

The first characteristic investigated was the method used in the research. Most of the studies were approached through a qualitative analysis, with 41 articles, including case studies, multiple case studies, longitudinal case studies, and ethnographic research, such as Van der Steen's article (2011), which investigates and aims to provide an understanding of the dynamics in the emergence and change of management accounting routines, with a study over a four-year period.

Another empirical method that appeared in two studies was the historical case study, which uses document analysis to explore certain practices over a given period of time, as in the study by Noguchi and Boyns (2012), which examines the role of the Japanese state in the development of budgets within "special companies" in the Transport sector between 1928 and 1945.

These studies vary among the following data collection techniques: open interviews, direct observation, participant observation, document analysis, and semi-structured interviews, the latter two of which are the most used. The other nine articles approach their variables quantitatively, eight of which are questionnaires. The exception is the article by Blaskovich and Mintchik (2011), which conducts an experiment to investigate internal and external influences on the recommendations of accounting executives to outsource the IT infrastructure.

Next, in this section of articles, it was verified which theoretical current of the Institutional theory was used as the basis within the studies. Eleven articles used Old Institutional Economics (OIE) and, among these studies, the most used work was Burns and Scapens (2000). None of the articles in Management Accounting used New Institutional Economics (NIE). Most of the papers used the concepts of the New Institutional Sociology (NIS), most of them based on the studies of DiMaggio and Powell (1983), Covaleski, Dirsmith, and Michelman (1993) and Scott (2001).

In addition, seven of the studies used the NIS and OIE at the same time, all of them qualitative, such as the article by Ma and Tayles (2009), which investigates the change factors in the management control systems to make them more strategic. The study by Yazdifar *et al.* (2008), as well as the study by Alsharari *et al.* (2015), uses in addition to the two currents the Mobilization of Power and Policy framework (Hardy, 1996), in this case to investigate the Management Accounting change at a subsidiary imposed by its headquarters.

In the next analysis, we looked into the other theories that appeared in the construction and analysis of the studies, besides the Institutional theory. In addition to Hardy's aforementioned Mobilization of Power and Policy Framework (1996), the theories that most appeared in the studies were Giddens' Structuration theory (1984), in three publications; and the Contingency theory with two. Other theories that appeared in management accounting studies are the Legitimacy theory by Dowling and Pfeffer (1975), and the Resource Dependence theory by Pfeffer and Salancik (1978). Finally, we looked for the sugges-

tions for future research in the articles in the context of the Institutional theory linked to Management Accounting. With a considerable amount of studies on the changes in Management Accounting practices, some aspects need to be further explored, such as studies that relate the different routine concepts (Van der Steen, 2011), and assess the resistance in the implementation or change process of the artifacts (An-gonese & Lavarda, 2014).

The studies have investigated and also suggested for further studies the exploration of heterogeneous environments, aiming to search for new discoveries such as outsourced sectors (Nicholson & Aman, 2012), subsidiaries (Yazdifar *et al.*, 2008), and emerging economic environments (Cohen *et al.*, 2008). Unlike the studies in Financial Accounting, the studies in Management Accounting are more focused on mimetic isomorphism. From these studies, some research problems arise: how does the isomorphism affect the management control systems in organizations? How does mimetic isomorphism affect the organizational settings? What are the reasons that lead organizations to adopt management control systems? An example is the study by Chen, Duh, Chan, and Xiao (2011).

The large majority of the studies also appoint the need to perform the same study in different contexts and locations to grant robustness to the results found, or to apply quantitative methods to permit the generalization of these results.

4.3 Bibliometric Analysis: research articles in Accounting

The research articles in Accounting were considered to be the other articles that discuss the themes research routes in Accounting and Accounting Education. In this area, only 14 articles were found, which were also separated into theoretical and empirical, with seven articles in each class.

As far as the theoretical studies are concerned, all of them focus on Accounting research problems and bring the Institutional theory to analyze the changes and as a solution for future cases, such as the study by da Silva, Martins and Lemes (2016), which seeks to create a framework for a possible theory of accounting choices, using, in addition to the Institutional theory, the Contractual Theory of the Firm and the Positive Accounting Theory. Other theories used in the theoretical studies are Giddens's Structuration Theory (1984) and Critical Theory.

The empirical articles are also very homogeneous. All of them have qualitative designs and conduct case studies. The data collection techniques were semi-structured interviews and document analysis, and they all discuss Accounting teaching. As an example, we mention the work by Dumitru, Stanciu, Dumitru, and Feleaga (2014), which analyzes the changes in the curriculum of a Faculty of Accounting and Management Information Systems in Romania. All articles are based on the New Institutional Sociology. In these articles, again, the work of DiMaggio and Powell (1983) stands out - and none of these articles refer to other theories.

In the suggestions for future research in the field of Accounting research, in the empirical studies, the request was found to strengthen the results presented in the theoretical articles (Silva *et al.*, 2016), as well as the call for future research using the Institutional theory in the analysis of curriculum change in Accounting courses (Dumitru *et al.*, 2014).

4.4 Discussion of Results

Based on the respective results classified in Financial Accounting, Management Accounting, and Accounting Research, the study presents the discussions of these results, pointing out possible paths for new studies.

The main topics related to Financial Accounting are audit, accounting reform, and adoption of IFRS, deriving from external pressures the media exerts on organizations. In this context, the New Institutional Sociology is used to justify most of the studies, trying to understand what are the institutional pressures that influence these areas and how they affect the organization.

The most prominent topic is the adoption of IFRS. The studies have explored the isomorphism deriving from their adoption, presenting results in multiple contexts, as in Latin countries (Carneiro, Rodrigues & Craig, 2017), Portugal (Guerreiro *et al.*, 2012), Romania (Albu *et al.*, 2011), Malaysia (Phang & Mahzan, 2017), Iraq (Hassan, *et al.*, 2014), and Australia (Pilcher *et al.*, 2011).

The studies found that the initial incentive towards adoption is coercive isomorphism, but the process is better institutionalized when accompanied by the mimetic isomorphism of trading partners; and the normative isomorphism of professionals prepared for the adoption (Albu *et al.*, 2011; Carneiro *et al.*, 2017; Hassan *et al.*, 2014).

In addition to the isomorphic aspects, one route to investigate is to deepen the resistance factors, testing in different cultural contexts (Nurunnabi, 2015) and aiming to help the adoption process. The idea can also be used in other accounting reforms, standardization of auditing and public sector accounting.

In Management Accounting, although the main themes are related to the internal aspects of organizations, such as control, budgeting and performance evaluation systems, most of the studies focus on external factors that lead to changes in the organizational practices, also investigating the isomorphism and its causal relationships. These results confirm the earlier studies (Cunha *et al.*, 2015; Vailatti *et al.*, 2017), the NIS being used in most Management Accounting studies. The studies have explored the changes in the multiple management control systems (Granlund, 2001), focusing on the isomorphism that affects the system (Chen, Duh, Chan & Xiao, 2011), how to turn them more strategic (Ma & Tayles, 2009) and why the models developed in theory are not used in practice (Guerreiro *et al.*, 2006).

In this context, studies of how isomorphism affects the institutionalization (Chen *et al.*, 2011) and which institutional logics can help in the process (Kantola & Järvinen, 2012) need to be deepened, again verifying different contexts for the sake of more robust results. Another possibility is to continue the studies that discuss the internal and external factors that affect changes in the systems (Zoni *et al.*, 2011), joining assumptions of OIE and NIS, as well as the work by Yazdifar *et al.* (2008).

In Accounting education, the focus has also been on external pressures. It should be noted, however, that this is a poorly explored area. For all these themes, the propositions of DiMaggio and Powell (1983) have proved to be an important tool to explore and understand the external pressure and the isomorphic mechanisms that lead to changes and new institutions. It is noticed, however, that despite the development of the Institutional theory literature in Accounting research, there is still much to be explored.

First, there is a lack of quantitative studies in the area to reinforce the findings resulting from a deeper exploration of the research contexts. One step would be the exploration of concepts by means of statistical analyses, investigating the relation of the variables studied in a population and seeking a better understanding of the institutional phenomena. Another possibility is to carry out more studies in heterogeneous contexts, focusing on the same assumptions, developing a research area that can reinforce the conclusions.

The approximation of the Institutional theory with other theories is also a good route. The combination of Agency theory and Institutional theory can support auditing and governance research, aiming for a better understanding of the quality of the reports presented (Cohen *et al.*, 2008). Structuration theory can be used to understand the interconnection between human and institutional factors in the change processes of accounting systems (Granlund, 2001). Resource Dependence theory can contribute to the understanding of the strategic responses of the stakeholders in institutional pressures (Abernethy & Chua, 1996).

In this context, the development of theoretical essays that approach the Institutional theory to these other theories can contribute to a better understanding of the contexts studied, but it is important to develop a series of studies that can prove these assumptions and reinforce the theory, such as the series of studies based on Old Institutional Economics, New Institutional Sociology, and the Power and Policy Mobilization Framework by Alsharari *et al.* (2015), Alsharari and Abougamos (2017), and Alsharari and Youssef (2017).

These are some alternatives that may aid in the development of the Institutional theory in accounting research, reinforcing the theoretically explored understanding and aiming to improve the Accounting practices, in line with Scapens (2006) and Guerreiro *et al.* (2006).

5. Conclusions

The objective of this study was to analyze how the studies based on the Institutional theory have been developed in Accounting research, aiming to produce knowledge in this area. The objective was achieved, using the ProKnow-C tool for the selection of a Bibliographic Portfolio of scientific publications on the proposed theme. The bibliometric analysis was applied to generate the research results.

First, the bibliometric analysis of the Financial Accounting articles was performed, which found 74 articles aligned with the research problem proposed in the study. Ten of these articles are theoretical and mainly developed theoretical essays. Among the empirical articles, those that adopted a qualitative approach used semistructured interviews and document analysis as the main data collection tools. The quantitative articles, in turn, used questionnaires, databases, and official documents.

With regard to the theoretical current of the Institutional theory, it was verified that most of the works use the New Institutional Sociology (NIS), mainly based on the studies of DiMaggio and Powell (1983), Covaleski, Dirsmith, and Michelman (1993) and Scott (2001). Old Institutional Economics (OIE) was used in three articles, based on the study by Burns and Scapens (2000). New Institutional Economics (NIE) was used in only one article, adopting the studies by North and Hart (2006) and Williamson (2000) as a theoretical basis. Finally, in the verification of which other theories were discussed together with the Institutional theory, it was verified that Agency theory was the most used in the articles of the BP, being applied in six studies. Suggestions for future work are focused on changing the data collection and analysis technique, changing the context analyzed and using longitudinal studies.

The bibliometric analysis of the Management Accounting articles identified 60 articles, including 10 theoretical articles, which used theoretical essay and literature review methods; the other 50 were empirical studies. Most of these were qualitative, developing case studies, multiple case studies, longitudinal case studies, ethnographic research, and a historical case study. In those studies, the following data collection tools were found: open interviews, direct observation, participant observation, document analysis, and semi-structured interviews. The quantitative articles present questionnaires or experiments.

Most studies use the New Institutional Sociology (NIS), with emphasis on the studies by Di Maggio and Powell (1983), Covaleski, Dirsmith, and Michelman (1993) and Scott (2001). Others used Old Institutional Economics (OIE), with emphasis on references to Burns and Scapens (2000); and six studies used both theories. In the analysis of the other theories that were discussed in the studies, the most frequent theories were Giddens's Structuration theory (1984) and the Contingency theory. In the suggestions for future research, studies have suggested the exploration of heterogeneous environments to seek new discoveries and the need to carry out the same study in different contexts or to apply quantitative methods.

Among the articles considered in Accounting research, seven were classified as theoretical. The other seven studies were considered as empirical, all qualitative, using semi-structured interviews and document analysis as data collection tools. All articles are based on the New Institutional Sociology. In these articles, again, the work of DiMaggio and Powell (1983) stands out and no other theory appeared in these works. In the future suggestions, we found indications of empirical studies to reinforce the results presented in the theoretical articles and the call for research on the analysis of curriculum changes in Accounting courses.

Thus, based on the Bibliographic Portfolio of the study, it is concluded that the Institutional theory has been widely used in Accounting research, aiming to understand the organizational changes, to explore the process and the consequences of these changes and why they occur. The papers explore the theoretical understanding of accounting practices and seek to understand the different contexts the accounting practices are inserted in to provide useful information to their stakeholders.

In an attempt to better understand the organizational context of the studies, some research has also sought to expand its scope, seeking the approximation of other theories with the sociological concepts of Institutional theory in its different currents. The challenge has been to use the already explored understanding to improve the practices in the actual environments, and to understand the diverse emerging

contexts of today's organizations. The search for depth in the contexts studied has taken an important step towards a better understanding of how organizations work, as well as the search to improve the accounting practices in favor of these organizations.

The study presents some limitations though: (i) the bibliographic search was restricted to articles published in scientific journals; (ii) the search procedure for BP formation considered only seven databases, including only the articles available in full; and (iii) the analysis of the articles with respect to the research variables was informed by the judgment and interpretation of the authors of the research, and may not correspond to the conclusions of the original authors of the studies.

In the light of the studies analyzed, for the development of future research, in the light of the Institutional theory in Financial Accounting, in the Brazilian context, we suggest (i) analyzing how the audit firms institutionalize their methods, procedures, and routines, with a view to the issuing the new independent auditor's model report (ISA 700 and 701); (ii) examine the isomorphism factors; and/or (iii) the change in the rules and routines in the implementation of the Brazilian Accounting Standards Applied to the Public Sector.

For Management Accounting research, in a general context, we suggest: (i) assessing the possible factors of motivation and resistance that can influence the institutionalization of a performance assessment model in public companies and entities; (ii) exploring the motivation; and/or (iii) the isomorphism to implement the management accounting practices in the context of micro and small companies.

Finally, in Accounting research, we suggest (i) developing more theoretical essays to approach the institutional theory to other sociological, behavioral or economic theories; (ii) identifying the change in the classroom routines of Accounting students resulting from the implementation of new teaching and assessment methods in undergraduate and graduate Accounting programs; and (iii) exploring the factors of isomorphism that lead to changes in the curricula of these courses.

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Learning styles and the performance of internships in accounting

Abstract

Purpose: The goal of this study was to unveil the impacts of learning styles in the performance of students who have taken mandatory and non-mandatory accounting internships.

Method: The learning styles of 247 students were measured using Kolb's Learning Style Inventory, while the students self-assessed their performance.

Results: With the use of chi-square and mean score statistics, the results indicate that the performance does not differ between the types of internship and that the students' learning style does not affect their internship performance.

Contributions: These results are contrary to expectations and indicate that students who fit into any learning style can successfully use the curricular component of supervised internship. Unlike other disciplines in which learning styles and their relationship to performance have been investigated, the internship has its own characteristics, which seem to exert no influence on how the students learn, considering Kolb's learning styles. It was verified that internships are a valuable employment method for accounting students.

Keywords: internships; learning styles; experiential learning theory; accounting

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1. Introduction

Once the college years are over, many recently graduated students do not feel ready to take the professional qualification exams, which they were prepared for during four or five years in college. The study by Siegel and Sorensen (1994) highlights that recently graduated persons do not rise up to professional expectations, among other reasons due to the lack of practical experience. Experience is seen as so important that Jones and Abraham (2007) found that students consider that previous work experience is the single most important factor influencing their potential hiring or not. Students might feel as if the fact that they are or have been temporarily employed and can add this experience to their curriculum is more important than the actual knowledge gained during the internship program itself.

To worsen the scenario, there is a visual disparity between accounting education and accounting practice. In a study, Grumet (2001) recalls that, while the academic accounting community is successful at teaching the theoretical side of the profession, since then, it has been moving away from the actual life of real word accounting. Kavanagh and Drennan (2008) found that both employers and students agree that universities are not properly developing non-technical and professional skills. Therefore, the objective of Higher Education Institutions (HEIs) is to shape citizens who possess not only technical mastery but also a critical perspective and autonomous learning skills, these characteristics being required to adapt to new professional requirements as they pop up. Santos, Sobral, Correa, Antonovz, and Santos (2011) believe that HEIs that care for their future professionals should offer education that is capable of responding to this demand. This is easier said than done. Some HEIs have desperately relied on internships in order to reduce this gap, many of them without consulting the literature and thinking through how things should be.

It is in this sense that internships, in the form of experiential learning, come to bridge the gap between theory and practice. Brazilian (Torres, Silva & Falk, 2011) and international authors (Bakar, Harun, Yusof & Tahir, 2011), for example, point out countless benefits for all the agents involved in the internship, which are academics, companies and the academy. These benefits include, for example, integration between theory and practice, confirmation or not of the professional choice, lower costs for the companies and the integration between the academy and the market. Internships have been proven to make students more marketable too (Pasewark, Stawser & Wilerson, 1989). Those benefits make internships appealing to study, including the gathering of feedback on how to improve the experience. There are also other advantages, as well as disadvantages, which will be brought up later in this paper.

Knowing that internships can actually be beneficial to students, as shortly mentioned in the paragraph above, it is also interesting to see which style of learners could potentially benefit even more from such programs. Hypothetically, if most students learn best by theoretical aspects and are performing more concrete experience tasks, there could be a problem. If the learning styles are known and a panorama of internship programs can be built, it is possible to assess if the results of those programs have benefited most students or not, also giving the opportunity to enhance internship experiences in order to reach out to other types of learners.

Kolb and Kolb (2005b) cite patterns of behavior associated with the four basic learning styles. These patterns occur through transactions with the environment at five different levels: personality, educational specialization, professional career, current job role, and adaptive competencies. From the model, four types of learners emerge, who are: divergers, assimilators, convergers, and accommodators.

Nogueira and Espejo (2015) found that there was a predominance of the assimilating learning style among the investigated students and also that the statistical tests showed no impact of different learning styles on performance in Introductory and Management Accounting subjects. Leite Filho, Batista, Paulo Junior and Siqueira (2008) also conducted a research about learning styles and academic performance; those authors analyzed the students' grades in some disciplines in relation to their learning styles and found no correlation though. Geiger (1992) conducted research on the learning styles of introductory accounting students and found that those students with learning styles similar to their instructors performed better. Stout and Ruble (1991) also researched the topic and found that accounting majors possess different learning styles in relation to undergraduate business students.

Some papers have mapped learning styles in accounting, such as those previously mentioned, but none of them looked at these in relation to internships, which are important components of pedagogical curriculums about which little is known. If, for example, one specific type of learner seems to be getting better results from internships while other types of learners are not, program coordinators have the opportunity to comprehend why this is happening and alter some configurations, so as to enable other types of learners to reach similar results.

Another reason to conduct this research is that according to Alpert, Heaney & Kuhn, (2009) there is little empirical evidence on the details of internships. These authors highlight that questions such as what internships are meant to accomplish, how they could be structured and how the students should be assessed remain unknown. Many papers have focused on capturing the perceptions of the agents involved in the internship process, such as Alpert *et al.* (2009) and Bakar *et al.* (2011) mapping the benefits and deficiencies of such programs for the agents involved.

This task of preparing a good professional is arduous and some HEIs have desperately relied on internships to achieve their goals, often without consulting the literature and acting on impulse. The case of the host institution (Maringá State University – UEM) is appropriate for the sake of this research. The pedagogical project makes it mandatory for all students to take an internship of at least 432 hours. Students can also take an optional internship if they choose so at any time in the course as from the second year. The final assessment does not take into consideration the report of the on-site supervisor and is based solely on the presentation skills of the intern. Currently, accounting internships are being discussed within the department and changes are to be made.

Bakar *et al.* (2011) and Torres *et al.* (2011) cite the countless benefits for all the agents involved in the internships, which are academics, companies and the academy itself. These benefits include, for example, integration between theory and practice, confirmation or not of the professional choice, lower costs for the companies and integration between the academy and the market. Internships have also been proven to make students more marketable (Pasewark *et al.*, 1989).

Knowing that internships can actually be beneficial to students, it is interesting to verify which style of learners could potentially benefit more from such programs. Hypothetically, if most students learn best by theoretical aspects and are performing more concrete experience tasks, there could be a problem of insufficient usage of the learning capacity.

In that sense, the research question is: **What are the impacts of learning styles in the performance of students who have taken mandatory and optional accounting internships?**

The main objective of this research is **to verify the impacts of learning styles in the performance of students who have taken mandatory and optional accounting internships**. By measuring the learning style of trainees, the premise is that the program coordinators at the accounting departments can have a better view of what type of students the internship is working best for and how to implement best practice strategies to improve the program for other types of learners in case disparities are found.

The key part in internships is that they should not be considered a mere compulsory activity to obtain a diploma, but a key player in the development of the skills necessary (teamwork, communication, critical analysis, and problem solving) to successfully engage in the professional market. Such skills, as cited in this paragraph, are normally not presented to students in the classroom. Hence, most degree programs are typically centered on the development of technical knowledge and not on the context this knowledge is applied to (Bayerlein, 2015).

Because of the internships' power over the agents involved and the importance that education has always had in society, this research is justified because it addresses an extremely relevant topic all eyes need to focus on in order to have more qualified professionals graduating from higher education. Aside from this, it is important to enhance the development of skills, which will certainly contribute to the evolution of students and, consequently, of future professionals.

Companies may benefit tremendously from internship programs, as they will receive these future professionals. Firms can benefit while the students are taking internship programs (low cost, vice-free

professionals) and these students leave college and enter the job market with experience. Students benefit through an opportunity to learn and gather experience, as well as to decide whether they are making the right choice of area. HEIs also gain through greater approximation with the market, thus permitting greater alignment with practical problems. If conducted properly, internships can be beneficial to all agents involved. To do so, trying to understand if the learning styles affect the performance of the internship is important for all stakeholders. The main intention of this paper is to unveil the role of the internships in this professional's education if they effectively contribute to the trainees' learning and their subsequent professional training and performance.

The findings indicated that performance does not differ between the types of internship, that the students' learning style does not affect their internship performance and that the learning styles do not differ among different types of internship. These results are contrary to expectations and indicate that students who fit into any learning style can successfully use the curricular component of supervised internship. Unlike other disciplines in which learning styles and their relationship to performance have been investigated, the internship has its own characteristics, which seem to exert no influence on how the students learn, in view of Kolb's learning styles.

2. Literature Review

2.1 The professional accounting profile

In many countries, the accounting profession has been associated with standardization, with a range of associations representing the professionals. In Brazil, when the accounting course was separated from the course in Actuarial Science in the 1940s and regulated shortly after, these accounting professionals were labeled as bookkeepers, regulated workers who mainly registered financial transactions in a double-entry manner. In this scenario, the "good accountant" had the capacity to assess the taxes to be paid and to structure financial statements by the end of long and tense financial periods (Machado & Nova, 2008).

The technological evolution contributed to the evolution of the accountant, as many activities that were the accountant's sole responsibility came to be replaced by information systems. Today, managers possess spreadsheets of accounting data that permit various types of analysis the user can perform alone, causing the accountant to be no longer a mandatory employee because of the user's computer and figure handling skills (Boer, 2000).

The contemporary accountant needs to be able to interact with other cultures (using other languages, aside from having knowledge in international accounting), dominate and impose new techniques and tools as well as management systems, not only registering and analyzing but foreseeing and suggesting, acting more like an information manager than a data unifier (Machado & Nova, 2008).

The accountant of the present works to be a strategic partner of the business, not only supporting decision taking but also suggesting and giving insights into the paths the company is to take. This is something very different from what was seen in the 1980's, when the accounting professional did not even participate in the decision-making process (Siegel & Sorensen, 1999).

In a study published in 2004, Oliveira and Arruda disclosed that the job market looks for accountants with a set of skills ranging from technical mastery, knowledge of other languages, leadership skills, teamwork spirit, urge to be always updated, professional enhancement and even technical accounting knowledge.

Further contributions could be made to this subject but there is a lack of empirical studies about the competencies of the accountant (Marin, Lima & Nova, 2014). Academic papers still have not revealed the exact skills of accountants, as papers have been focusing more on their roles (Cardoso, Souza & Almeida, 2006). Next, the topic of accounting internships is discussed.

2.2 Supervised accounting internship

The supervised internship serves as an important tool in professional development. In the halls of universities, it is heard that the internships bridge the gap between theory and practice. This is also a consensus among many authors, including Nevett (1985), Beard, (1998) and Mihail (2006).

It can be said that the internship is a necessary practice in academic education, a requirement for students' training, thus permitting the practical applications of knowledge gained in the academy (Fundação Brasileira de Contabilidade, 2009).

Studies such as Maelah, Muhammaddun Mohamed, Ramli and Aman (2014) have found that the students benefit from the learning of technical and soft skills required in the market. Practical work experiences come in handy when students consider that their career is the most important dimension (Bakar, *et al.* 2011). Moreover, students feel as if having the experience is a determinant factor in their future careers (Jones & Abraham, 2007).

Internships provide an experience of "learning by doing" in a real business situation. In the practice of the internships, these students are engaged in real life professional situations in which examples are solving problems and interacting with other professionals alike (Alpert, Heaney & Kuhn, 2009). This is very unlikely to happen inside classrooms, where most content is taught in lectures, due the fact that there are many accounts of students complaining that classes are too theoretical and lack professional insights. Goodman (1982) reported that many trainees are offered and eventually accept full-time positions at the firms where they took their internships. Aside from better future professional positioning, students with internship experience perform significantly better than those without internship experience in the semester following the internships (English & Koeppen, 1993).

Among other benefits the internships provide to students, it is valid to highlight the exposure to the technology, which is unprecedented in the classroom environment (Bakar *et al.*, 2011). It is certain that most accounting courses have an accounting information system discipline but it is in the place of work that the hands-on experience happens. Another benefit according to Bakar *et al.* (2011) is the self-confidence developed during the program, as students identify skills, abilities, and talents.

Students are not the only ones who benefit from internships. For businesses, internships represent a valuable hiring tool. When firms hire trainees, they are most likely reducing costs (Maslen, 1996) due to lower wages in comparison to hiring graduated professionals. Companies also have the opportunity to teach students and once the internship is over, they can hire trainees to work full time. In such cases, the internship is a cost-effective way to train future workers. For the business, there is also an opportunity of integration with the educational institution, as the professionals at the firms can get in touch with professors.

Companies may also benefit in other ways. Gibson (2001) found that the presence of a faculty intern might impact the company's networks and other elements of the firm's culture. With the arrival of the faculty intern, employees may have to perform better and think about processes more precisely in order to teach or explain how a certain process works. Such processes provide the firm's staff with a deeper understanding of workplace content (Herron & Morozzo, 2008). On certain occasions, faculty interns bring new energy and ideas to the workplace (Bakar *et al.*, 2011), thus motivating other professionals. So even firms who have not received trainees may benefit from hiring a worker who has internship experience, as professionals who were once interns may have academically outperformed those who never were (Hauck, Allen & Rondinelli, 2000) and this could potentially lead to better work performance as well.

Educational institutions also benefit from internship programs. According to Gibson (2001), faculty members benefit from internships by obtaining guest lecturers (which are from the companies they send trainees to); the connection with local firms enhances student respect and the students who go through internships are more effective after those programs. Herron and Morozzo (2008) highlight that faculty may also benefit from using the firm's database for research and use the company as others means learning may apply to. As an example, there are cases in which companies start to host case studies. Internships may also affect curriculum and teaching, as up-to-date information and real-world practical exam-

ples to share with students are plentiful if the professors engage in the programs. Similarly, Beard (2007) highlights that accounting programs benefit from enhanced placement opportunities for their graduates, enhanced learning, industry support and feedback on their programs. Other studies such as Herron and Morozzo (2008) and Gibson, (2001) confirm those insights. Bakar *et al.* (2011) also highlight that an internship program may strengthen the student's ties to the university when college facilitates the experience.

Besides advantages, there are also drawbacks regarding internships for the many agents involved in the programs. Many of the drawbacks that will be presented can be attributed to a lack of careful planning and supervision (Hanson, 1984). For universities, some shortcomings may be the lack of supervision of what is actually happening because activities happen off-campus, beyond the direct control of faculty members (Alm, 1996). For students, internships are time and energy consuming, thus requiring great physical and mental effort. Another disadvantage is that some students do not engage in meaningful work and do not feel as if they are a part of the team (Thiel & Hartley, 1997). For companies, some negative effects of internships are the disruption of the normal work environment and the cultural shock (Anthony, 1981).

Keeping in mind that internships are time and energy consuming and offer employment and skill acquirement potential for students, UEM has mandatory and non-mandatory internships. It is understood that students may do better at the non-mandatory than the mandatory type because the student is doing it out of his or her own free will. Thus, the following hypothesis emerges:

H1: Non-mandatory accounting internship performance is different than mandatory accounting internship performance.

The results from these comparisons can be analyzed and lead to changes with a view to the implementation of best practice strategies. The next section will explore the theory used in the research.

2.3 Experiential learning theory

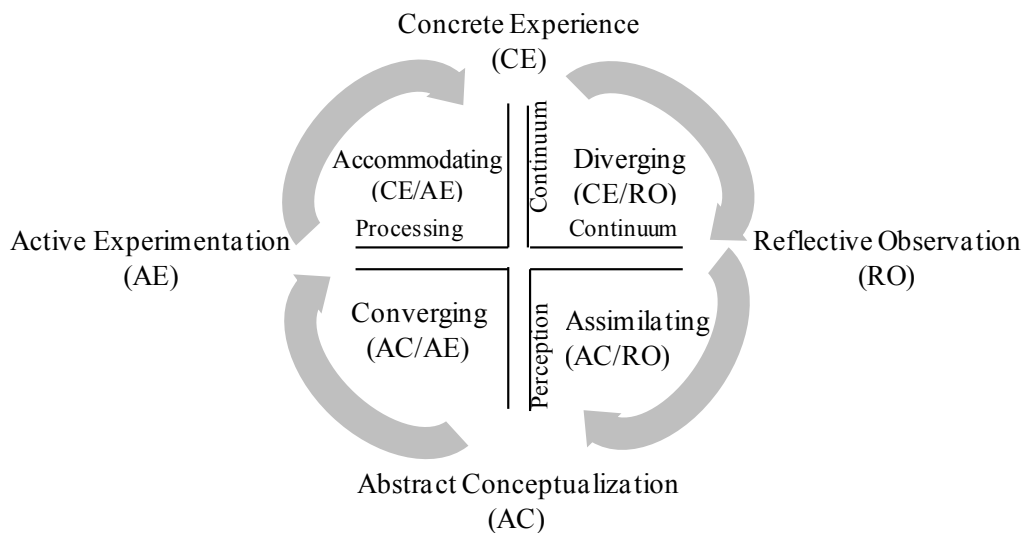
Many different theories have been raised and somehow applied to education since the 1950s. One that has received much attention is David A. Kolb's Experiential Learning Theory (ELT) from 1984. For Kolb (1984), learning can be seen as a continuous process grounded in experiences and opportunities to reflect upon these experiences. In brief, probably the most important aspect of ELT is that learning is considered as a process and not an outcome in itself. The ELT as we know it today integrates the works of scholars such as Kurt Lewin, John Dewey, Jean Piaget, among others.

ELT compiles six propositions, as cited by Kolb & Kolb (2008), which are:

- a. Learning is best conceived as a process, not in terms of outcomes: the focus should be on engaging students in a process that best enhances their own learning with feedback on the effectiveness of their efforts. Students play a central role in their own learning;
- b. All learning is re-learning: the student's beliefs should be examined, tested and integrated with new, more refined ideas. Learning is a continuous process, refinement requires going through the learning cycle many times;
- c. Learning requires the resolution of conflicts between dialectically opposed modes of adaptation to the world: things such as conflicts, differences, and disagreement drive the learning process. During that process, the learner is to move back and forth between opposing positions of reflection, action, feeling, and thinking;
- d. Learning is a holistic process of adaptation: learning involves the integrated functioning of the total person (thinking, feeling, perceiving, and behaving);
- e. Learning results from synergetic transactions between the person and the environment: people model themselves according to the choice of actual occasions they go through;
- f. Learning is the process of creating knowledge: social knowledge is created and recreated in the personal knowledge of the learner.

The above premises of ELT are contrary to the transmission model of other learning theories. Hence, ELT is a constructivist theory. Kolb (1984) says that individuals construct knowledge through the transformation of experiences into cognitive frameworks, thus causing individuals to change the way they think and behave.

In order to map the theory, Kolb (1984) developed a learning model as seen in Figure 1. This model encompasses the different learning styles individuals have and how individuals grasp and transform these experiences.



Source: Adapted from ALQahtani, D. A. & Al-Gahtani (2014).

Figure 1. Kolb's ELT

For effective learning to occur, the learner has to go through the entire cycle, although one can enter the cycle at any stage according to Kolb (1984). The learning cycle as seen in Figure 1 can be visually compared to a compass due to polar opposite dimensions. The vertical axis displays how we grasp or think about things, which is through concrete experience (CE) and abstract conceptualization (AC). The horizontal axis also contains polar opposite dimensions in relation to how we transform or do things, which are reflective observation (RO) and active experimentation (AE).

Kolb (1984) defines each mode as follows:

Concrete Experience: A CE orientation focuses on being involved in experiences and dealing with immediate human situations in a personal way. It emphasizes feeling more than thinking; a concern with the uniqueness and complexity of present reality over theories and generalizations; an intuitive, "artistic" approach over a systematic, scientific approach to problems.

Reflective Observation: A RO orientation focuses on understanding the meaning of ideas and situations by carefully observing and describing them. It emphasizes reflection and understanding over action and practical application; a concern with what is true or how things happen more than with what will work.

Abstract Conceptualization: An AC orientation focuses on using logic, ideas, and concepts. It emphasizes thinking rather than feeling; a concern with building general theories rather than intuitively understanding unique, specific areas; a scientific more than an artistic approach to problems.

Active Experimentation: An AE orientation focuses on actively influencing people and changing situations. It emphasizes practical applications as distinct from reflective understanding; a pragmatic concern with what works rather than with what is absolute truth; an emphasis on doing, more than observing.

Kolb (1993) also highlights key aspects learners encounter at each stage of the cycle and, because of this, the stages presented in the following paragraphs do not follow any specific order.

At the CE stage, learning occurs through specific experiences, relating to other people and through being sensitive to feelings and people (Kolb, 1993). Baker, Simon, and Bazeli (1987) complement that, in this stage, the purpose is to present students with samples of objects, artifacts, behavior processes, or phenomena found in practice. The CE phase also encompasses the ability to fully and openly engage oneself, without bias, in new experiences (Sutherland & Wolcott, 2002).

In the AE stage, individuals learn by showing the ability to get things done, taking risks and influencing people and events through action (Kolb, 1993). In this stage, there is the application of what has been learned in relation to the practical problems as practitioners would encounter them. In other words, it is the synthesis part of the learning cycle (Baker, Simon & Bazeli, 1987). This requires the use of theories to make decisions and solve problems (Sutherland & Wolcott, 2002).

In the stage of AC, learning occurs through the logical analysis of ideas, systematic planning, and action on an intellectual understanding of the situation (Kolb, 1993). This stage is when the student is required to play a more active role in the learning process and it is usually done through homework problems or cases. It is recommended that a laboratory environment be created for the learner to have discussions with others (Baker, Simon & Bazeli, 1987). Sutherland and Wolcott (2002) complement that this is where the ability to create concepts that integrate observations into logically sound theories come in handy.

Lastly, in the RO stage, learning happens through carefully observing before making judgments, viewing issues from different perspectives and looking for the meaning of things (Kolb, 1993). Baker, Simon, and Bazeli (1987) cite that, after students have observed concepts, these are proved deductively, expanded and added to related concepts and generalizations. The RO phase is also home to the ability in which one observes and reflects on experiences from a variety of perspectives (Sutherland and Wolcott, 2002).

Going through the whole cycle, the learner will feel, watch, think, and do. According to the ELT, the learner needs to touch all bases (CE, AC, RO, and AE) in a process in response to the learning situation and as well as to what is being learned. Kolb and Kolb (2008, pg. 5) report that in the learning cycle:

[...] the immediate or concrete experiences are the basis for observations and reflections. These reflections are assimilated and distilled into abstract concepts from which new implications for action can be drawn. These implications can be actively tested and serve as guides in creating new experiences.

According to McCarthy (2010), for effective learning to occur, the learner needs to continually choose which set of learning abilities to use in a specific learning situation, the cycle being composed of different stages, and each one of these stages can be used at any time for a specific learning occasion. Kolb and Kolbe (2008) complement that learning involves creative tension among the four learning modes that is responsive to contextual demands. Moreover, the position of the learner is determined by a combination of individual disposition and characteristics of the learning environment (Kolb & Kolb, 2008).

Kolb's work has been regarded as of great importance, as it sheds light on learning preferences and indicates that there are different approaches to different learning strategies. In the following section, a decisive part of Kolb's experiential learning theory will be presented: learning styles.

2.4 Kolb's learning styles

McCarthy (2010) depicts that learners will generally have a preference for a specific learning style and that, as the learning process develops, their preference might shift. The model described in the previous paragraphs assumes that there are two continuums or dimensions – perceiving, the extent to which an individual emphasizes abstractness over concreteness (AC-CE continuum); and processing, which is the extent to which an individual emphasizes action over reflection (AE-RO continuum). The learning style of an individual represents a combination of these two independent dimensions (Manolis, Burns, Assudani & Chinta, 2013) From the model, four types of learners emerge, which are: divergers, assimilators, convergers and accommodators.

The diverging learning style corresponds to individuals who learn (perceive learning) by way of concrete experience and process the learning through reflective observation. Persons of this learning style experience a situation and then look at the situation from many perspectives, learning from each of them. They are imaginative problem solvers who prefer to feel and watch (DiMuro & Terry, 2007). These students tend to enjoy tests that include unfamiliar questions and synthesize course content (DiMuro & Terry, 2007). Felder (1996) complements that these learners are interested in knowing why it is important for them to learn the course material and how it relates to their future careers.

The assimilator learning style marks people who learn by way of abstract conceptualization and process information through reflective observation. Persons of this learning style prefer individual reflection to class discussions. In individual problem solving, assimilators are less comfortable with identifying practical uses for theories and concepts. In preparing for tests, assimilators like detailed information about the scope and dislike surprises (DiMuro & Terry, 2007). Kolb & Kolb (2008) find that people with this learning style are best at understanding a wide range of information and putting it into a more concise, logical form. These individuals are more interested in ideas and abstract concepts. In informal learning situations, assimilators prefer readings, lectures, exploring analytical models and having time to think things through; these types of learners are important in science careers (Kolb & Kolb, 2008).

The converging learning style corresponds to individuals who learn through abstract conceptualization and process their learning through Active Experimentation. According to O'Leary and Stewart (2013), the greatest strength of convergers is in the practical application of ideas to solve problems and make decisions; these learners also use hypothetical deductive reasoning to focus on specific problems and perform best in situations where there is one correct answer. According to Kolb and Kolb (2008), persons with this learning style are best at finding practical uses for ideas and theories these learners prefer to deal with technical tasks and problems rather than with social and interpersonal issues. Convergers are particularly important for the effectiveness of technology careers, such as engineering and accounting (Kolb & Kolb, 2008).

The accommodating learning style relates to individuals who learn through Concrete Experience and process it through Active Experimentation. According to DiMuro & Terry (2007), these individuals have their strength in doing things, conducting plans and taking risks to excel in new situations. Kolb and Kolb (2008) say that these individuals prize "hands-on" experience and tend to act on "gut" feelings rather than on logical analysis. Moreover, these learners rely more heavily on people for information than on their own technical analysis (Kolb & Kolb, 2008). This learning style is effective for action-oriented careers, such as marketing or sales (Kolb & Kolb, 2008).

Kolb and Kolb (2008) also cite patterns of behavior associated with the four basic learning styles. These patterns occur through transactions with the environment at five different levels: personality, educational specialization, professional career, current job role and adaptive competencies. These behaviors and learning patterns are displayed in Table 1.

Table 1

Relationship Between Learning Styles and Five Levels of Behavior

Behavior Level	Diverging	Assimilating	Converging	Accommodating
Personality types	Introverted Feeling	Introverted Intuition	Extraverted Thinking	Extraverted Sensation
Educational Specialization	Arts, English, History, Psychology	Mathematics, Physical Science	Engineering, Medicine	Education, Communication, Nursing
Professional Career	Social Service, Arts	Sciences, Research, Information	Engineering, Medicine, Technology	Sales, Social Service, Education
Current Jobs	Personal Jobs	Information jobs	Technical Jobs	Executive jobs
Adaptive Competencies	Valuing Skills	Thinking skills	Decision skills	Action Skills

Source: Kolb and Kolb (2008).

In the next section, the literature on learning styles in accounting will be discussed.

2.5 Learning styles in accounting

Many different studies in the accounting area have used the Learning Styles Inventory (LSI). Kolb and Kolb (2008) cite that, in the period 1971-1999 alone, 22 studies were conducted and published. Most of the studies have found that accountants tend to be convergers (McKee, Mock & Ruud, 1992; Baker, Simon & Bazeli, 1986). Kolb and Kolb (2008) themselves say accountants are in mostly convergers.

Other studies have obtained results different from convergers when mapping accounting students' learning styles. Nogueira and Espejo (2010) found in their research (with Brazilian students) that there was a predominance of the assimilating learning style among the researched students and also that the statistical tests showed no impact of different learning styles on performance in Introductory and Management Accounting disciplines.

Valente, Abib, and Kusnik (2007) conducted research aiming to compare students and professors' learning styles at a public Brazilian university in search of a match. The results indicated that there is a discrepancy between the students and the professors' preferred way of learning. In other words, professors tended to teach through concepts and fundamentals, while the students preferred to learn through the encouragement of their experimental learning and self-discovery. The results also indicated a predominance of the accommodating learning style among students.

Geiger (1992) found that, among 157 respondents who took part in his survey (American institution), 68 were assimilators, 19 divergers, 42 convergers and 28 were accommodators. Learning style was also found to be significantly related to performance and the assimilators had outperformed all other types of learners.

Leite *et al.* (2008) researched the relationship between learning styles and academic performance in students affiliated with a Brazilian public institution. The results indicate the predominance of divergers in 55% of students who went to class in the morning and in 76% of students who had classes in the evening. Students with grade average A were mostly divergers. No indications of relations between academic performance and learning styles were found at a more general level.

Auyeung and Sands (1996) performed a cross-cultural study of accounting students' learning styles. The authors compared the learning styles of students in Australia, Hong Kong, and Taiwan. The results showed that the Australian students were predominantly accommodators, while the students from Hong Kong and Taiwan proved to be more of the assimilating style. The authors concluded that the Australian students represented more of the western individualistic culture and were thus more concrete and active, while the students from Hong Kong and Taiwan better portrayed the Chinese collectivistic culture, being more abstract and reflective.

Baker, Simon, and Bazeli (1987) conducted a research with first-year accounting students (in an American institution) and were surprised at the diversity found in the learning styles of the sample students. Results indicated that 44% of the students were assimilators, 31% convergers, 13% divergers, and 13% accommodators. One interesting point the authors cited is that a class with a large diversity of learning styles raises an unusual challenge for the instructor, as reaching all students at the same time will not be possible.

Since learning styles in accounting have been mapped into different styles and no study has correlated learning styles and internship performance, this study sought to find if different learning styles cause an impact on accounting internship performance. For instance, the accommodating learning style corresponds to individuals who learn through concrete experience, process their learning through active experimentation and prioritize “hands-on” experience. Then, this or another learning style more linked to practical knowledge could be associated with superior performance in the internship. This contributed to the following hypothesis:

H2: Learning styles impact the performance of accounting internships.

Another relevant aspect to analyze regarding learning styles is if there is any relation between the choice of the internship modality and the learning style. No studies or evidence were found to support research on whether learning styles impact the type of internship, even though this information could be important to signal the difference of styles between students who perform and do not perform non-mandatory internship, which led to the following hypothesis:

H3: Students taking mandatory internships have different predominant learning styles when compared to their non-mandatory counterparts.

3. Method

This research has a descriptive design. According to Bhattacharjee (2012), this type of research is best aimed at making careful observations and detailed documentation of a phenomenon of interest. Kothari (2004) complements that the main purpose of descriptive studies is the description of the present state of affairs and to accurately portray the characteristics of an individual, situation or group or, in other words, to map the terrain of a specific phenomenon. As information was collected to classify individuals by learning styles and other variables were mapped and further analyzed, it justifies the design of this study as descriptive. This study adopts a positivist approach. Studies that use the positivist approach aim to find the characteristics of a determined population or phenomenon, establishing relationships among variables and treating data with statistical techniques (Martins, 1997).

Data collection was administered by means of a survey, more specifically with the aid of two distinct research instruments (questionnaires). The first questionnaire was the Kolb Learning Style Inventory (KLSI) v. 3.1. The KLSI v. 3.1 is managed by the HayGroup®. To obtain the questionnaire, we contacted the HayGroup® via email to request permission to use their instrument for academic purposes, with a positive response. Due to contractual aspects established by the HayGroup®, subject to the signing of a conditional use agreement document, the questionnaire cannot be modified and published within this paper, the latter being required to preserve their rights over the product. The original Portuguese translated version was used as an instrument in this research. As this questionnaire has been used, improved and validated throughout the last decades, it was not necessary to apply a pretest. This instrument was proposed by Kolb and used in most of the studies cited on learning styles.

This instrument consists of three pages. The first one is the questionnaire per se. The second and third pages are used for graphical mapping of one's learning style according to the answers given on the first page.

In terms of the construct for the Learning Style Inventory, the details on the construction and how the questionnaire measures the learning styles by means of the scaling cannot be disclosed, as they are the property of the HayGroup®.

The second part of the data collection was done using another questionnaire to measure the student's self-perceived performance in the internship (Table 2).

Table 2

Performance assessment construct

Answered by Student		Measure	Source
Overall Performance assessment	Scale		
Excellent	5	Select the best alternative	Authors (2017)
Very Good	4		
Average	3		
Below average	2		
Unsatisfactory	1		

Source: Developed by the authors (2017)

Data treatment is quantitative. Statistical treatment was done using SAS and R software. As this study focuses on the learning styles and internship performance of accounting students at UEM, we have adopted the following variables:

- Dependent (y): Internship performance, as indicated by the student.
- Independent (x): Student Learning Styles, which were obtained by applying the KLSI v. 3.1.

With the variables in mind, this study compares the performance of mandatory and non-mandatory internships, given the premise that a free initiative system naturally inclines only students who take interest in value creating internship programs to prospect and select a company that best proposes an internship plan that suits them more properly. Then, the main objective is to verify if the student's learning style impacts the performance or not.

Lastly, this research tried to confirm if the predominant learning styles of students who engage in mandatory and non-mandatory internship programs are different, this based on the premise that a specific or determined profile would seek optional internships, as mandatory internships are already in place.

In order to answer the assumptions about performance and learning style and performance along internship modalities (H2 and H1), the mean score technique was used, in which scores $a = (a_1, a_2, \dots, a_r)$ are attributed to the level of the response variable, thus making a mean score \bar{f}_i for each level of the covariate, enabling the examination of changes in the mean score (Stokes, Davis & Koch, 2000). This is done by the use of the following formula:

Whereby:

- a_j is the score of the j -th treatment;

$$\bar{f}_i = \sum_{j=1}^r \frac{a_j n_{ij}}{n_{i+}} \quad i = 1, \dots, s.$$

- n_{ij} is the observation in the category i of the covariable (X) and category j of the answer variable (Y);
- n_{i+} marginal total of the i -th line.

In statistical terms, this hypothesis can be expressed by:

$$\begin{cases} H_0: \bar{f}_1 = \dots = \bar{f}_s \text{ (there are no changes in the mean score)} \\ H_1: \bar{f}_i \neq \bar{f}_j \text{ (at least one mean score differs from the rest)} \end{cases}$$

About the null hypothesis, H_0 Stokes *et. al.* (2000) argue that the expectation and variance of \bar{f}_i are respectively given by:

$$\mathbb{E} \left[\bar{f}_i \mid H_0 \right] = \sum_{j=1}^r a_j \frac{n_{i+j}}{n} = \mu_a,$$

$$\mathbb{V} \left[\bar{f}_i \mid H_0 \right] = \frac{n - n_{i+}}{n_{i+} (n - 1)} \sum_{j=1}^r (a_j - \mu_a)^2 \left(\frac{n_{i+j}}{n} \right) = \frac{(n - n_{i+})}{n_{i+} (n - 1)} v_a.$$

whereby μ_a and v_a are, respectively, the mean and the population variance of a score. The \bar{f}_i quantity has an approximately normal distribution according to the central limit theorem. Thus, the mean score statistic is defined as:

In this formula, QS has a chi-square approximated distribution with $(s - 1)$ degrees of freedom.

$$Q_S = \frac{n - 1}{n} \frac{\sum_{i=1}^s n_{i+} (\bar{f}_i - \mu_a)^2}{v_a}$$

The null hypothesis is rejected, with a significance level of $\alpha\%$, if $Q_S > X^2(\alpha, s-1)$, in which $X^2(\alpha, s-1)$ is the percentile $100 \times \alpha$ of the chi-square distribution with $(s - 1)$ degrees of freedom.

To test the third premise (internship modality and learning style, H3), the chi-square statistic was used. More specifically, the chi-square technique was used as a homogeneity test (Bussab & Morettin, 2010).

It is important to note that this statistical technique comes with requirements, which are:

- Measurement level in at least a nominal scale;
- Expected frequencies above 5;

For the sake of better comprehension, consider the following notation:

- i indicates the line number;
- j indicates the column number
- O_{ij} indicates the observed values of the i -th line and j -th column;

In statistical terms, the hypotheses are given by:

$$\begin{cases} H_0: P_1 = P_2 \text{ (The probability distribution of the lines is the same)} \\ H_1: P_1 \neq P_2 \text{ (The probability distribution of the lines is different)} \end{cases}$$

According to Stokes *et. al.* (2000), the chi-square statistic is given by:

$$Q_p = \sum_{i=1}^s \sum_{j=1}^r \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

whereby:

- s is the number of lines
- r is the number of columns

Supposing H_0 to be true, we note that the Qp statistic has a chi-square distribution with $(s - 1)(r - 1)$ degrees of freedom. The null hypothesis is rejected, to the level of significance of α , if $Qp > X^2(\alpha, s-1)(r-1)$, in which $X^2(\alpha, s-1)(r-1)$ is the percentile $100 \times \alpha$ of the chi-square distribution with $(s - 1)(r - 1)$ degrees of freedom.

The population of this study consists of all students who were enrolled in Accounting at UEM in the year 2016, corresponding to 533 students. The questionnaire was applied to 247 students. Of the 247 respondents, 160 had not taken or were still taking internships, and were therefore excluded from the sample. Thus, 87 was the final sample that answered the questionnaires.

4. Analysis and Interpretation of the Results

First, the descriptive statistics will be presented regarding all of the 247 observations. The vast majority of students is under 23 years of age. Only two students who answered the questionnaire are over 35 years of age.

There is also a predominance of female students (60%) among the respondents. This is in accordance with a study the Brazilian Accounting Council) (2016) developed in 2016, which shows that accounting has become a course that mainly receives female students.

Regarding the learning styles of the 247 responses, most students are identified as Assimilators (111%). The second most popular learning style within the respondents refers to the Convergers (57%), followed by the Divergers (46%). Finally, the learning style with the smallest number of representatives within the sample corresponds to the Accommodators with 33 observations (13%). The data are available in Table 3. According to the study by Kolb and Kolb (2005b), accountants are in majority Convergers, which is the second most popular learning style in the group of Accounting students at UEM.

Table 3.

Distribution of predominant learning styles within the sexes

Sex	Styles				Total
	Accommodator	Assimilator	Converger	Diverger	
Male	11	49	27	13	100
Female	22	62	30	33	147
All	33	111	57	46	247
%	13%	45%	23%	19%	100%

Source: developed by the authors (2017)

This result as to the majority of students being assimilators complies with the study by Nogueira and Espejo (2010), which was coincidentally done with students from a university in the same state and only about 500 kilometers away from UEM. Similar results in terms of predominant learning styles were also found in the studies of Baker, Simon and Bazeli (1987), involving students from an American HEI, Geiger (1992) and partially in the study by Auyeung and Sands (1996), executed with students from Australia, Taiwan, and Hong Kong.

As most students are assimilators, it is interesting to enforce lectures and papers, this being the way in which assimilators learn best according to Kolb and Kolb (2008). On the other hand, in order to benefit the majority of students, a professor would have to refrain from simulations, case studies, mutual cooperation, and hands-on activities, which would benefit a small portion of the students who adopt the opposite learning style, being accommodators (Kolb & Kolb, 2008).

There are many specific areas of the accounting field in which students took internships. Of the 163 students who had already taken or were still taking internships, 80 worked with tax accounting. This high number was already expected as tax accounting offices represent the majority of employers of UEM's accounting students. In the management spectrum, 40 of these 163 students reported doing some management accounting work. In the public sector, 22 students worked in city halls, education departments, revenue departments and other public institutions doing public accounting. Regarding payroll accounting, 17 of the 163 students reported that they did activities related to the calculation of salaries, employee resignations, and other payroll-related tasks. Lastly, eight students reported working with accounting in the third sector. These eight students worked in Non-Governmental Organizations (NGOs) or accounting offices, doing their accounting. Students could respond that they worked with many different areas simultaneously.

In order to test the first hypothesis, the mean score technique was used:

H1: Non-mandatory accounting internship performance differs from mandatory accounting internship performance.

When tested, the following results emerge:

Table 4.

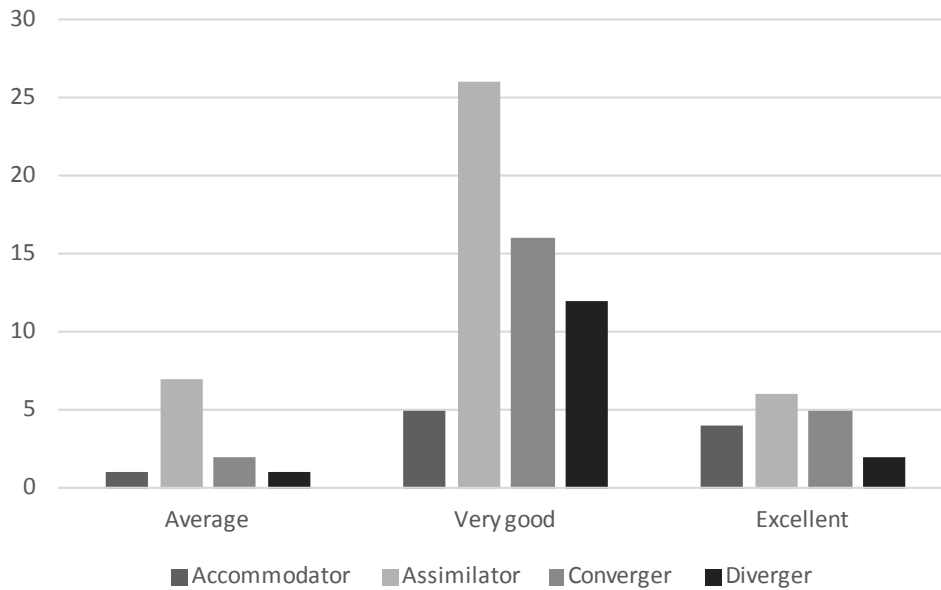
Internship performance and modality

Internship modality	Performance			Total
	Average	Very good	Excellent	
Mandatory	8	40	16	64
Non-mandatory	3	19	1	23
Total	11	59	17	87
Statistics Qs = 2.5245		p-value = 0,1121		

Source: developed by the authors (2017).

The results did not reach statistical significance. The results presented in Table 4 show that we reject the hypothesis (H1) though. In other words, the internship performance is not in any way related to the internship modality. Once again, this goes against the premise that originated the hypotheses, which is that, in a free initiative system, where a student could choose if he would like to do an internship or not, this would impact the performance. It is worth arguing that the existence of compulsory internships discourages students to attempt to pursue a more value-adding experience. This can be seen solely by looking at the proportion of students who take optional internships in relation to those who take mandatory ones (all of the students). If a more equivalent number of students took optional internships, more comparisons could be drawn.

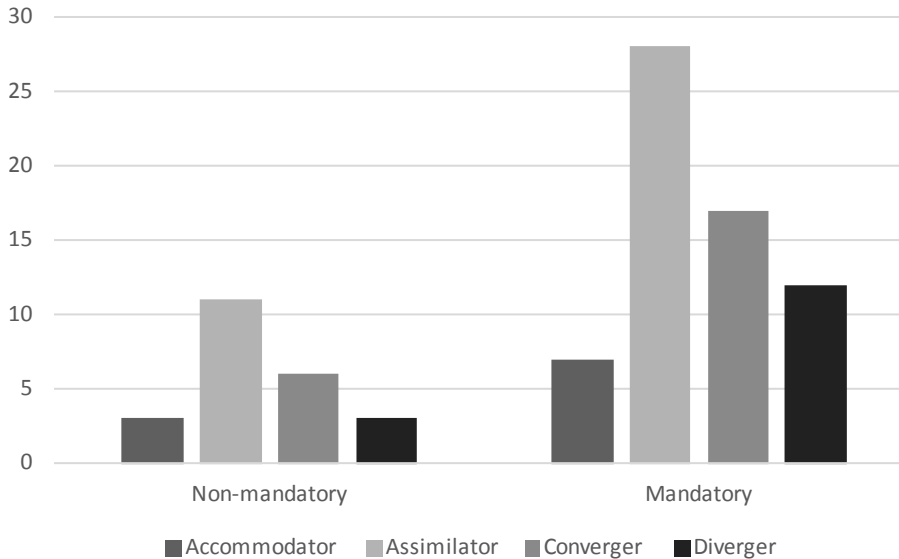
With regard to performance, it is important to note that none of the 87 respondents who had taken and finished their internships graded themselves below average. All of the responses indicated average, very good or excellent, in other words, there is limited variation in the results. Figure 2 shows the students' assessment of their internship modality and performance.



Source: developed by the authors (2017).

Figure 2. Internship modality and performance, considering 87 observations

The low variation in responses regarding self-perceived performance indicates that students approve their performance and feel as if they are meeting requirements. These responses can be seen in Figure 3, alongside the learning styles. The overall good performance could be explained by the low complexity of the interns' tasks.

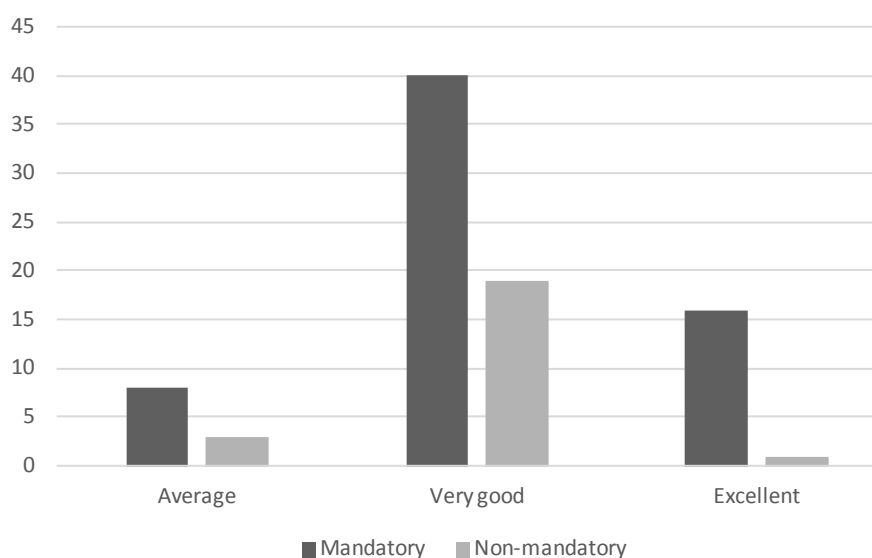


Source: developed by the authors (2017).

Figure 3. Learning styles and self-assessment of performance, considering 87 observations

Another explored benefit of internships regards the employability. Excluding the seven students working at public offices, who have limited time contracts with no potential of renewal, about 80% of the students were offered a chance to continue in the company as an effective full-time worker. Further questioning unveiled that about 60% of the students who were offered chances to remain in the company declined the invitation. The reasons for the refusals or acceptances were not explored in the study.

Regarding the internship modality amongst the 87 respondents, most of them underwent mandatory internships, as shown in Figure 4, along with the learning styles.



Source: developed by the authors (2017).

Figure 4. Learning styles and internship modality, considering 87 observations

Next, the results displayed in the figures above will be tested and further analyzed by means of statistical tools. In order to test the hypotheses concerning internship performance and learning styles, the statistical technique of mean scores was used, in which the following hypothesis was:

H2: Learning styles impact the performance of accounting internships.

When tested, the following results were obtained:

Table 5.

Internship performance and learning style

Learning style	Performance			Total
	Average	Very good	Excellent	
Accommodator	1	5	4	10
Assimilator	7	26	6	39
Converger	2	16	5	23
Diverger	1	12	2	15
Total	11	59	17	87
Statistics Qs = 3.0748		p-value = 0,3802		

Source: developed by the authors (2017).

The results did not reach statistical significance. The results presented in Table 6 highlight that we reject hypothesis H2. Thus, we verify that the learning style does not impact the internship performance for the sample tested. These results are contrary to the premise that the learning style of an individual directly affects his/her performance in internships, which led to the creation of these hypotheses. The low variation of performance itself would already suggest that the learning styles do not play a significant role in internship performance. There are two possible explanations that may have affected this outcome. Firstly, the sample size of 87 respondents could be a key factor to explain the low variation in performance. The second and most important aspect to observe is the type of job the interns are doing. Most students perform activities with low requirements for critical thinking and technical knowledge, simply recording financial transactions in

an accounting system. The low complexity of the activities itself may explain the above average performance observed. In summary, these factors or the combination of factors may have led to the low variation of answers and, consequently, the non-relation between learning styles and internship performance.

The third hypothesis to test was:

H3: Students of mandatory internships have different predominant learning styles from their non-mandatory counterparts.

In order to test this, the Chi-square technique was used, as the data met its requirements. This technique verifies the frequency distribution (Table 6).

Table 6.

Learning style and internship modality

Internship modality	Learning style				Total
	Accommodator	Assimilator	Converger	Diverger	
Non-mandatory	3	11	6	3	23
Mandatory	7	28	17	12	64
Total	10	39	23	15	87
Statistics Qp = 0.4490		p-value = 0.9299			

Source: developed by the authors (2017).

The results did not reach statistical significance, but indicate that we reject the hypothesis H3. In other words, students who took mandatory and non-mandatory internships have the same predominant learning style. This is opposite to the premise that motivated the hypothesis that students who sought non-mandatory internships would have a different learning style. It is obvious that, if there is no advantage in taking non-mandatory internships if there is a legal requirement to take one, not many students will undergo such arduous and energy consuming experience. In the sample surveyed, only about one-fourth of the students decided to take non-mandatory internships. The reasons for this were not explored in this study. One observation that can be drawn from Table 7 is that, unlike the other learning styles of the students who took non-mandatory internships, in the estimated proportion of 1:3 or 1:4, the accommodators were more likely to engage in non-mandatory internships, to an estimated proportion of 1:2.

We found that the students' learning styles did not impact their internship performance, with no relevant statistical disparity among learning styles regarding performance in the sample. This result goes contrary to the premise that motivated the study. On the other hand, it complies partially with the study by Nogueira and Espejo (2010). The result of this hypotheses test indicates that any type of learner can benefit from internships and not only learners who best learn from concrete experiences, which, in essence, is what internships are. For the host institution, it means that there should be no efforts taken to tailor different types of internships for students with different learning styles in order to improve performance. For the host companies, this implies that the performance of the trainees will not be altered by what and how work experiences are provided.

Although mandatory internship showed superior performance, it cannot be inferred that it is statistically relevant. One possible explanation might be that students who seek non-mandatory internships may encounter more challenging jobs and consequently have lower performance due to the greater complexity of the work done. Thus, the internship performance is not in any way related to the internship modality. This result means that the continuation of mandatory internships by UEM promotes employment and good performance, as the performance average was high according to both students and supervisors. For students, the implication of this result is that the internship modality is not the determining factor that affects their performance or, in other words, they can achieve high performance levels in both internship modalities. As, to the best of our knowledge, a search in the Capes database revealed no other study with the scope of these hypotheses, we cannot compare the findings.

Regarding performance as a whole, as it was overwhelmingly well assessed and as the majority of interns work with tax accounting, it might indicate that the high performance is due to the low level of complexity involved in the activities the interns are doing. Much of the time spent on the internship is doing repetitive low mental effort tasks such as registering electronic invoices and other business transactions in the system with a barcode.

The result of the chi-square statistical test reveals that there are in fact no differences in the predominant learning style of students opting for different internship modalities.

The implications of this result are that students do not view non-mandatory internships as essentially different from mandatory ones. Students might feel as if there is no advantage in taking non-mandatory internships, as they will necessarily have to go through a mandatory one. An issue that can be further investigated is that this current system of mandatory placements may discourage students from pursuing opportunities in companies for non-compulsory internships. In other words, the internship modality does not attract the students' attention based on their learning style but on other aspects, maybe based on their perception of necessity (financial, perhaps) and other potential benefits like future employability. As, to the best of our knowledge, a search in the Capes database revealed no other study with the scope of these hypotheses, we cannot compare the findings.

5. Conclusions and Recommendation

This study sought to correlate the performance of internships and learning styles. To do so, initially, a sample of 247 accounting students was surveyed and thereafter filtered to 87 students. Although mandatory internship showed superior performance, it cannot be inferred that it is statistically relevant. Thus, the internship performance is not in any way related to the modality of internship. We also found that the students' learning styles do not impact their internship performance as there is no relevant statistical disparity among learning styles regarding performance in the sample. This result goes contrary to the premise that motivated the study.

Regarding performance as a whole, as a result of the chi-square statistical test, there are in fact no differences in the predominant learning style of students opting for different internship modalities. The implications of this result are that students do not view non-mandatory internships as essentially different from mandatory ones. These results show that there is no association between the types of internship and the learning styles and the performance. Therefore, studies should deepen the analysis, perhaps in a qualitative way, in order to capture the problems and challenges with the aim of improving this type of learning.

A limitation of the study is that the results are limited to its sample and cannot be generalized. This study should be replicated in order to confirm or refute the results obtained. As the final sample was small in number in relation to the population, the data could be distorted. Thus, it would be interesting for upcoming studies to focus on obtaining a larger sample to minimize this effect. It would also be fulfilling if a study focused on the choice of non-mandatory internships and thus determined the motives that lead students into taking non-mandatory internships where there exists a legal requirement for mandatory ones.

Studies with the same method should consider other courses than accounting, such as business administration and economics, in order to compare predominant learning styles and the performance of internships. It would be curious to test learning styles and the performance of mandatory credit and optional credit disciplines in post-graduate courses of accounting, economics and business administration. Perhaps at a higher academic level, learning styles can play a more significant role in performance.

For the HEI where this study was developed, according to the results, the legal requirement of mandatory internships should be preserved except for students who are already employed, as the evidence shows that students approve their performance and the benefits of these programs are clear, especially in terms of self-perceived performance and potential employability.

Future research should also concentrate on developing a qualitative study on the contributions that internships bring to students' skills set, the enhancement of bonds between the academy and the business world and the benefits left for the company after the student has finished the programs.

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Disclosure in view of companies' increasing intangibility: Book Value x Market Value

Abstract

Objective: To check if, as a result of companies' increasing "intangibility", Accounting has worked to develop ways to maintain the utility of accounting information for investment decision making.

Method: Exploratory study with a qualitative approach. The research is based on the list of the largest companies in terms of market capitalization, as published by Visual Capitalist in 2016. The evolution of the main stock markets in the North American market was analyzed for the past 15 years. It was verified that, between 2001 and 2016, the ranking of the largest companies by market capitalization changed from other economic sectors to the technology sector, where the five largest companies in the world, in 2016, were: Apple, Alphabet (holding of Google), Microsoft, Amazon and Facebook.

Results: The results disclose that the companies' equity is lower than their market value. The market considers that part of the difference is due to the fact that accounting does not recognize the companies' intangible assets, mainly in the new context of the digital economy.

Contributions: As the solution will not be achieved in the short term and Accounting needs to maintain its information characteristic, we argue in favor of the disclosure of its intangible items, even if in the Notes to the Financial Statements.

Key words: Intangibility, Disclosure, Market Capitalization.

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1. Introduction

The recognition of intangible assets in the financial statements has always been a polemic issue. In Technical Pronouncement CPC 04 (CPC, 2010), it is established that an intangible asset is an identifiable non-monetary asset without physical substance. Some intangible assets found regularly are: technology, brands, patents, client portfolios and intellectual capital. And new assets are emerging each day. Intangible assets gain increasing importance and affect the company value, but the majority is not recognized in the financial statements.

In the pronouncement, it is established that an entity should only recognize an intangible asset if certain criteria are attended to. Furthermore, specifications are provided on how to determine the book value of intangible assets, requiring specific disclosure in this respect.

Thus, Accounting, shaped for the industry and the trading of tangible goods, is facing the challenge of providing useful information in a market that increasingly values intangible assets and new corporate activity models, more based on ideas, technology and value added to the brand than on physical items valued at their production cost.

In that context, we intend to demonstrate that companies are increasingly becoming intangible and that Accounting plays a fundamental role in the disclosure of the information needed for better decision making.

Therefore, we analyzed the evolution in the past 15 years of the largest global companies in terms of market capitalization, represented by the stock price, which investors frequently use to estimate a company value that is considered fair at that moment. These companies' stocks are traded on the main North American stock exchanges.

The research is based on the disclosure by Visual Capitalist (Canadian company specialized in business and investment trends) of the largest companies in market value. As a result, it was verified that, between 2001 and 2016, the ranking of the largest companies in market value changed from other economic sectors (industry, trade, etc.) to the technology sector (New Economy), where the five largest companies in the world with stocks traded on the North American market in 2016, were: Apple, Alphabet (holding of Google), Microsoft, Amazon and Facebook.

And what do these five companies have in common? All of them are active in the technology sector and surpass companies that used to head the list of the highest market capitalization, such as Exxon, G&E, Total, Citibank, Petrochina, Shell, ICBC – Industrial and Commercial Bank of China and Walmart.

In view of the above, we raise the following research question: **Does the accounting information remain useful for investment decision making?**

Thus, the study objective is to check whether, as a result of companies' increasing intangibility, Accounting has worked to develop ways to preserve the utility of accounting information for investment decision making.

According to Beyer, Cohen, Lyz and Walther (2010), accounting information plays two important roles in market economies. First, it allows the capital providers (stockholders and creditors) to value the potential return of investment opportunities (the valuation role of accounting information). Second, the accounting information allows the capital providers to monitor the use of their capital after it has been committed (the stewardship role of accounting information).

It is through Accounting, as a business language, that the users expect to obtain useful and relevant information for decision making.

On the opposite, Lev (2016), an accountant and researcher with expertise on Intangible Assets, highlights that fundamental factors to determine the value of a company do not figure on the Balance Sheet and Income Statement and that this situation is not restricted to emerging technology companies as, in any competitive environment, even in traditional industries, innovation is necessary.

Nevertheless, Lev (2016) does not recommend the elimination of the financial statements, as "The financial reports will always be important as a historical record. You need some kind of historical perspective of the business". And he ends by considering that it is important to know the past, but this does not always provide linear information about what is going to happen in the future, which is why the author proposes changes in the way the information is presented.

Nevertheless, there was a significant change in the company valuation, with distancing between the economic value and the book value, arousing debate on the decreased importance of accounting information. That situation made researchers look for alternatives for the lack of identification of intangible assets in the balance sheet, as can be observed next. The continuation of this study is structured as follows: theoretical background, addressing disclosure and intangible asset; description of the method used; presentation of data on the largest companies by market capitalization and analysis of the results; and the final considerations.

2.Theoretical Background

2.1. Disclosure

According to Lopes (2004), Accounting is considered relevant only if it clearly influences its users' economic decisions. The role of accounting information in company valuation has been an active area of research in accounting.

In the New Economy, companies have more intangible assets that Accounting does not recognize than they had in the Old Economy. Companies are moving towards increasing intangibility. In this way, financial statement disclosure plays a fundamental role for a greater understanding and comparability of the information that is disclosed.

For Iudícibus (2004), the disclosure is an inalienable commitment of Accounting towards its users and its own objectives. The forms of the disclosure may vary, but the essence is always the same: to present quantitative and qualitative information in an orderly manner, leaving as little as possible to stay out of the formal statements, in order to provide a proper information base for the user.

The value of accounting transparency indisputably involves the disclosure of intangible assets. The future of Accounting is linked to a scenario of objectivity in the numbers presented to the information users.

The International Accounting Standards Board's (IASB) Conceptual Framework for Financial Reporting (2011) defines that the purpose of financial statements is to provide accounting and financial information of the entity that is useful to existing and potential investors, to loan creditors and other creditors when making a decision related to funding for the entity.

Disclosure has to follow the precepts of the Conceptual Framework that defines the fundamental qualitative characteristics of the Financial Statements: Relevance and Reliable Representation. Relevance depends on the nature and also materiality (size) of the item under discussion. Reliable Representation refers to three attributes: information has to be complete, neutral, and error-free. The information needs to be concomitantly relevant and accurately represent the reported reality in order to be useful.

In addition, in the information disclosure process, it needs to possess the qualitative characteristics to improve the usefulness of the information, which are Comparability, Verifiability, Timeliness, and Comprehensibility.

According to Core (2001), there is a consensus that the business reporting model needs to expand to meet the changing information needs of the market and provide the information needed for greater transparency and corporate accountability. Around the world, regulators see disclosure as the key to achieving the desired change in the quality of corporate reporting.

According to Iatridis (2011), who investigated the quality of companies' disclosure in England, companies that exhibit high-quality accounting disclosures are generally larger, more profitable and possess higher liquidity levels. Studies by Botosan (2006) demonstrate that the primary conclusion of existing theoretical and empirical research is that greater disclosure reduces the cost of capital.

Finally, the quality of corporate disclosure contributes to enhancing governance. Doige, Karolyi, and Stulz (2007) argue that better governance allows companies to access capital markets in better conditions, and that good governance practices should positively impact a firm's valuation and market performance.

2.2. Intangible Asset

Hendriksen and Van Breda (1999) indicate that intangible assets are one of the most complex areas of accounting theory, partly because of the definition difficulties, but mainly because of the uncertainties regarding the measurement of their values and estimation of their useful lives.

An intangible asset is an identifiable non-monetary asset without physical substance. Under the terms of CPC 04 (CPC, 2010), an entity shall recognize an intangible asset only if certain criteria specified in that standard are met, taking into account the need for such an asset to be identifiable and for the entity to control it, defining when it should be recognized and how to measure its value.

The standard defines that an asset is identifiable when it is separable, that is, it can be separated or divided from the entity and sold, transferred, licensed, rented or exchanged, either individually or in conjunction with a related contract, asset or liability, or results from contractual or other legal rights, whether those rights are transferable or are separable from the entity or other rights and obligations.

Recognition, in turn, should occur only when it is probable that the expected future economic benefits attributable to the asset will be generated in favor of the entity and when the cost of the asset can be reliably measured.

In Brazil, the recognition of intangible assets the company generated internally from projects or even brand development is prohibited, as CPC Pronouncement 04 (CPC, 2010) indicates that the goodwill generated internally should not be recognized as an asset. The Pronouncement further determines that no intangible asset should be recognized in the research phase, but recognition is possible when in the development phase, provided that a list of criteria is met.

The equivalent international standard, IAS 38 (IASB, 2004), however, provides for the possibility of recognition of internally generated intangible assets in specific cases and which result in few possibilities for recognition, but represent a greater possibility internationally when compared to the Brazilian standard.

Both the Brazilian and international standards indicate, however, that internally generated trademarks, publication titles, client lists, and similar items should not be recognized as intangible assets. Such a normative impossibility of recognizing these assets, however, especially when generated internally, does not prevent the business world from evolving and several companies from presenting more and more items with characteristics of intangibles, a situation demonstrated in a survey conducted by BrandZ (2016), a global platform that covers more than 100,000 brands in 45 countries and presented that, in the ranking of the 100 most valuable brands released in 2016, the five most valuable brands are in the technology segment: Google, Apple, Microsoft, AT & T, and Facebook. In the 2017 ranking (BrandZ, 2017), Amazon, classified under Retail, but intensive in technology and innovation, replaced AT & T in the same position.

In this sense, Szuster, N., Szuster, FR and Szuster, FR (2005) discussed the challenges of Accounting to reproduce the current reality and signaled that corporate wealth is no longer centered only on tangible assets, but on the intangible assets specific to each sector of the economy, pointing out the need for disclosure, even in the Notes to the Financial Statements.

Upton Jr. (2001) prepared the Financial Accounting Standards Board's (FASB) Special Report on "Business and Financial Reporting, Challenges of the New Economy". In the preface, the author highlighted a gap between the information provided in the financial statements and the information needs of investors and creditors, a situation some characterize as a gap between "new economy" companies and financial reports of the "old economy" and that the users demand greater disclosure of non-financial information, more prospective information and more information about intangible assets. He further emphasized that the improved financial statements of the "new economy" require attention to the recognition of internally generated intangible assets in financial statements and improved measures of these assets, expanded and systematic use of non-financial performance metrics and greater use of prospective information.

Castro (2015), in his research, highlighted that the accounting principles for measurement were developed in a primarily industrial economy scenario, focusing on tangible assets. In recent decades, however, the presence of intangible assets in companies has increased significantly, contrary to the accounting standards, which did not follow this evolution.

In a study by Perez and Famá (2006), a sample composed of 699 companies in the United States was analyzed for the period from 1997 to 2002. As a result, they concluded that intangible assets are relevant in the company's economic performance. It was clear that companies with a greater share of intangible assets generated more value for their shareholders. It could also be inferred that, based on the clarity of the results, in the period under review, the tangible assets provided the companies with only normal profits and that true value creation resulted from the intangible assets.

Other studies also relate intangible assets to market capitalization and/or company return, as well as to the loss of Accounting's information power, in accordance with Aboody and Lev (1998); Lev and Zarowin (1999); Lev and Radhakrishnan (2003); Oliveira, Rodrigues, and Craig (2010); Decker, Esslin, Queen, and Queen (2013); Basso, Oliveira, Kimura, and Braune (2015); Chehab, Liu, and Xiao (2016); and Clausen and Hirth (2016). The most recent studies present proposals for the better treatment of intangibles to enhance the information power of Accounting.

Lev (2016) pointed out that some people consider that only putting the capitalized value on the balance sheet is not enough and that the appropriate value should be estimated, a position he does not underwrite because it is difficult to estimate the appropriate real value. The main advantage of capitalizing intangibles would be to correct the income statements. Despite this, the author describes that there are major forces working against the change in relation to the measurement and disclosure of information about intangibles, especially in the light of the possibility of using R & D expenditures as a tool for manipulating results.

Thus, the author considers that the usefulness of the financial information has worsened, a situation that increases the risk of investors and, consequently, the companies' cost of capital, reducing their shared values.

On the other hand, although most of the studies that relate intangible assets and company value indicate the need for accounting records of intangible assets, presenting Penman's (2009) approach is due here. The author questions the need for accounting recognition, noting that the value of intangibles can be obtained from the Income Statement and the Balance Sheet. In his study, he demonstrates the possibility of approaching the book value to the company's market value, based on accounting information and the trade value of the share, considering two large companies in the information technology segment. In conclusion, he indicated that research on the accounting treatment of intangible assets should not be discouraged but put into perspective.

In the evolution of the concepts, in his book *The End of Accounting and the Path Forward for Investors and Managers*, in partnership with Gu Feng, Baruch Lev observes strategic assets in general. The authors developed a report focused on improving information disclosure, called *Strategic Resources and Consequences Report*. This report of one or a maximum of two pages would consider strategic items of the company, with the potential to generate value, concentrating on information that is lacking in the financial statements. These items are not suitable for accounting recognition but are strategic for company valuation, such as results of clinical trials of the biotechnology and pharmaceutical company, proven oil and gas reserves of energy companies, new clients in technology companies.

Kaufmann and Schneider (2004) synthesized research on intangibles and concluded that these studies were characterized by a wide array of viewpoints and interpretations, indicating that, until then, the dominant schools of thought had not yet developed. At present, however, in research, the importance of intangible assets for company value is confirmed, as well as several studies whose scope is to improve the Accounting treatment of intangible assets.

Thus, there is an international scenario of normative restriction for the recognition of intangible assets, with even more restrictions in Brazil, as opposed to the market's ability to value those items, influencing the companies' market capitalization, identified based on the stock price. In addition, there is intense academic debate seeking solutions for the greater representativeness of intangible assets by Accounting, either directly, in the Financial Statements, or even in the set of qualitative information the companies provide, in view of the users' demand for further information that indicates the company value or permits its estimation, in order to meet the expected level of disclosure.

3. Method

Regarding the objectives, this research is characterized as exploratory and has a qualitative approach. As for the technical procedures, it is characterized as bibliographical and documentary.

According to Gil (2007), exploratory research aims to enhance the familiarity with the problem, in order to make it more explicit or to construct hypotheses. This research intends to make the reader more familiar with the issue of companies' progressive intangibility and the commitment of Accounting to improve the disclosure of information to its users.

As for the qualitative approach, according to Soares (2003), qualitative research mainly aims to describe the complexity of a certain hypothesis or problem; to analyze the interaction between variables; to understand and classify dynamic processes experienced by social groups; to permit the interpretation of the particularities in individuals' behaviors or attitudes; and to interpret data, facts, theory, and hypotheses. This research has a qualitative approach, as it seeks to explore the management of intangible assets in companies in further depth.

As for the technical procedures, according to Marconi and Lakatos (2003), both bibliographic and documentary research are dichotomous due to the origin of their sources: the bibliographical, secondary sources, that is, what has already been published, through magazines, research and others; and the documentary, primary sources such as public documents, private archives, and statistical sources. The use of these techniques is intended not only to present a repetition of the content, but an approach not yet explored. This research uses printed and electronic books and scientific articles as sources on the research topic.

4. Largest Companies in Market Value and Results Analysis

Figure 1 shows the changed scenario from the old economy (with few intangibles) to the new economy (intensely intangible) over 15 years, from 2001 till 2016.

In the following figure, the world's five largest publicly-traded companies by mark capitalization are displayed, ranked in the sectors of "Technology" in green and "Other" in black. It can be noticed that, in 2001, there was only one company from the Technology sector, which was Microsoft. In 2006, the scenario continues only with Microsoft and, in 2011, Apple is ranked second with a market capitalization of about \$ 376 billion.



Source: Visual Capitalist (2016).

Figure 1. The Largest Companies by Market Capitalization

Confirming the aspect of companies' increasing intangibility, in 2016, the five largest global publicly-traded companies according to market capitalization were as follows:

Table 1

Classification of the five largest publicly-traded companies by market capitalization in 2016

Cap Rank	Code	Company	Market Cap (US\$B)
1	AAPL	Apple	582
2	GOOGL	Alphabet	556
3	MSFT	Microsoft	452
4	AMZN	Amazon	364
5	FB	Facebook	359

Source: Elaborated by the authors.

On the whole, these five companies, all of them from the Technology sector, correspond to a market value of \$2.3 trillion dollars around the world. Nevertheless, the companies' equity is distant from their market capitalization.

Table 2 demonstrates the information taken from the investigated companies' financial statements, corresponding to the position on 12/31/2016, and the comparison by market capitalization.

Table 2

Market Capitalization, Stockholders' Equity, Total Assets and Intangible Assets (US\$B) and their percentages in the companies' valuation

	Apple	Alphabet	Microsoft	Amazon	Facebook
Market Cap	582	556	452	364	359
Total stockholders' equity	128	139	72	19	59
Total assets	322	167	194	83	65
Intangible assets (with goodwill)	9	20	22	4	21
Total stockholders' equity/Market Cap (%)	22%	25%	16%	5%	16%
Intangible assets/Total assets (%)	3%	12%	11%	5%	32%

Source: Elaborated by the authors.

The analysis of the numbers reveals that the companies' equity is inferior to their market capitalization. In percentage terms, Apple possesses 22%, Alphabet 25%, Microsoft 16%, Amazon only 5% and Facebook 16%.

In the same way, it shows how distant the value of the intangible asset is from the total assets of companies that are highly intangible, as they come from the Technology sector. In percentage terms, Apple has only 3%, Alphabet 12%, Microsoft 11%, Amazon 5%, and Facebook 32%.

One noteworthy point in the analysis of these figures is that, although Facebook has an intangible percentage of 32% compared to its Total Assets, which is higher than Alphabet, which has only 12%, it can explain less of its market value. Facebook's equity amounts to 16% compared to its market capitalization, while Alphabet shows a higher percentage with 25% of its equity in relation to the market capitalization.

Next, the change in the companies' market capitalization between 2015 and 2016 is shown.

Table 3

Difference in Market Capitalization between 2015 and 2016 (US\$B)

	Apple	Alphabet	Microsoft	Amazon	Facebook
2015	668	361	395	143	225
2016	582	556	452	364	359
Difference Value	-86	195	57	221	134
Difference (%)	-13%	54%	14%	155%	60%

Source: Elaborated by the authors.

The observed variation indicates the volatility in the companies' pricing by the market, which is strongly influenced by expectations of gains or losses. In this way, the market acts considering speculation and assigning not yet realized value to the companies. Accounting, on the other hand, requires reliable representation in the presentation of the facts, with specific criteria for the incorporation of values in the representation of an economic phenomenon in order to maximize the characteristics of complete, neutral and error-free information.

The analysis of the five largest companies in the world reveals that the market values these companies higher than the value determined by Accounting. In this way, it should be emphasized that Accounting uses but does not provide market values. Financial reports help to estimate but are not designed to show the economic value of the entity.

The recognition of elements in the balance sheet or income statement has to meet certain requirements, including cost or value that can be reliably measured, as indicated in the Conceptual Framework for Financial Reporting issued by the Accounting Pronouncements Committee. This reliability should be analyzed in order not to compromise the information disclosed in the financial statements.

The analyses developed considered the comparison of information in the balance sheet with the company's market capitalization and demonstrated the significant distance between these values. Penman (2009), however, points out that the omission of intangible assets from the balance sheet is not necessarily a shortage, as the value of intangible assets (and others) can be verified in the income statement, more or less precisely, and stresses that the demands for recognition of intangible assets in the balance sheet can be misinterpreted, considering that articulated balance sheets work together to indicate the company value and each statement can correct the deficiencies in the other.

With data from Microsoft for the year ended June 2008, considering the balance sheet and income statement, in addition to the risk free rate, the risk premium and the expected return to the company was calculated at US\$ 23.03 per share or US\$ 210,718 million, while the stock traded for \$ 25 per share or \$ 228.775 million after the publication of the annual report. As stated by Penman (2009, p. 367),

Note, however, that financial reports do not report just earnings and book values; they also report more detailed financial information in line items and, over time, historical sales, earnings, and book value growth rates. This information can be exploited with financial statement analysis. For a market price of \$ 25 for Microsoft, the growth rate implied (that reverse engineers the residual earnings model) is 0.84 percent. The analyst challenges this implied growth rate using further financial statement analysis and other information.

Thus, Accounting has informative power to equip decision making, considering all the financial statements, even when the intangible assets are not explicitly recognized in the balance sheet. In the case observed, the accounting information was the tool to infer the company's market value, considering additional criteria related to the market, such as the expected return and the risk-free rate. The reliability of the information presented in the financial statements was preserved, which is used as the basis for the es-

timation. In addition, in case of a significant difference, there is an alert to evaluate the market pricing criteria, which would not be possible if the accounting information were strictly aligned with the company's market capitalization, subject to speculation and consequent oscillation, often resulting from factors the entity's managers cannot control.

Considering the companies with the highest market value in 2016, strategic items can be identified that do not meet the requirements for accounting recognition, even as intangible assets, but can and should be disclosed as a note to the financial statements or in a specific, synthetic report, such as the Strategic Resources and Consequences Report, proposed by Lev and Gu.

Apple has a great ability to innovate with new products under investigation. Google has a significant database, with potential business generation and product prospecting. Microsoft is looking for technology breakthroughs with products under development, such as touch interaction in medical imaging and hands-free keyboarding to enable people who are unable to speak or use a physical keyboard to communicate to do so using only their eyes. Amazon possessed acknowledged distribution technology that sets it apart from retail companies, using robots that automate the movement of cargo within the warehouse and speed up the process and tailor-made carton system that saves packaging material and optimizes the use of space in the logistics structure, whether for storage or transportation. Facebook, in turn, has a large number of people and companies that are linked in the social network. All these companies also have their client portfolio. These items exemplify the situation of value generation recognized by the market in company valuation but do not meet the normative requirements for accounting recognition. They can be presented as strategic information, in order to assist in the estimation of current value and in the projection of future results.

Thus, the role of Accounting is to reduce information asymmetry, given the companies' progressive intangibility. The information asymmetry exists because controlling shareholders are usually more informed than the minority shareholders about the expected future cash flows.

In the current market, only those who have the relevant information have the power of company valuation and this power is generally concentrated in the hands of the big investors. Often, the problem of insider information occurs, that is, knowledge of relevant information that is not yet known to the general public. Hence, disclosure plays a fundamental role in the better quality of information for its users.

According to Iudícibus (2004), as investment and financial analysis tools in general are increasingly sharp, the investor makes his decisions based on the largest and best possible amount of information. That explains the challenge of Accounting. Today, many investors are more interested in the cash flow the company can produce than in the cash flow of the period ended. This raises a number of new issues in accounting, and if we are to remain competitive as a profession, let us considerably broaden the scope of our information, always in a disciplined manner, however, without intending to replace the judgment of the risk taker but advising him.

Finally, the recognition and measurement of the intangible asset deserve increasing attention in the scenario shown in this article. Accounting plays a fundamental role in the reliable representation of the values of intangibles and in the relevance of the information disclosed through its financial statements.

5. Final Considerations

The purpose of this paper was to propose a reflection on the informational power of Accounting in the face of companies' progressive intangibility.

A theoretical reference survey was carried out on the recognition of intangible assets by Accounting and the relation of these assets with the company value, revealing that there are different opinions about the accounting treatment to be applied, as well as new ways to treat the issue in order to provide useful information for decision making. There are authors who argue that Accounting should fully recognize intangible assets, despite the difficulty in measuring different items. Others, in turn, observe the existence of a risk of manipulation, earnings management and great difficulty for the amortization of these assets.

There is progress in the treatment of information, as shown by Penman (2009), who showed the approximation between the companies' book and market values, based on accounting information and the value of the stock traded, considering large companies in the information technology segment; and Lev and Gu (2016), who evolved in relation to the debate on the recognition of intangible assets, observing strategic assets in general, and presented a report proposal called Strategic Resources and Consequences Report.

Thus, there are different opinions about the evolution needed in Accounting. Without a short-term consensus and in view of the need to maintain the informational characteristic, there are different alternatives. At the same time, it is argued that disclosure of information on intangible assets should occur, even in Notes to the Financial Statements, in cases where the criteria currently in force for asset recognition are not met. This initiative does not exclude the continuity of the search to improve the provision of accounting information, in order to provide complete, useful and relevant information.

Next, we analyzed the evolution of the last 15 years in the largest global companies by market capitalization with shares traded in the main North American stock exchanges.

As a result, the findings showed that, from 2001 to 2016, there was a shift in the ranking of the largest companies in market capitalization from other economic sectors (industry, commerce, etc.) to the technology sector (New Economy), where the five largest global companies with shares traded in the US market are: Apple, Alphabet (Google holding), Microsoft, Amazon, and Facebook.

The sample took into account the five largest global publicly traded companies by market value in 2016, confirming a progressive intangibility in the market. These five companies together, all of them from the technology sector, account for a market value of \$ 2.3 trillion worldwide.

It is worth mentioning the publication of controversial articles, especially by Lev, in which the researcher addresses whether the lack of questioning about the companies' disclosure or not of research actually follows the desire of some CEOs to present what they want in their financial statements. R & D expenditures in the current regulatory environment, which impose the treatment as an expense until the stage of development, has a margin for earnings management.

In view of this scenario, Accounting has a fundamental role in the disclosure of the information necessary to make better decisions and better recognize and measure the intangible asset, which is insignificant in relation to the total asset value of the analyzed companies. In addition, it was verified that the shareholders' equity is lower than the companies' market value, which opens room for debate on a better disclosure of the information for decision making.

It is concluded, therefore, that the financial statements disclosed maintain Accounting as a source of useful information for decision making on investments in an environment in which companies become progressively intangible. There is a need to improve the published content though, with proposals from important researchers intended to reduce the informational asymmetry, either by disclosing information in a note to the financial statements or in a summary report that presents information not included in the traditional financial statements, indicating possible impacts, in order to preserve the historical content and the reliability of the book value determined by means of instruments that better estimate the current market value and the future expectations for the companies.

Recent information that the four technology giants (Tesla, Dropbox, Uber, and Spotify) never made a profit (Veja, 2018) further supports this conclusion. Tesla, created fifteen years ago, registered a \$ 2.2 billion loss in the balance sheet of 2017, even though it had a market value of \$ 60 billion. Dropbox, in turn, created 11 years ago and despite its 12 million subscribers, lost 111 million dollars in 2017. Uber, which was created nine years ago and whose app is valued at \$ 120 billion, lost \$ 4.5 billion in 2017. Finally, Spotify, which had its streaming service launched in 2008 and has 87 million subscribers, reported an annual loss of \$ 1.5 billion in 2017.

Thus, in this article, numerous inquiries on this subject were presented, evidencing that debate is increasingly necessary, with a view to increasing reflection among academics and accounting professionals seeking a better recognition and measurement of intangibles and greater transparency in the disclosure of information to the market.

The age in which companies only disclose what the standards require or what favors their image has come to an end. The strengthening of the accounting profession encompasses the seriousness and commitment to the information users and to the company's going concern, a fundamental principle of Accounting.

In this way, the research contributed to demonstrate the scenario of companies' increasing intangibility, showing the change in the profile of companies with greater market value, besides highlighting the need for accounting information to evolve and present existing proposals with this goal.

Finally, in order to better recognize and measure intangibles and to enhance greater transparency in the disclosure of information to the market, future research is suggested to elaborate models for the presentation of information about company assets that impact its market value, as well as interaction with decision makers to verify whether the company they operate in would be willing to be more transparent in terms of expected revenues or losses, considering ongoing projects in two scenarios: mandatory disclosure and voluntary disclosure.

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The regulatory modes and their relations among Accountancy students

Abstract

Objective: Based on the Regulatory Mode theory by Kruglanski, Thompson, Higgins, Atash, Pierro, Shah and Spiegel (2000), individuals present two self-regulatory functions. The locomotion function corresponds to a strong focus towards action. The assessment function corresponds to the capacity to critically assess the means and ends. In this study, we aimed to associate the students' regulatory modes with vocational education aspects in the undergraduate program in Accountancy, such as satisfaction with the course, academic performance and professional career aspects.

Method: A survey was undertaken among 94 students from an undergraduate program in Accountancy. After the validity and reliability tests of the scales, Pearson's Correlation test was used to analyze the results.

Results: The students' regulatory mode of locomotion was positively associated with satisfaction and performance in the course. The locomotion profile was also positively associated with the intention to work in the accounting area, especially in opportunities that value the conquest of professional experiences, personal satisfaction and promotion through career plans.

Contributions: The results suggest that students with a locomotion (vs. assessment) profile experience a regulatory adjustment and are more fit to the Accountancy course.

Key Words: Regulatory modes; Accountancy; Academic performance; Professional expectations.

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1. Introduction

The activity area of accounting professionals is experiencing a context of major changes due to, for example, the processes of convergence with international accounting standards and the great technological advance. These transformations are also perceived in academic environments, especially considering Accounting teaching methods and practices, which evolve so that students are able to meet the new demands of Accounting users. In addition to the entire accounting treatment and information production process, accountants are increasingly required to interpret economic facts, establish performance assessment plans and systems, and act strategically in the decision-making process (IMA, 2008; Maciel & Martins, 2018). That is, new accounting professionals need not only demonstrate technical skills but also the ability to innovate in service delivery in order to create value for their users (Maciel & Martins, 2018).

At this point, it is fundamental to understand the aspects about the training of new accounting professionals, including the motivational aspects that regulate the behavior of college students and that guide them toward the achievement of the final objective, which is the conclusion of the college course. More precisely, it is necessary to identify the students' personality trait that most identifies with or fits this new professional profile, making the learning process more assertive, efficient and pleasurable.

Several are the motivational factors present in the literature that explain how individuals engage in goal-pursuit (Spiegel, Grant-Pillow and Higgins, 2004). Among them, the regulatory modes proposed by Kruglanski *et al.* (2000), which determine how an individual behaves in the search for a future outcome. In this situation, individuals need to evaluate the means to achieve the goal and progress towards its achievement (Pierro, Kruglanski & Higgins, 2006). Therefore, individuals have two basic self-regulatory functions: assessment and locomotion. The assessment function consists of the individual's ability to critically evaluate conditions and entities, such as, for example, evaluating the objectives and means to achieve the intended objective. The locomotion function consists in the individual's ability to move from the current state to the future state and in the commitment of resources towards the goal (Kruglanski *et al.*, 2000).

Therefore, self-regulatory functions involve on the one hand the inclination of individuals to critically appraise a future goal, the progress towards this goal, and possible means of attaining it. On the other hand, there is the inclination of individuals to direct resources (e.g. time and effort) in pursuit of the goal and to move and persist in this direction. For example, a student with a strong Assessment characteristic, when faced with the future objective of completing the undergraduate course, will be able to evaluate the benefits of this achievement, how it will be perceived by third parties, what the risks and impacts of failure are and what level of commitment and dedication that will be required (Kruglanski *et al.*, 2000). This student's engagement in the action will depend on how positive these evaluations are. A student with a strong locomotion trait, then, will be less concerned with these assessments (e.g. risk of failure) and with the amount of effort that will be required (Pierro, Chernikova, Lo Destro, Higgins & Kruglanski, 2008) and will try to engage as quickly as possible in the activities, as what motivates him is the sense of progress (Kruglanski *et al.*, 2000; Pierro *et al.*, 2006).

The Regulatory Mode theory does not argue that one mode is superior to the other as they represent a portion of any self-regulatory activity (Kruglanski *et al.*, 2000). Therefore, any individual will present the basic functions of Assessment and Locomotion, but in different levels and combinations. However, the individual's motivation will be greater when the way the individual pursues the goal is sustained by his/her predominant regulatory mode (Spiegel *et al.*, 2004). For example, an activity requiring rapid actions is more suited to a locomotion profile, whereas an activity that requires more reflection is more in keeping with an assessment profile (Chernikova, Destro, Mauro, Pierro, Kruglanski & Higgins, 2016; Pierro *et al.*, 2018). This combination of regulatory mode and activities is called "regulatory fitness" (Higgins, 2000; Pierro, Giacomantonio, Pica, Giannini, Keuglauski & Higgins, 2013).

In the literature, several authors have examined the regulatory modes and fitness in a wide range of research areas, such as decision making (Avnet & Higgins, 2003; Miceli, De Palo, Monacis, Di Nuovo & Sinatra, 2018), sales behavior and performance (Jasmand, Blazevic & De Ruyter, 2012; Faia & Vieira,

2017; Vieira, Pires & Galeano, 2013; Silva, Vieira & Faia, 2015; Silva, Faia & Vieira, 2016), leadership styles (Benjamin & Flynn, 2006), materialism and social welfare (Giacomantonio, Mannetti & Pierro, 2013), counterfactual thinking and remorse (Pierro, Leder, Mannetti, Higgins, Kruglanski & Aiello, 2008), time management (Amato, Pierro, Chirumbolo & Pica, 2014), goal-pursuit strategy (Orehek & Vazeou-Nieuwenhuis, 2013) and critical thinking (Manalo, Kusumi, Koyasu, Michita & Tanaka, 2013), among other areas. It is not known which regulatory mode is the most appropriate for the technical, professional and scientific training of undergraduate students though.

In order to fill this gap, in this study, we aimed to identify the regulatory mode of students that is best associated with their trajectory to complete the undergraduate course in Accounting. What we want to know is which regulatory mode (locomotion or assessment) allows the student to experience regulatory fitness, increasing the sense of importance and making him more engaged in the activities performed in the course (Pierro *et al.*, 2013; Avnet & Higgins, 2003). Therefore, the objective of this study was to examine the degree of association between the students' regulatory modes and the vocational training process in the undergraduate Accountancy course. More specifically, this study aimed to measure students' regulatory modes and to relate them to measures of satisfaction with the course, academic performance, and aspects related to the professional career.

Therefore, a survey was carried out among the students of an undergraduate Accountancy course. The results, although limited to the sample surveyed, allow us to advance in the literature, evidencing a type of regulatory fitness in Accountancy. The results of the study reveal three main contributions. First, it was identified that the locomotion (vs. assessment) profile is more associated to the aspects involved in the course. Students with the most action-focused profile were more satisfied with the course and academic performance. According to the results, values such as the development of new professional experiences, personal satisfaction, and the career plan are more associated with students with a locomotion profile. These results are consistent with people with this profile, whose motivation is intrinsic and focused on the execution of activities (Kruglanski *et al.*, 2000; Giacomantonio *et al.*, 2013). Third, it was identified that, among the accounting professionals' career options, there were positive associations only with the locomotion profile, that is, students with this characteristic are not only associated to the undergraduate course, but also to the future exercise of the profession.

2. Regulatory Modes

Research on the self-regulatory aspects of human behavior demonstrates theoretical and practical significance as it contributes both to formal knowledge and to the improvement of social environments that aim to develop individuals, such as universities. According to Lourenço and Paiva (2010), the tasks and activities lived in universities are associated with the students' intellectual processes, such as attention, concentration, information processing, reasoning in problem-solving. These processes directly imply the quality of the student's engagement in the teaching and learning process.

The students' motivation and engagement in the process of university learning are important aspects to prepare agents of social change. Often, however, academic education is still far from the demands of the professional accounting market (Ott, Cunha, Cornacchione Júnior & de Luca, 2011). One of the reasons for this problem in training may be related to the misalignment between the aspects of students' self-regulation and the characteristics of teaching and work in the accounting area.

The regulatory mode theory (Kruglanski *et al.*, 2000) identifies two fundamental aspects of self-regulation, which describe how individuals plan and behave in the face of a goal (Pierro *et al.*, 2018), such as students pursuing the objective of completing a higher education course in Accountancy. These aspects of self-regulation are called "regulatory modes" and basically involve a function of thinking and critical reflection on the goal and two means to achieve it, and a function of action and movement from the current state to the future state (Pierro *et al.*, 2018). These two functions are called, respectively, "regulatory

modes of assessment” and “locomotion”, which individuals will present to different extents and in different combinations. The individual’s locomotion profile is associated with a strong orientation towards action and the desire to remain constantly in motion and in progress (Pierro *et al.*, 2018). The main concern of people with a high level of locomotion is to move, either in a physical, experiential or psychological sense, from a present state to a future state (Pierro *et al.*, 2006). Therefore, individuals with locomotion traits usually engage in more than one task simultaneously; are more persevering in the face of challenges and negative outcomes; dedicate more effort and energy to activities; have higher levels of intrinsic motivation; and are faster to make decisions (Pierro *et al.*, 2006; Kruglanski *et al.*, 2000).

The assessment profile is associated with the critical evaluation of means and ends in order to take cautious actions, prevent failures and make more assertive decisions (Pierro *et al.*, 2018; Kruglanski *et al.*, 2000). People with this profile are constantly compared with standards and with third parties and tend to devote a large share of resources to action planning and evaluation of means (Kruglanski *et al.*, 2000). Assessing individuals dedicate most of their time to the critical assessment of the means to perform an action, which makes them present higher levels of procrastination as well as higher levels of extrinsic motivation (Kruglanski *et al.*, 2000). Therefore, incentives, such as financial rewards, tend to have more effects on the behavior of individuals with the assessment profile (Giacomantonio *et al.*, 2013). Table 1 presents a comparison between the main characteristics of the regulatory modes.

Table 1

Characteristics of regulatory modes

Assessment	Locomotion
<ul style="list-style-type: none"> - Strong self-assessment and social comparison - Low focus on action - Time is dedicated to preparation and assessment of means available to perform activities - Extrinsic motivation - Easy pursuit of multiple goals 	<ul style="list-style-type: none"> - Strong focus on action - Easy accomplishment of simultaneous tasks - Persistence in the performance of activities - Intrinsic motivation - Preference to pursue one goal at a time

 Source: Kruglanski *et al.* (2000)

It is important to mention that one self-regulatory profile is not superior to the other and that the same person can present both profiles simultaneously at different levels and combinations. Thinking about a corporate environment, what managers should aim for is that the types of work and responsibilities, as well as incentive systems, fit the employee’s predominant regulatory mode (Benjamin & Flynn, 2006). For example, if a manager wants speed in performing tasks, a person with a locomotion profile will probably perform better. If the absence of errors is of interest, however, assessors will fulfill this responsibility more easily.

Thinking about an academic environment, understanding which profile of self-regulation matches the student’s future field of action and, consequently, how it is taught, is of great importance. This information allows, for example, to identify which student profile presents the best performance and satisfaction with the undergraduate course, the priorities of these students when choosing a professional career (e.g. stability, remuneration, personal development, pleasant work environment, development of professional experiences, career plan and personal satisfaction at work), as well as the areas of work they most identify with.

3. Academic Environment in Accounting

Teaching at the undergraduate level aims to transform the student “so that he can develop in the environment related to his area and be subject to certain changes in his trajectory” (Silva, Miranda, & Pereira, 2017, p. 265). Therefore, students should not only be offered knowledge on their future activity area but should also develop skills that allow them to adapt to the changes and new contents that will appear when they are no longer in the academic environment. The future professional accountant is expected to add aspects, such as ethical values and attitudes, intellectual abilities, investigative spirit, critical analysis, interpersonal skills, communication, skills with new technologies, among others (Ott *et al.*, 2011).

According to the National Curricular Guidelines for Undergraduate Accountancy Courses (CNE / CES Resolution 10, 2004), the Bachelor program has to enable future accountants to identify and understand organizations’ technical, scientific, social and economic issues; to master their functional responsibilities in a wide range of performance areas; and to possess critical-analytical skills to use the information in the organizational scope. Therefore, in addition to the technical content of accounting, contents related to other areas of knowledge, such as Administration, Economics, Mathematics, Sociology, Psychology, and others are also taught in Bachelor Programs in Accountancy (Silva *et al.*, 2017)

In terms of employability, Accounting education is intended to enable the student to act in several areas, as the provision of accounting services is segmented in different domains, aiming at the specialization and the production of accounting information specific to each type of user. According to Iudícibus and Marion (2002), Accounting is a profession that provides professionals with a range of possibilities in the job market, such as Financial Accounting, Cost Accounting, Management Accounting, Audit and Accounting Skills, Financial Analysis, Consulting, Public Accounting, Tax Accounting, among others (Iudícibus & Marion, 2002).

For this study, the regulatory modes were particularly associated with the students’ interest in the following areas: Management Accounting; Financial Accounting; Tax Accounting; Public Accounting; and intent to set up their own business (to undertake). Management accounting refers to “the process of providing relevant financial and non-financial information for decision-making, resource allocation, monitoring, evaluation and performance reward to managers and employees of an organization” (Atkinson, Kaplan, Matsumura & Young, 2015, p.3). The focus of management accounting is to help decision makers improve the organizational performance by applying planning and control skills (Garrison, Noreen & Brewer, 2013).

While management accounting is intended to produce information for internal users, financial accounting is guided by the interests of external users, such as the preparation of financial statements whose objectives are “to provide information that is useful in economic decision-making and evaluations by users in general, not intended to meet the specific purpose or need of certain user groups” (CPC 00, 2011, p. 3). The focus of financial accounting is to offer information on the equity and financial position of the entities that supports the economic decision and allow the users to assess the managers’ performance (CPC 26, 2011).

Tax accounting is related to the procedures and techniques “applicable to the calculation of taxes due by companies and entities in general, to the search and analysis of alternatives to reduce the tax burden and to fulfill the additional obligations established by the Treasury” (Pohlmann, 2012, p. 14). Therefore, the career in tax accounting does not only include the calculation of taxes but also involves planning activities, whose objective is to reduce tax obligations through concessions and exemptions provided for in tax law and the forecasting process of business operations (e.g. survey of estimated income and expenditure for a period) (Martinez, 2017). Public accounting is related to social welfare through efficiency and publicity and transparency in the use of resources. The objective of public accounting is to capture, record, accumulate, interpret and demonstrate the phenomena that affect the budgets, finances, and assets of public law entities (Kohama, 2012).

Finally, the Accountancy course should also encourage students to undertake (Santiago, Faia, & Silva, 2016). Throughout the course, students learn a variety of management tools that enable them to use them to their own advantage in establishing their own business (Anjos, Santos, Miranda, Silva, & Freire, 2011). In addition, the characteristics of accounting service provision allow accountants to act autonomously, helping them to take risks and take charge of their own careers.

4. Methodological Procedures

In view of the objective of examining the degree of association between the regulatory modes and the education process in undergraduate Accountancy programs, a descriptive and quantitative research was conducted (Triviños, 2013) with the students of a public educational institution of Brazil. The Accountancy course at this institution is organized in four periods (years), with only one class group per period. Annually, the course offers 40 places, which are filled through a public selection process. At the time of data collection, 163 students were enrolled in the course. The research was supported by the course coordination, which informed all the teachers about the development of the project.

The students were contacted in the classrooms, where they received explanations about the research objectives and were invited to participate by answering a structured and self-administered questionnaire. After completion, the students put the questionnaire in an envelope at the end of the room without the need to identify themselves. The survey took place in November 2016 in the class groups of all the periods, including the first year. As most of the course subjects are biannual, at the date of data collection, the first-year students had already completed one semester of approvals and failures, in addition to having already taken the first tests of the second semester. Therefore, they were already able to evaluate their performance in the course thus far and their progress towards the conclusion of the course. In addition, first-year students had attended at least three specific courses in the accounting area, whose programs involve discussions about the activity area and the accounting profession.

Thus, a non-probabilistic convenience sample was used. The survey totaled 94 responses, which represented a response rate of approximately 58% of the population. It is noteworthy that the participation in the research was optional and that the data collection occurred with those students who attended the course over a week. In addition, considering that there is at least a moderate effect between the tested variables ($r = 0.30$) and accepting a 5% probability of type I error and 20% probability of type II error, there would be a minimum need of 55 respondents (Cohen, 1992, Field, 2012).

A 14-item scale developed by Kruglanski *et al.* (2000) was used to measure the students' locomotion and assessment modes. The course performance was evaluated based on the student's perception according to a four-item scale adopted by Borges (2016). In addition, scales were developed to measure the student's perception of the course evaluation system (5 items), interest in theoretical subjects (5 items) and interest in practical subjects (5 items), and satisfaction with the Accountancy course (3 items). These scales totaled 36 items, evaluated on a 10-point Likert scale ranging from 1-I totally disagree to 10-I totally agree.

In addition, besides questions to identify the sample, five questions were added in the questionnaire related to the activity areas of accounting professionals. Based on a scale from 1 to 10 (1-little interest and 10-great interest), students indicated how much they would like to work in the future in the areas of Financial Accounting, Management Accounting, Public Accounting, Tax Accounting and opening their own business. Finally, seven questions were added in relation to the items the students valued in a job opportunity. Again, based on a scale from 1 to 10 (1-little important and 10-very important), students indicated the level of importance of the following items: stability, remuneration, professional skills development, professional environment quality, acquisition of professional experiences, career plan and personal satisfaction.

Initially, the normality of the data was evaluated (Pedhazur & Schmelkin, 1991). As suggested by Marôco (2010), the asymmetry and kurtosis measures were used, whose results were lower than the suggested maximum values ($sk < 3$; $ku < 10$). Subsequently, the scales of the regulatory modes of locomotion and assessment and the scales to measure the student's perception regarding the course evaluation system, interest in theoretical and practical subjects, and satisfaction with the accountancy course were submitted to the validity and reliability tests. First, the factorial validity of the scales was obtained through the Exploratory Factor Analysis technique, intended to reduce the items in common latent dimensions (Bezerra, 2012). In addition to the correct specification of the items in their respective dimensions, all items presented factor loadings higher or nearer than expected ($\lambda > 0.50$) (Marôco, 2010). The description of the items and the results of the factor analysis are presented in Table 2.

Table 2

Description of the items, factor loadings and validity and reliability coefficients of the scales

Locomotion		AVE = 0.439 / α = 0.794
I don't mind doing things even if they involve extra effort.		0.613
I feel excited just before I am about to reach a goal.		0.553
I enjoy actively doing things. more than just watching and observing.		0.624
When I decide to do something. I can't wait to get started.		0.695
By the time I accomplish a task. I already have the next one in mind.		0.790
Most of the time my thoughts are occupied with the task I wish to accomplish.		0.568
When I get started on something. I usually persevere until I finish it.		0.757
Assessment		AVE = 0.404 / α = 0.759
I spend a great deal of time taking inventory of my positive and negative characteristics.		0.413
I like evaluating other people's plans.		0.742
I often compare myself with other people.		0.746
I often critique work done by myself or others.		0.746
I often feel that I am being evaluated by others.		0.583
I am very self-critical and self-conscious about what I am saying.		0.537
When I meet a new person I usually evaluate how well he or she is doing on various dimensions (e.g., looks, achievement, social status, clothes).		0.605
Performance		AVE = 0.674 / α = 0.873
I perform very well on the assessment when compared to my classmates.		0.825
My overall performance on the exams and tests is very good.		0.905
My performance when doing exercises in the classroom is very satisfactory.		0.779
I find it very easy to understand the contents transmitted in the classroom.		0.768
Perception of Assessment System		AVE = 0.503 / α = 0.834
For me, good course scores are a good indicator to assess my course performance.		0.828
I find it important to rank among the highest grades in my classroom.		0.804
I consider that getting good grades is important for a good employment position in the future.		0.795
I believe that getting good grades is a way for the teachers to think highly of me.		0.496
I find it important to get good grades and not just enough to pass the subjects.		0.551
Interest in Practical Subjects		AVE = 0.519 / α = 0.828
I like subjects with many practical exercises, such as postings and the elaboration of financial statements.		0.658
When I am doing the exercises in the subjects I feel motivated and excited.		0.789
I feel that I learn more by doing the exercises the teachers requested.		0.737
When doing the exercises, I get anxious to reach the end result.		0.702
I believe that doing the exercises will enhance my qualifications for the job market.		0.708
Interest in Theoretical Subjects		AVE = 0.580 / α = 0.794
I like subjects that encourage me to think and reflect.		0.663
When I am reading texts on the teachers' request I feel motivated.		0.764
I feel that I learn more by doing the required reading.		0.894
When reading the texts, I always reflect on how much I have learned from them.		0.828
I believe that the reading will enhance my qualification for the job market.		0.626
General Satisfaction with the Course		AVE = 0.610 / α = 0.806
Until now, the course has attended to my expectations.		0.811
I would indicate the accountancy course to a friend.		0.720
I feel that the Accountancy course was a good choice.		0.808

Besides the factorial validity, the convergent and discriminant validity of the scales was also checked. The convergent validity was measured using the Mean Extracted Variance (MEV) index, which reflects the general amount of variance of the items explained by the latent construct (Fornell & Larcker, 1981; Hair, Black, Babin, Anderson & Tatham, 2009). The discriminant validity was evaluated by comparing the explanatory power of the construct items with the explanatory power of the other variables (Fornell & Larcker, 1981). For this purpose, the values of MEV were submitted to the square root and compared with the correlation coefficients between the variables of the study. As shown in table 2, only the locomotion and assessment constructs presented values lower than the 0.50 standard (Marôco, 2010). No correlation coefficient was greater than the square roots of the EMV values though, indicating that the items of each scale have greater explanatory power over their respective constructs than any other variable in the study. These results allow us to assume the validity of the scales.

Besides the validity, the scales were also submitted to the reliability test. Therefore, Cronbach's alpha coefficient (α) was used, which is a measure of the internal consistency of the items of each construct and describes the extent to which they indicate the latent construct in common (Hair *et al.*, 2009). According to the results reported in Table 2, all scales presented reliability values higher than the adopted reference value ($\alpha > 0.70$) (Hair *et al.*, 2009).

Finally, to analyze the results, the Pearson correlation test was adopted. The "correlation test measures the strength of the relationship or degree of association between two variables. Two variables are highly correlated if the changes occurring in one of them are strongly associated with the changes in the other" (Cunha & Coelho, 2012, p.140). The correlation coefficients vary from -1 to 1, and negative values represent that, when one variable increases, the other decreases. Positive values indicate that, when one variable increases, the other also increases. The closer the coefficients are to the extremes, the greater the degree of association. Values close to zero indicate that there is no association, that is, if one variable increases or decreases, the other remains unchanged (Field, 2012).

5. Results

The main information of the sample is presented in Table 3. The questionnaires were distributed and answered by the following proportion of students: 1st year (38.29%), 2nd year (8.79%), 3rd year (28.57%) and 4th year (26.37%). Most of the respondents were female students (63.74%), a similar proportion to that found in the course enrollments. The mean age of the respondents was 21.6 years (SD = 5.7) and the majority of students reported that they considered the Accountancy course to be more practical than theoretical (61.5%).

Table 3
Description of the sample

Personal data	Students (N = 94)
Course year	
1 st year	38.29%
2 nd year	8.79%
3 rd year	28.57%
4 th year	26.37%
Gender	
Female	63.74%
Male	36.26%
Consider the course predominantly:	
Practical	61.5%
Theoretical	38.5%
Mean Age (years)	21.62 (5.66) ^a
Regulatory Modes	
Locomotion (1-10)	7.31 (1.64) ^a
Assessment (1-10)	5.12 (1.74) ^a

Obs. ^a 30Mean (Standard deviation).

To meet the research objective, initially, the levels of the regulatory modes needed to be identified among the students. As reported in Table 3, it was observed that the students presented higher levels of locomotion ($M = 7.31$) than assessment ($M = 5.12$). The averages were submitted to the t-test for paired samples to identify if the difference between them was significant (Field, 2012). The results support the conclusion that the students in the sample possess higher levels of locomotion than assessment ($T_{(93)} = 10.24$; $p < 0.001$), with a strong orientation towards action as a predominant characteristic among the students participating in the research (Kruglanski *et al.*, 2000).

Subsequently, the regulatory modes were submitted to the Correlation test with the measures related to the Accountancy course: perception of academic performance, perception of the evaluation system, interest in practical or theoretical subjects and general satisfaction with the course. The data are reported in Table 4. First, it is important to note that a positive and significant association was found between the levels of locomotion and assessment ($r = 0.250$; $p < 0.05$). This result reinforces the notion that regulatory modes are not exclusive, and that individuals present several combinations of both. As demonstrated by Pierro *et al.* (2018), an individual with high levels of locomotion and assessment is favored in terms of goal achievement, as it demonstrates initiative and effort in actions as well as the capacity to critically evaluate their actions and results and to avoid and correct errors.

Table 4

Correlation between regulatory modes and course measures

	1	2	3	4	5	6	7
1 Locomotion	1						
2 Assessment	0.250*	1					
3 Performance	0.362**	0.073	1				
4 Assessment System	0.172	0.131	0.325**	1			
5 Pract. Subj.	0.441**	0.122	0.353**	0.397**	1		
6 Theor. Subj.	0.391**	0.098	0.187	0.178	0.209*	1	
7 Satisfaction	0.267**	-0.087	0.196	0.201	0.493**	-0.026	1

Obs. **p < 0.01; *p < 0.05

Although the regulatory modes have a significant mutual correlation, only the level of locomotion was significantly associated with the measures involving the undergraduate Accountancy course. First, a positive and significant correlation was found between the level of locomotion and the student's perceived performance in the Accountancy course ($r = 0.362$, $p < 0.01$). Likewise, the locomotion level also showed a positive and significant correlation with the general satisfaction with the course ($r = 0.267$; $p < 0.01$). Thus, the higher the student's level of locomotion, the higher his perceived performance and satisfaction in the Accountancy course.

In relation to the practical and theoretical subjects, both were significantly associated with the students' level of locomotion. As expected, the highest correlation coefficient occurred with the practical subjects ($r = 0.441$, $p < 0.01$), whose perception of movement is greater, as in exercise resolution activities for example. The interest in theoretical subjects was expected to be associated with the student's level of assessment, given the greater involvement in analysis and reflection activities; the relationship between them was nil though.

The only measure related to the course that did not show a significant association with the regulatory mode of locomotion was the perception of the evaluation system. This measure assessed the extent to which the students are impacted by grades, comparisons with other students, and subjective evaluations of teachers. As demonstrated by Kruglanski *et al.* (2000) and by Giacomantonio *et al.* (2013), locomotion individuals are intrinsically motivated and less influenced by external evaluations. Therefore, students with this profile care less about grades and how they will be perceived if they are unfavorable. Conversely, a positive association between the student's level of assessment and the perception of the course evaluation system was expected. Although this relation obtained the highest correlation coefficient involving the regulatory mode of assessment, the relationship was not significant ($r = 0.131$; $p = \text{NS}$).

One important highlight relates to the positive and significant associations between the interest in practical subjects and the perception of academic performance ($r = 0.353$, $p < 0.01$) and general satisfaction with the course ($r = 0.493$, $p < 0.01$). Because locomotion is a predominant trait among the students in the sample, the presence of practical subjects, in which the feeling of involvement and effort in activities and exercises are greater, arouses the students' greater satisfaction with the course performance and with the course generally. By the way, based on the criteria by Cohen (1992), there is a high degree of association between the interest in the practical subjects and the degree of satisfaction with the course.

In addition to the course-related measures, the students were asked about the degree of interest in acting in some professional areas of accounting. The purpose of these questions was to relate the regulatory modes with the specialization and career options in the area. The results are shown in Table 5.

Table 5

Correlation between personal orientation variables and professional activity branch

	1	2	3	4	5	6	7
1 Locomotion	1						
2 Assessment	0.250*	1					
3 Financial Accounting	0.241*	0.080	1				
4 Management Accounting	0.267**	0.098	0.570**	1			
5 Public Accounting	0.211*	-0.087	0.246*	0.153	1		
6 Tax Accounting	0.276**	-0.025	0.467**	0.343**	0.184	1	
7 Undertaking	-0.071	-0.032	0.029	0.053	-0.091	0.097	1

Obs. **p< 0.01; *p< 0.05

Similar to the results involving the measures of the undergraduate Accountancy course, only the regulatory mode of locomotion presented positive and significant correlations with the accounting professional's interests in activity areas. Except for the intention to undertake, the associations with the other areas were significant, which indicates that the greater the student's level of locomotion, the greater the interest in working in the main areas of the accounting profession. In contrast, the regulatory mode of assessment did not show any significant correlation with the interest in acting in the selected professional areas. Thus, the higher or lower the levels of student assessment, the variation in the intention to act in some of the areas listed remained null.

The intention to undertake did not present significant associations with the regulatory modes. The phenomenon of entrepreneurship is treated in the literature as a process that involves the individuals' identification, evaluation, and exploitation of an opportunity (Shane, 2012). As demonstrated by Amato, Baron, Barbieri, Bélanger, and Pierro (2017), however, each of the regulatory modes influences only part of the entrepreneurial process. For example, locomotion is important in the active search for opportunities, while assessment is important in the judgment stage of the opportunities (Amato *et al.*, 2017). Therefore, being a complex activity, the intention to undertake may require a combination of the two regulatory modes (Pierro *et al.*, 2018), explaining the absence of direct associations.

Finally, for an additional analysis, some values related to the professional career were listed and the students were asked to indicate how important they consider these values in deciding on a job opportunity. The results of the Correlation test involving these values and the regulatory modes are presented in Table 6.

Table 6

Correlation between regulatory modes and values of the professional environment

	1	2	3	4	5	6	7	8	9
1 Locomotion	1								
2 Assessment	0.250*	1							
3 Stability	0.098	0.042	1						
4 Remuneration	-0.023	-0.101	0.328**	1					
5 Professional comp.	0.077	-0.044	0.216*	0.442**	1				
6 Quality of environ.	0.199	-0.004	0.273**	0.363**	0.431**	1			
7 Prof. experiences	0.234*	-0.046	0.110	0.326**	0.677**	0.596**	1		
8 Career plan	0.223*	-0.167	0.300**	0.229*	0.420**	0.430**	0.538**	1	
9 Personal satisf.	0.287**	0.180	0.021	0.023	0.116	0.231*	0.129	0.150	1

Obs. **p< 0.01; *p< 0.05

Again, the regulatory mode of locomotion was the only one to present significant associations with the variables of the professional environment among the students surveyed. There were significant correlations between the level of locomotion and the valuation of a work environment that permits new professional experiences ($r = 0.234$, $p < 0.05$), an appropriate career plan ($r = 0.223$, $p < 0.05$) and that provides for personal satisfaction ($r = 0.287$, $p < 0.05$). It is noteworthy that people with the regulatory mode of locomotion have higher levels of intrinsic motivation and orientation towards action (Kruglanski *et al.*, 2000). Therefore, locomotive individuals tend to attribute more value to a career that provides several work experiences and allows the individual to always pursue new goals (e.g. career plan). Likewise, the search for personal satisfaction at work is common in people who are intrinsically motivated, such as locomotive individuals (Benjamin & Flynn, 2006). This aspect is more valued than stability and pay, for example.

6. Conclusions

In this study, we sought to associate the students' regulatory modes with education-related aspects in the Accountancy course. Although the results found refer only to undergraduate students, they offer some theoretical discussions, which serve as inspirations for future research that wishes to consolidate the relationships tested here, generating new knowledge about the accounting education process. In this section, we present the theoretical and management discussions of this study, as well as the limitations of the research and the suggestions for future research.

In relation to the theoretical discussions, it is highlighted that, in pursuing a goal, such as completing an undergraduate course, individuals are guided by two essential regulatory modes, which they present in different degrees and predominance: to critically evaluate the current and future situation and the means to reach the desired objective (regulatory mode of assessment) and the ability to move and to commit resources towards the future situation (regulatory mode of locomotion) (Kruglanski *et al.*, 2000; Higgins, Kruglanski, & Pierro, 2003). Therefore, in a psychological view, the search for objectives should not be evaluated solely in terms of the results that will be generated, but also in relation to the way in which they will be achieved (Avnet & Higgins, 2003; Higgins, 2000). In other words, the individual value of a choice is due to the fit between the individual's regulatory mode and the strategy used to take and put the decision in practice (Higgins, 2000; Pierro, Presaghi, Higgins & Kruglanski, 2009). When the individual experiences this fit, called regulatory fitness, the level of well-being, the perception of having adopted the correct strategy, the sense of importance in what he is doing, the level of engagement in the task, and the favorable responses to the goals and evaluation systems are greater (Pierro *et al.*, 2013, Avnet & Higgins, 2003).

While individuals usually determine the goals they wish to pursue, however, it is not always up to them to decide on the form and strategies they will adopt to pursue them (Pierro *et al.*, 2009). For example, when deciding to enroll in an Accountancy course, the student should submit to the form of work determined by the higher education institution, such as the subjects that will be studied, the evaluation system, teachers and their recall exercises, among others. Thus, "although regulatory fitness is characterized as an intrapersonal motivational experience, the determinants of this experience may be interpersonal" (Pierro *et al.*, 2009, p.602).

Based on the survey conducted in this study involving Accountancy students, it is important to highlight that the locomotion (vs. assessment) profile was the most associated to the aspects involving the respective course. Besides the locomotion profile being predominant among the students under analysis, positive associations were found between the level of locomotion and general satisfaction with the course and with the academic performance. Students with the locomotion profile tend to have higher levels of orientation towards action (Kruglanski *et al.*, 2000), which may indicate a greater degree of fitness to the Accountancy course, whose practicality is predominant.

This conclusion is corroborated by a strong association between the locomotion profile and the interest in practical subjects. The interest in the practical subjects also showed a significant association with the measures of performance and satisfaction with the course, associations that were not significant involving the interest in theoretical subjects. Many Accounting courses require students to record financial, economic and equity facts, as well as to prepare statements and other accounting reports. Another indication that the locomotion profile is the most fit in relation to training in the accounting area refers to the associations between the regulatory modes and the selected career options. The students' level of locomotion was positively associated with their interest in the areas of Financial Accounting, Management Accounting, Public Accounting and Tax Accounting, while there was no significant association involving the level of assessment. Based on the results found, what the locomotive students value most in these career options is obtaining professional experiences, personal satisfaction and the presence of a career plan that allows them to constantly make new plans and challenges. In other words, values of a work environment that are related to a feeling of movement and progress, great engagement in actions and a high level of intrinsic motivation (Pierro *et al.*, 2013; Kruglanski *et al.*, 2000).

In this way, it is emphasized that students who present the regulatory mode of locomotion predominantly experience greater regulatory fitness when taking Accountancy at the investigated teaching institution. That is, the format of the higher education course, mirroring the demands of the job market, is more fit to the locomotive students when they want to complete the Accountancy course and act professionally in the area. In contrast, students with the regulatory mode of assessment experience this regulatory fitness to a lesser extent.

In addition to these theoretical implications, the results permit management implications. The results highlight that it is important for the managers of higher education institutions and course coordinators to understand the students' predominant regulatory mode, as well as the profile that is more likely to experience regulatory fitness. Students who experience this fitness should have lower dropout rates, greater involvement, and satisfaction with the course, besides better grades. In addition, this better experience in the education process can indirectly influence the improvement of the course performance in measures such as student employability, market assessment, rankings, and exams (e.g. Enade). In addition, information about regulatory fitness can be useful in determining the target audience and dissemination strategies for the course.

Finally, the results of this study should be analyzed with caution, as they are limited to only one specific undergraduate course. Therefore, new studies may examine whether perceived regulatory fitness among the students of the institution being surveyed is also perceived in samples of students from other higher education institutions. In addition, higher education courses are partially shaped to meet the demands of the regions they are inserted in, admitting, for example, specific educational areas. Therefore, there may be changes in regulatory fitness between accounting courses depending on the regions surveyed and the specialties offered.

Another limitation of the study was the equal treatment in the analysis of the results for students from all periods. Students in the final period, for example, have already experienced much more of the Accounting education process than the students in the first period. In addition, the students of the final period may represent a more homogeneous sample in terms of regulatory modes, as those who did not experience regulatory fitness may have dropped out the course and did not advance. Therefore, future studies may focus only on the last-year students, aiming to find the predominant regulatory mode among them and associate it with perceived performance and course satisfaction. This research may also extend to graduated professionals working in the field as a way of adding knowledge about the professional profile of accounting.

Another limitation of the study refers to the data analysis technique. The correlation test does not permit conclusions about the causal relationship among the associated variables and is limited to a bivariate relation (Field, 2012). New studies can examine the relationships between the regulatory modes and aspects of accounting education, controlling for the effects of other variables such as the students' socio-educational profile, the difficulties perceived during the student's education, the perception of the professional perspective in the area (Panucci-Filho, Clemente, Souza & Espejo, 2013).

Finally, the absence of some significant associations is highlighted, which present themselves as opportunities for new studies. First, the results demonstrated the lack of significant associations involving the regulatory mode of assessment. The ability to critically evaluate states and the means to achieve goals is an increasingly demanded competence in the accounting area. Current issues such as the prevalence of essence over form, the use of new technologies, assertiveness in projections, analytical and interpretative skills, big data and professional judgment require students and practitioners to look at ways that were not identified in the outcome of this study. Future studies can identify in which specific contexts this competence is critical.

Second, there were no significant associations between the regulatory modes and entrepreneurial intentions, although the modes are important throughout the entrepreneurial process (Amato *et al.*, 2017). It should be emphasized that, in this study, a single item was used to measure the intention and that new studies can adopt scales that measure this phenomenon more fully, such as the entrepreneurial alert (Tang, Kacmar & Busenitz, 2012) or entrepreneurial orientation scales (Bolton & Lane, 2012). In addition, new studies may also investigate entrepreneurs in accounting, analyzing the effects of regulatory modes on these individuals' performance in conducting business (Amato *et al.*, 2017).

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1. Paper Submission Guidelines

To submit articles to the *Journal of Education and Research in Accounting* – REPeC authors should follow the standards and criteria set by REPeC. From January 2013, the guidelines of the American Psychological Association (APA) with regard to citations and references should be followed. Submissions not complying with the standards will be rejected.

Articles submitted to the journal must be original, i.e., cannot have been published or submitted to another journal.

Articles may be written in Portuguese, English, with at least 5,000 and maximum 9,000 words, including tables, figures, notes and references. A maximum of 5 (five) authors are allowed per article. All papers accepted will be translated and published in two languages: Portuguese and English.

Articles containing tables or figures, they [the tables and figures] should be in a format that allows them to be edited. In case some of these Figures or Tables have been imported from other programs such as Excel, Power Point etc., the source file must also be sent as Supplementary File.

Do not use expressions like id., ibid., op. cit., loc. cit. and the like, or reference notes and footnotes. Notes at the end of the text are acceptable, but should be avoided.

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2. Content and Formatting of Papers

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- An **abstract** written in the language of origin of the article (Portuguese or English) with at least 150 and at most 200 words, single space between lines, in four paragraphs containing the following elements, highlighted: **Objective, Method, Results and Contributions**. At the end of the abstract should be placed **three to five** keywords;

Objective: this study was aimed at investigating the relevance of accounting education and research for the growth of the Brazilian economy during the first decade of the 21st century.

Method: to collect the data, a structured questionnaire was used, elaborated based on the relevant literature. The questionnaire was tested and applied to a sample of Brazilian accountants and businessmen during 2017. In the analysis of these data, content analysis was applied and statistical tests were used to establish relations between the answers obtained.

Results: the main findings of this study indicate that the expansion of accounting education and research in Brazil was essential for the growth of the economy, according to the respondents' perception, despite the impression that accountants and businessmen need to make better use of the accounting information.

Contributions: from the academic viewpoint, the evidences from this research contribute to fill of an important existing gap in the Brazilian literature. What the market is concerned, they contribute by providing evidence that, despite its perceived relevance, its users need to make better use of the accounting information.

Key words: Education; Research; Accounting.

- The article itself, written in Portuguese or English, with at least 5,000 and at most 9,000 words, including tables, figures, notes and references.
- The pages of the articles should be properly numbered in the upper right corner, typed with Word for Windows, under the following conditions:
 - A4 paper (210 x 297 mm);
 - Times New Roman, size 12;
 - Spacing: single;
 - Paragraph input: 1.25;
 - Margins: 3cm top, 2cm bottom, 3cm left, 2cm right;
 - Tables and figures in Times New Roman, size 10;
 - Citations and references must comply with current standards of the APA (American Psychological Association).

3. Tables and Figures¹

Tables and figures should be used in articles whenever their information make text comprehension more efficient, without repeating information already described in the text.

3.1 Tables

The table should usually show numeric or textual information organized in an orderly exposition of columns and rows. Any other statement should be characterized as textual figure.

The table should be displayed with its information visible and sufficient for their understanding and should be formatted as follows:

¹ Most of these guidelines were adapted from the Manual for Submissions of the *Revista de Administração Contemporânea* – RAC, available at www.anpad.org.br.

Table editor	Word for Windows 97 or superior. In case authors have drawn their tables in Microsoft Excel or in a similar program, please remake the tables using the feature in Word.
Font	Times New Roman, size 10.
Line spacing	Simple.
Spacing before and after paragraphs	3 pt.
Table colors	Use only black and white (grayscale).
Title	The table title must be brief, clear and explanatory. It should be placed above the table, in the top left corner, and on the next line, just below the word Table (with a capital initial), followed by the number that designates it. The tables are presented with Arabic numerals in sequence and within the text as a whole. Eg: Table 1, Table 2, Table 3, and so on.
Citation of tables	When citing tables in the text, type only the number referring to the table, for example Table 1, Table 2, Table 3 and so on. (the word 'Table' should be presented with the first letter capitalized). Never write 'table below', 'table above' or 'table on page XX' because the page numbers of the article may change while formatting.
Table notes	The font used in the notes of the table should be Times New Roman, size 10, single spaced. The notes should be described in the footnote of the table, and they serve to indicate the Source of the information of the table, and other information important to understanding the table.

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The figure should show a flow chart, a chart, a photograph, a drawing or any other illustration or textual representation.

The figure should be displayed with its information visible and adequate for its understanding, and should be formatted as follows:

Font	Times New Roman, size 10.
Figure colors	Use only black and white (grayscale).
Format	Figures should be submitted in an editable format.
Title	It explains the figure concisely, but discursively. The title should be placed under the figure and numbered with Arabic numerals in sequence, preceded by the word Figure (with initial capital). Eg: Figure 1, Figure 2, Figure 3, etc. After the title, any other information necessary for clarification of the figure or source must be added as a note.
Captions	The caption is the explanation of the symbols used in the figure and must be placed within the limits of the figure.
Size and proportion	Figures must fit the dimensions of the journal. Therefore, a figure should be drawn or inserted into the article so that it can be reproduced in the width of a column or page of the journal to which it will be submitted.
Citations in the main text	When citing a figure in the text type only the number referring to the figure, e.g. Figure 1, Figure 2, Figure 3 and so on. (the word 'Figure' should be presented with the first letter capitalized). Never write 'figure below' figure above ', or even 'figure on page XX' because the page numbers of the article can be changed during formatting.

4. Citations and References

For the full version of the standards of citations and references according to APA (American Psychological Association), access <http://www.repec.org.br/index.php/repec/article/view/1607/1237>.