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## Editor's Word

Dear reader, we are delivering the third issue of the year 2020. As usual, this issue contains 1 (one) editorial and 6 (six) articles. A novelty was the number of *lives* held by REPeC and RBC, with full support from the Federal Accounting Council and Abracicon, in the names of accountants President Zulmir Breda and President Maria Clara Bugarim.

In this issue, we begin with the article written by our associate editor, Professor Iracema Neves, who discusses the implication of scientific revolutions on the scientific text, highlighting the importance of argumentation to contribute, innovate and communicate.

Concerning the articles, the first of them is written by Evaldo Rezende Duarte, Fernando Caio Galdi and Felipe Storch Damasceno. In the article, the authors aim to show that the Brazilian companies listed on B3, due to the imminent breach of the ratios established in the covenants, have a higher level of earnings management. The results point to robust evidence that suspicious Brazilian companies (close to breach) act in order to improve their outcome, possibly to avoid the breach of covenants. This study aims to contribute to disclose the fragility of financial covenants inserted in debt contracts and, consequently, in the exposure to higher risk of third-party capital.

The second article is written by Fabio Frezatti and Diogenes Bido. In this article, the authors sought to identify what stimulates or inhibits reviewers' satisfaction in the performance of their tasks, based on the seminal approach by Katz and Kahn (1970), in which role conflict and ambiguity are analyzed with regard to the reviewer's role. Among the results, the journal's positioning in rankings such as Qualis and JCR figures is among the aspects that most favorably affect reviewer satisfaction. Role ambiguity negatively affects the reviewer's satisfaction. The elements of role conflict were not identified as negatively affecting satisfaction.

The next article was written by Altieres Frances Silva and Rodrigo Fernandes Malaquias. The objective of this research was to identify characteristics associated with the adoption of financial management practices by Brazilian farmers in the region of *Triângulo Mineiro*. The main results indicated that the financial management practices were related with the producer's age, knowledge of production costs, participation in training about financial management, and the perceived relevance of financial management.

The fourth article, in the area of accounting education, was written by Vitor Hideo Nasu and Luis Eduardo Afonso. This article aims to analyze the relationship between cynicism and the expectation of cheating in the academic and professional life of *lato sensu* graduate students in accounting. About the results, the initial tests indicated that the participants' level of cynicism is similar when analyzed by gender, area in which they work and academic background. The binary logistic regression models indicated that there is a positive relationship between cynicism and expected cheating, in academic and in professional life.

The fifth article, written by Jessica Giovana Nolli and Ilse Maria Beuren, aims to analyze the effect of cooperation management practices and the scope of transaction on the relationship between the objectives of cooperation and the performance of cooperation in enterprises of the textile industry. The research results show that the respondents rated cooperation as strategically important. In order to achieve the desired objectives of the strategic alliance, however, it is necessary that the cooperation management practices and the scope of transaction are aligned. The strategic relevance of cooperation positively impacted the performance of cooperation, when associated with information sharing, interaction between partners and activities developed between cooperation partners.

Finally, the article written by researchers Rosilei of Fatima Martins de Souza Fonseca and Márcia Maria dos Santos Bortolocci Espejo aims to evaluate the mediating effect of management control proxies in the characteristics of the entrepreneur on companies' financial and non-financial organizational performance. About the results, the mediation of the management control proxies in the established relationship occurs in a partial and concurrent way. The initial model had to be respecified in accordance with the indications of the analyses. The final model indicated that the characteristics of the entrepreneur have a direct and negative influence on the organizational performance by 36.4%, while, through the management control proxies, the effect was positive by 41.3%.

I would like to use the opportunity to repeat that REPeC is a publication linked not only to the area of education, but to several areas, as shown in its objectives, which are financial, managerial, public, audit, taxes, among others.

Without further ado, I thank all the researchers who have submitted their articles to REPeC. Congratulations to those who had the articles approved, because the demand is quite high, and the way to the final publication quite arduous. I hope everyone is well in this difficult time we are going through and enjoy the reading.

Thank you again to the readers and I hope you enjoy this new issue.

Academic greetings.

**Gerlando Lima, PhD.**  
**Editor-in-chief.**

# Argumentation: criticality and contribution in scientific discourse

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## Science and society: advances drive the dialogue

With its own method, science gained social credibility by expressing truths about the origin of the universe and man himself competently. This reputation was built in contexts of revolutions that rejected theories and established new paradigms, greatly modifying scientific practice. We can affirm that the succession of revolutions, described in Kuhn (2011), confirms the relevance of scientific metamorphosis and the experiences arising from the path followed, paying attention to the volatility of their contributions when detailed in time and space.

In "The structure of Scientific Revolutions", Kuhn (2011, p.27) points out that "a scientist's world is qualitatively transformed [and] quantitatively enriched by fundamental novelties of either fact or theory". The author evidences that the twentieth century is marked by the transition from an individualistic (metaphysical) natural science, linked to areas of significant technological and economic impact, to an apolitical science practiced by specialized communities that sustain the primacy of methodological rigor. Fuller (2003) reports that social scientists felt relieved and welcomed when they noted that the title "science" assumes this new conception in this context.

The scientific authority, preserved with Kuhn, rests on the reliability attributed to its method. The results of the investigations carried out exert power over society, transforming it and favoring the emergence of new demands – dialectical movement resulting from this continuous interaction. In the 21st century, science is conceived as culturally constructed and situated, incorporating local and universal knowledge – increasingly inclusive contours of the human and social areas that bring together scientific agents and those interested in science -, a concept diffused by scholars such as Miller (1983) and Latour (2005).

It is inferred that, as science generates knowledge and explanations for the phenomena and situations investigated, the social reality is transformed and starts to generate scientific justifications to understand this modified reality. In this context, the scientific revolution highlights the role of the researcher-interlocutor, as this subject uses his socio-cultural repertoire, without neglecting the specificity of the scientific language, to produce a discourse imperatively clear, cohesive, free from subjective contamination and impartial (Targino, 2010). According to Minayo (2002, p.14), "it is not only the researcher who gives meaning to his intellectual work, but human beings, groups and societies grant meaning and intentionality to their actions and their constructions". Hedges (2002, p.118) argues that "text is the materialization of language in a certain social environment, in which this language performs a specific function". The conceptions these authors present meet the sense of science in the current century: a science concerned with the well-being of humanity, which focuses on socially relevant phenomena, not limited to the economic and technological, and which needs to communicate its contributions to those who yearn for them.

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In the following sections, we will focus on the discourse presented in the text of scientific articles that, although the production is inseparable from the researcher, need to obey production standards intrinsic to the genre they belong to in order not to compromise the conception of what is scientific and, therefore, the methodological effort undertaken.

## Specifics of the scientific text

The discourse expressed in the scientific text is guided by rules that seek to ensure its objectivity and impersonality. According to Targino, the scientific text should be linguistically concise, accurate, objective and formal, using the verb in the 3<sup>rd</sup> person singular or in the 1<sup>st</sup> person plural (Targino, 2010). The peculiarities presented do not draw inferences about the superstructure of the scientific text (introduction, theoretical framework, method, results and conclusion), but concern intrinsic aspects that guide the textual production.

By disseminating the scientific discourse through its definitive publication in journals, the researcher agrees to the established rules, both with regard to the format of the document and the lexicon used to express the ideas and findings of the research. The authority of the scientific discourse is confused with the institutional authority. There is a tacit agreement between those who produce the scientific discourse and the parties involved in the evaluation and validation process of this discourse, as the academic environment is controlled and monitored by rules.

Based on a socio-constructivist vision, Ivanič (1998) considers the academic text as a reflection of standards and conventions drawn up by a group of subjects who define themselves, among other things, by their discursive practices. According to Koch (2010), the subject-organizer-planner builds the text based on complex factors, such as his/her expectations, convictions and beliefs, cultural and social rules and conventions, his/her interrelationship with other subjects and shared knowledge, which give meaning to the text. This critical capacity and rationality support the argumentation: fertile ground for innovation and effective contributions.

We need to understand that the fact of observing the rules of formal writing for the production of scientific discourse should not imply textual non-criticality. We agree with the idea that there is no fully exempt science (Fiorin, 1993; Minayo, 2002; Franco, 2004; Morin, 2005; André, Henriques & Alves, 2005; Cardoso, 2006 and Campos, 2012) and this does not imply that we disagree with the methodological rules linked to “scientific doing”, nor do we disagree with those inherent to textual structuring. We merely believe that these rules are not entirely effective for the purposes they are intended for: to make the scientific text exempt from its own authorship. This belief results from the fact that the text produced is historically and socially detailed, and therefore expresses the conception of its author at the moment when (s)he conceives the first ideas about the object (s)he intends to investigate.

The efficiency of the communication established between science and society is evidenced when the application of the rules inherent in this scientific genre does not “mute” its authors, compromising the contribution of the study. What is inadmissible to the discourse of a scientific article is not an element of “censorship”, which restrains criticality and the establishment of explanations/justifications for the object or phenomenon under study. The modesty and limitations, evidenced by the excess of citations, sometimes used in spaces that should rest on the results of the study and the researcher’s capacity of inference, may signal that there are greater problems linked to his/her educational background or acceptance in a certain hegemonic group.

Koch (2002, p. 83) points out that the ideological relationships of discourse involve subjectivity intrinsic to the power of argumentation; for the author “there are no neutral statements and, as a result, argumentativeness is an inherent feature of human language”. When disseminating research results, science uses linguistic precepts capable of constituting, through discourse, the integrity and security of its findings.

## Argumentation in scientific discourse

Before discussing argumentation, we emphasize that discourse is conceived here as a way to establish power, in the contemporary context, which is profoundly related with cognition and with the social, one of the important conditions of the “minds” that all individuals in society enjoy (Van Dijk, 2008). Understanding the discourse involves understanding its production conditions (Pêcheux, 1990), that is, the circumstances that led to its elaboration and the historical conjuncture in which it was generated. According to Coracini (1991) the scientific discourse, like all others, is constructed socially and historically and its meaning is consolidated anchored in several previous texts.

Reading and writing practice are essential foundations to develop argumentative skills. According to Mazière (2007), reading feeds the work of memory and the resumption of the already-said in the construction of meanings. The quality of the explanations that constitute the arguments elaborated and the grammatical competence to write them, however - cohesion, coherence, semantic aspects, phrasal structuring, among others -, make the act of arguing complex and challenging. Ducrot (2009) synthesizes these skills in two classifications: rhetorical argumentation and linguistic argumentation.

According to Ducrot (2009), rhetorical argumentation is the verbal activity that expresses the ability to persuade, that is, to make an individual believe in someone or something (what we understand as quality of explanation); on the other hand, linguistic argumentation refers to the logical organization of discourse segments woven by the chain of propositions linked by argumentative operators, in which one proposition is an argument and the other a conclusion, extending this logic to the sequential chains of paragraphs.

Jiménez-Aleixandre and Erduran (2007) present argumentation as justification, persuasion, and controversy. Argumentation as justification is similar to what Ducrot points out as linguistic argumentation and concerns lines of reasoning, empirical evidence and theoretical ideas that justify a statement. In the same way as Ducrot, Jiménez-Aleixandre and Erduran (2007) understand argumentation as persuasion when its basic foundation is to convince, such as the conviction of the scientific community. These authors present the argumentation by controversy as that resulting from different positions in relation to the same theme.

Resuming the discussion of the discourse in scientific articles, we understand that this textual genre provides opportunities for the researcher to establish contributions based on argumentative critical positioning presented here, or rather, much more than opportunity, the findings of a research carried out in a scientific article enforce the social function of science. We argue that the weaving of discourse in scientific texts requires extra attention, because the authority and power exercised by this type of text can make it socially lethal.

The dissemination of rhetoric based on justifications that go beyond the results or even on explanations resulting from decontextualized studies without scientific rigor can flaw the credibility of science. In addition, the communication noises resulting from an impaired interpretation render the scientific knowledge deriving from research that originally has significant social relevance useless.

According to Koch (2002, p. 17) “as a being endowed with reason and will, man constantly evaluates, judges, criticizes, that is, forms value judgments”. This statement leads us to believe that the rules for the construction of scientific discourse, cited in the previous section, seek to confer “truth” and avoid dubious interpretations of scientific findings. One example is the incoherence of rhetorical arguments in descriptive research analyses, published as articles, whose relative frequency comparisons do not rest on a baseline reference period - we commonly call this mistake “meaningless elevator analyses”; as well as in analyses without criteria that logically sustain the analogy the author makes: to compare Brazilian and American companies’ financial recovery capacity in the post-pandemic period of Covid-19 for example.

We could expand with a series of examples of common mistakes and argumentative opportunities detected in scientific article reviews. That would go beyond our objective though - any attempt to exhaust those examples would be an innocent effort in view of the countless opportunities to articulate ideas and human creativity. The reality experienced in the 21<sup>st</sup> century reveals the possibility of turning research into an opportunity for development and social well-being, but there is no point in faithfully and rigorously complying with the scientific method, or even focusing efforts on the search for social emergencies, if we are anchored in critical and argumentative incapacity.

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# Accounting earnings management and breach of covenants: an empirical study in Brazil

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## Abstract

**Objective:** This study aims to show that the Brazilian companies listed on B3, due to the imminent breach of the ratios established in the covenants, have a higher level of earnings management.

**Method:** To identify the group of suspicious companies (close to the breach), we collected ratios of covenant breach in the notes to the financial statement, subsequently confronted with the performance indices generated based on Economática data. The analysis was developed using econometric tests, by means of multiple linear regression estimated by OLS.

**Results:** The results point to robust evidence that suspicious Brazilian companies (close to breach) act in order to improve their outcome, possibly to avoid the breach of covenants.

**Contribution:** this study aims to contribute to disclose the fragility of financial covenants inserted in debt contracts and, consequently, in the exposure to higher risk of third-party capital. Thus, the effect of the insertion of financial covenants would be reverse to what creditors expect.

**Keywords:** *Covenants; Ebitda; Earnings management; Discretionary accruals.*

\* The author Fernando Caio Galdi thanks CNPq for its financial support to the research.

## 1. Introduction

Several studies relate the existence of earnings management to the cost of debt (Watts and Zimmerman, 1990; Healy and Whalen, 1999; Fields, Lys, and Vicent, 2001; Lopes and Martins, 2005), and these studies suggest that managers use accounting earnings for contractual reasons to meet the needs of contractual restrictions to facilitate or improve conditions for future loans. Thus, in the imminence of having a high cost of debt, companies would act in order to make alternative accounting choices in order to disclose better results and, consequently, reduce this cost.

Callen, Dou and Xin (2016), then, indicate the relationship between covenants and accounting conservatism in the contracting of private debt, conditioning this relationship to the extension of the information asymmetry between managers and creditors. They appoint that, with a high degree of asymmetry, conservatism and restrictive clauses restore the efficiency of the contract.

In this context, when closing debt contracts, creditors seek additional protections by inserting restrictive contractual clauses (covenants) to protect themselves from actions that are not aligned with their interests. Niklolaev (2010) and Reisel (2014) show that the importance of covenants lies in limiting managers' opportunistic actions such as managing accounting earnings. Studies also relate covenants with agency conflict. According to Fields, Lys and Vicent (2001), agency costs are generally related to contractual issues such as management remuneration and debt covenants, and this would be directly related to the company's accounting choices. For Zhang (2019), the breach of covenants also entails external disturbances such as loss of commercial credit.

According to Freudenberg, Imbierowicz, Saunders, and Steffen (2017), covenants attempt to lessen the agency conflict and, when these clauses are breached, creditors would act to "implement a tougher alliance structure". Demerjian and Owens (2016) also see the use of covenants in order to lessen the agency conflict.

It is remarkable that the breach of covenants would imply negative consequences for borrowing companies both internally, with the anticipation of the balance due, and externally, negatively influencing the relationship with suppliers for example.

In the Brazilian scenario, Silva (2008) points out that companies in general use hardly conservative accounting practices and that, in this case, there is evidence, indicating that managers adopt actual actions that mainly affect the cash flow in order to avoid the violation of covenant clauses. In the same sense, Dyreng, Vashishtha and Weber (2017) point to direct evidence on the poor quality of accounting information of profits used in performance measures of covenants, as companies also tend to disclose higher cash flow forecasts than GAAP earnings measures.

The Brazilian scenario represents an interesting source of research, as the 2015 Global Financial Stability Report by the International Monetary Fund points out that the level of indebtedness of Brazilian companies is 79%, and this measurement is taken between the total debt on equity and this index, ranking among the highest in emerging countries. In addition, while companies get more leveraged, the ability to cope with the debt service is lower in Brazil than in other emerging countries; also, the country has the highest real interest rate globally (International Monetary Fund, 2015).

It is suspected that Brazilian companies with a high debt ratio and the market with high interest rates would be motivating managers to avoid the breach and suffer harsh sanctions (such as anticipation of the debt balance) because, in a company with underperforming investors, suffering financial sanctions would become a severe blow.

The insertion of covenants seeks to mitigate conflicts between creditors and debtors by minimizing the risks of default (Smith & Warner, 1979). The effectiveness of covenants may be compromised by the managers' discretionary action though, and the presentation of financial reporting may be overshadowed by the practice of earnings management. This practice would be increasing the risk of the financial transaction and deluding creditors.

In order to complement the studies and fill the existing gap, this research aims to verify whether, by approaching the ratios established in the covenants, Brazilian companies manage the accounting earnings related to the ratio established to avoid the breach of the covenant in question. Thus, we expect to answer the question: **Do Brazilian companies manage the accounting earnings to meet contractual clauses of covenants?**

This study evaluated 344 companies listed on Bovespa, 74 of which were selected, with present “covenants” with the *EBITDA* ratio. Creditors use this ratio as a proxy for performance and profit. Thus, 102 observations were generated throughout the research period, using Economatica as a data source.

A preliminary sample was selected, excluding companies whose short-term indebtedness was greater than the long-term indebtedness. Next, companies with an indebtedness level inferior to 20% were excluded as, in theory, these companies would be less motivated to manage earnings in view of the covenants.

The period from 2012 to 2016 was considered, justified by the creation of Normative Instruction 527/2012, which created a standardized calculation and disclosure of the *EBITDA* ratio, present in different covenants as a *proxy* of corporate performance.

After assessing the characteristics of the restrictive clauses and identifying the financial ratios present in the covenants, the ratios established in the covenants were classified and compared with the corporate performance ratios to check the proximity and establish a group of suspicious companies. Then, the relationship between the group of suspicious companies and earnings management was analyzed based on the discretionary accruals, calculated according to Kothari (2005).

Thus, this research contributes to the advancement of the literature, helping to explain situations that can make the accounting information less reliable. In terms of practical contribution, we hope to disclose if the covenant clauses achieve their original objective, which is to establish agreements/compromises to safeguard the creditors’ resources by monitoring the organization’s financial performance ratios, so as to measure the efficacy of the company’s management and its financial health. Furthermore, we expect to demonstrate that the fragility and consequent ineffectiveness of the restrictive clauses also contribute to the discussion of alternative forms of restrictions.

## 2. Theoretical Framework

### 2.1 Accounting Earnings Management

Accounting earnings management derives from the managers’ choice to respond to regulation or contracts, in a lawful or unlawful way, through favorable or unfavorable choices, improving or mitigating their earnings (Benham, 2005).

Several studies investigate the reliability and events that can alter the performance and financial information. Graham and Dodd (1934), in their work “Safety Analysis”, started the discussion on models for assessing American companies’ earnings per share.

According to Dechow *et al.* (1996), discretion in the accrual basis of recording its financial events enables the company to manipulate in order to disclose a good organizational performance. Nardi and Nakao (2009) supplement that, in an attempt to avoid frustration in the expectations of investors as well as creditors, who establish minimum limits of return in the debt clauses, motivation is created for this earnings management, as security and expectation of return are pillars of the relationship between company and investor. Thus, the company’s financial result is directly linked to the accounting information, including the return on capital.

According to Santos and Paulo (2006), the importance of this accounting information gives rise to the agents' incentive to manage earnings, so that they can present more inspiring accounting information and, consequently, motivating business performance. For Nardi and Nakao (2009), this information under the agency theory can be managed at the manager's need/will, so as to increase or decrease accounting earnings.

In this sense, researchers develop several models with a view to capturing the level of earnings management and measuring the quality of profit.

Dechow *et al.* (2010) present a model for the evaluation of profit quality based on the persistence of earnings and smoothness of profits; external indicators and investors' response to the earnings in an attempt to measure the trustworthiness of the profits presented. They conclude that the quality of the reported profits and the environment, as well as debt covenants, create potential motivation for companies to avoid a breach of the debt covenant through earnings management.

Several models have been developed through proxies, aiming to analyze and disclose earnings management. Healy's model (1985) confronts mean total accruals and total assets, considering the periods used to estimate the accruals.

DeAngelo (1986) also develops a model based on discretionary accruals on total assets, considering the previous period for measuring total assets. On the other hand, the Dechow model (1991) evaluates constant non-discretionary accruals for companies in the same sector and which would be constant over time.

The Jones model (1991) differs by considering the changes economic events cause in the discretionary accruals, mainly by the variation of revenues and fixed assets. Jones modified (1995) considers that earnings can be managed and evaluates the variation of sales and receivables as a way to measure forward sales management.

Kang and Sivaramakrishnan (1995) developed a model that investigates the relationship/reflection of costs and expenses in the balance sheet accounts, as well as Pae (2005), who included the evaluation of operating cash flow and the relationship with the company's total accruals.

Dechow and Dichev (2002) relate accounting earnings and profit through cash flow income in previous, present, and future periods. Martinez (2013) evaluates earnings management from profit management perspectives to achieve established goals or expectations, smoothing by reducing profit variability and decreasing present earnings to inflate future ones.

According to Lopes and Tukamoto (2007), scientific research has advanced in recent decades in countries such as the United States, England, and developed countries, by deepening research on the subject in order to identify and measure this practice. On the other hand, in emerging countries, empirical evidence is still rare.

According to Martinez (2013), research in Brazil adopts the same focus, as the regulatory model is worn out; in addition, there is the fact of a broad access to companies' economic-financial data, as well as the concern with the quality of Accounting Information characteristic of the positivist imprint.

## 2.2 Restrictive Contractual Clauses (Covenants)

Covenants are intended to safeguard the creditors' rights through the compromise between company/creditor and, therefore, set financial ratios to monitor the organization's performance. According to Zhang and Yang (2013), these covenants also benefit the shareholders by reducing the cost of third-party capital.

Beiruth and Fávero (2016) highlight the relevance of the theme in Accountancy, as there are many financial indicators in debt contracts, but they indicate that there are few related studies and, in their work, present the main results on the theme.

According to Christensen and Nikolaev (2012), these covenants fall into two categories, capital covenants and performance covenants, the former attempting to minimize the agency conflict while the latter measures the company efficiency. This effort takes place in order to safeguard the third-party capital during the period of the debt contract.

According to Inamura (2009), the agency theory is justified by the presence of covenants in debt contracts, while the conflict of interests should limit the managers' action in order to safeguard the creditors' interests at minimally acceptable levels.

The importance of covenants lies in limiting opportunistic actions of managers such as managing accounting earnings. Thus, they should help prevent the probability of default or even increase the recovery value and, consequently, decrease the information asymmetry (Nikolaev, 2010; Reisel, 2014).

The use of these performance measures would serve to indirectly control improper management actions. This monitoring seeks financial information to strengthen confidence, which in practice may not occur as, through the discretionary choices, the managers may improve results and achieve goals artificially. What is worse, the presence of these financial ratios and their sanctions can turn into a motivating factor for earnings management.

Studies related a possible breach of covenants with accounting events. In these cases, the number of financial covenants related to the loan was used as a proxy. Demerjian (2011), Christensen and Nikolaev (2012) also develop a theory that relates the intensity of the use of these clauses by counting covenants, instead of the probability of violation.

Silva (2008) also points out that research results on accounting earnings management and the relationship with covenants may vary over time due to the dynamic nature of business or even variations arising from the (social and regulatory) environment.

In this sense, the adoption of IFRS could affect the results of new research, as well as the standardization of EBITDA caused by Normative Instruction CVM 527/2012. According to that Instruction, the Brazilian Securities Commission (CVM) establishes the need to preserve the quality of information intended for investors and indicates that even non-accounting information, as in the case of EBITDA, should deserve the same care and treatment given to accounting information, as this information is relevant and influences the economic decisions of the financial statements.

Even though it is not a ratio present in the financial statements, EBITDA is calculated based on these statements using the following equation:  $EBITDA = \text{Net Operating Profit} + \text{Depreciation} + \text{Amortization}$ .

In addition, Dechow (1996) indicates that debt clauses can motivate earnings management to avoid their breach. Thus, the research hypothesis arises: Brazilian companies are managing earnings to avoid breaching the covenants.

## 2.3 Hypothesis development

Studies relate the earnings management hypothesis and the relationship with *covenants*. According to Watts and Zimmerman (1990), the closer to a financial ratio established in the covenants, the greater the probability of the manager acting by increasing earnings or managing accounting ratios.

For Reis, Lamounier and Bressan (2015), companies manage earnings in order to avoid disclosing losses through operational decisions. In this perspective, earnings management may also happen to avoid disclosing losses or unsatisfactory earnings that would directly affect the debt contract.

Cristensen and Nikolaev (2012) and Demerjian (2011) identified a significant decrease in the use of ratios based on the balance sheet in the covenants, demonstrating the creditors' lesser interest in these results. On the other hand, greater interest is observed with the establishment of financial ratios in the covenants of profit accounts and income statements.

Ball, Li and Shivakumar (2013), as well as Fávero and Beiruth (2016), identified that, after the adoption of IFRS, the use of accounting and financial ratios decreased and this reflection was caused by the greater flexibility in the choice between accounting rules.

In the Brazilian context, in addition to the economic scenario, with high interest rates and a high ratio of indebtedness, it was found that the covenants present in the notes to the financial statements report the use of performance ratios, generally using the EBITDA proxy for monitoring and evaluation.

Thus, according to the literature approach, this study intends to test the following hypothesis:

- **H<sub>1</sub> = Brazilian companies that border on a breach of the ratios established in the covenants present a higher level of earnings management to improve their performance and avoid the breach.**

### 3. Research Method

The objective of this study is to verify whether Brazilian companies manage earnings in order to improve their performance and avoid breaching the covenants.

To develop the study, Brazilian companies listed on Bovespa were considered as the research universe. The sample was limited to the companies most likely to breach the covenants.

In principle, companies with less long-term loans and financing than short-term loans and financing were excluded as, in theory, companies that have large-scale short-term financing would not have incentives towards earnings management due to the breach of covenants, because the payment of the debt occurs in the same financial year, not producing effects from the perspective of the breach.

Next, the indebtedness ratio was analyzed, setting higher than 20% of indebtedness as the cut-off point. The following equation was used to calculate the level of indebtedness:  $IR = [(Liabilities/Assets) * 100]$ , liabilities including Current Liabilities (due in the short term) + Non-Current Liabilities (due in the long term). The ratio established in the research considers that there would be no incentive to manage accounting earnings as a result of debt contracts of companies with a small external financing margin because, in theory, the breach of covenants would not cause significant financial problems due to the magnitude of the equity.

Thus, this study worked with the sample of 74 companies that possessed financial covenants, indebtedness ratio superior to 20%, and long-term loans and financing higher than short-term loans and financing.

The period from 2012 to 2016 is justified by the creation of Normative Instruction 527/2012, which standardized the calculation and disclosure of the EBITDA ratio, present in several covenants. In this study, the EBITDA ratio was used, excluding ratios with the term “adjusted”, considering the Net Operating Profit + depreciation and amortization for calculation purposes.

To construct the database, the notes to the financial statements collected on the Bovespa website were analyzed, in the period from 2012 till 2016, starting with the reading and interpretation of the restrictive clauses to identify and classify the financial ratios in the covenants. The clauses present in financing/loan contracts and in the issuance of debentures were considered. Thus, document analysis was used as the methodological approach. Heteroscedasticity and normality of the residues were tested to second the use of the OLS estimator with White’s correction. The results are presented in Table 2, in the results section.

In the notes to the financial statements that served as a source for this research, searches were carried out for the terms “covenant”, “clauses”, “restrictive” and “EBITDA”, in order to locate and identify the financial ratios responsible for the restrictions. After locating the ratios in the covenants, four groups of more recurring financial ratios were identified, which were:

Table 1

**Covenant ratios**

Ratio in the <i>Covenants</i>	Calculation formula	Source
Ebitda margin	$\frac{EBITDA}{RECEITALIQUIDA}$	Notes to the financial statements
Net debt and Ebitda	$\frac{DIVIDALIQUIDA}{EBITDA}$	Notes to the financial statements
Ebitda and Financial Expense	$\frac{EBITDA}{DESPESAFINANCEIRA}$	Notes to the financial statements
Debt service coverage ratio (dscr)	$\frac{EBITDA}{PASSIVOACURTOPRAZO}$	Notes to the financial statements

We define the Suspicious variable as those companies that show indicators inferior to 10% or 5% of the limit established by the respective covenant. The intuition is that these companies are at greater risk of breaching the limit and suffering the established sanctions and, thus, have greater incentives to manage earnings in the attempt to avoid breaching the covenant.

Subsequently, data were collected in Economatica to generate the companies' performance ratios for the sake of comparison with the ratios mentioned above and present in the covenants. The EBITDA margin ratio was collected directly from Economatica; the other ratios are not available and had to be calculated in this research.

To calculate the Net Debt/EBITDA ratio, the Total long-term loans + Total short-term loans and short-term financing - Sash and cash equivalent / Net Operating Profit + Depreciation + Amortization was used.

To calculate the EBITDA/Financial Expense ratio, Net Operating Profit + Depreciation and Amortization/Financial Expense was used.

To calculate the debt service coverage ratio (dscr), Net Operating Profit + Depreciation and Amortization/Total of loans and short-term financing was used.

Based on the identification of the performance ratio, the proximity to the breach ratio of the covenants was evaluated. Thus, the dummy variable of this study emerges, in which companies that maintain performance ratios bordering on the breach ratios established in the covenants by up to 10% are classified as “suspicious”, and companies that maintain ratios bordering on the breach ratios established in the covenants by more than 10% are classified as “non-suspicious”, i.e., less on the verge of a breach.

Observing the dummy variable created to measure the level of approximation of the ratios to the ratios established in the covenants by up to 10%, in total, 102 observations were obtained, 64 being classified as non-suspicious and 38 as suspicious. During the data collection in the companies surveyed, cases were found in which there are financing and issuance of debentures with different financial constraint values, varying according to the issue date. It is highlighted that, even in case of a difference in the established values, the companies maintained the same formula for calculating the ratio. In this research, the most critical value was always used, on the verge of the breach, corresponding to the extreme value (minimum or maximum depending on the ratio) established by the company.



It is also highlighted that the companies that breached the covenants are not part of the sample, even if they managed to get a waiver from their creditors.

To measure earnings management, Jones' model was used (1991):

$$NDA_{it} = \alpha \left( \frac{1}{A_{t-1}} \right) + \beta_1 (\Delta R_{it}) + \beta_2 (PPE_{it}) \quad (\text{Equation 1})$$

Where:

- $NDA_{it}$  = non-discretionary *accruals* of company  $i$  in period  $t$ ;
- $R_{it}$  = variation of net revenues of company  $i$  from period  $t-1$  to period  $t$ ;
- $PPE_{it}$  = account balances of Fixed Assets and (gross) Deferred Assets of company  $i$  at the end of period  $t$ , by total assets at the end of period  $t-i$ ;
- $A_{it-1}$  = total company assets at the end of period  $t-1$ ;
- $\alpha$ ,  $\beta_1$  e  $\beta_2$  = regression parameters

To measure the parameters, the following equation is used:

$$TA_{it} = \alpha \left( \frac{1}{A_{t-1}} \right) + \beta_1 (\Delta R_{it}) + \beta_2 (PPE_{it}) + V_{it} \quad (\text{Equation 2})$$

Where:

- $TA_{it}$  = total accruals of company  $i$  in period  $t$ , weighted by total assets at the end of period  $t-i$ ;
- $\Delta R_{it}$  = variation in net revenues of company  $i$  from period  $t-i$  to period  $t$ , weighted by total assets at the end of period  $t-i$ ;
- $PPE_{it}$  = balances of Fixed Assets and (gross) Deferred Assets accounts of company  $i$  at the end of period  $t$ , weighted by total assets at the end of period  $t-i$ ;
- $A_{t-1}$  = total company assets at the end of period  $t-1$ ;
- $V_{it}$  = regression residue

For Earnings Management (EM):

$$GR = TA_{it} - NDA_{it} \quad (\text{Equation 3})$$

Where:

- $TA_{it}$  = total accruals of company  $i$  in period  $t$ , weighted by total assets at the end of period  $t-i$ ;
- $NDA_{it}$  = non-discretionary *accruals* of company  $i$  in period  $t$ ;

Finally, the model developed to test the research hypothesis is as follows:

$$GR_{it} = \beta_0 + \beta_1 \text{suspeita}_{it} + \beta_2 \text{Tam}_{it} + \beta_3 \text{Btd}_{it} + \beta_4 \text{Fcx}_{it} + \beta_5 \text{Cresc}_{it} + \beta_6 \text{Lev}_{it} + \beta_7 \text{Ki}_{it} + \beta_8 \text{Tang}_{it} + \varepsilon_t$$

Where the model variables are defined as:

- EM= Earnings management defined by value of discretionary *accruals*, calculated using Kothari's model (2005).

- Suspicious:1 (suspicious) if the performance ratio is bordering 10% of the limit set in the covenants and 0 (not suspicious) if the company's performance ratio surpasses the border of 10% of the ratio set in the covenants.
- Size =  $(Siz = AT_{it})$ , calculates the size of the company measured by the value of the total asset in *reais*. According to Gu, Lee and Rosett (2005), larger companies have lower variability of accruals and less incentive for management due to the political cost. For Nardi and Nakao (2009), these characteristics explain the negative relationship between size and EM, in which larger companies have fewer discretionary accruals.
- *Book Tax Differences* (BTD) =  $(\text{Accounting Profit} - \text{Tax Profit}) / \text{Total Assets}$  calculates the difference between accounting profit and tax profit, divided by the total asset of the company in the same year. According to Ferreira *et al.* (2012), there is a directly proportional relationship between *book-tax-differences* (BTD) and discretionary accruals. They point out that companies manage their earnings in the same sense as the observed BTD signal.
- Debt coverage =  $(Fcx_{it-1} = EBITDA_{it-1} / PO_{it-1})$ , calculated through the EBITDA (earnings before interest, taxes and depreciation and amortization expense) divided by short-and long-term debt. According to Nardi and Nakao (2009), this variable is able to measure the cash flow for debt compliance purposes, thus establishing a relationship with the possible ability to avoid financial difficulties.
- Growth =  $(Cresc_{it-1} = (AT_{it-1} - AT_{it}) / AT_{it-1})$ , calculated through the total assets of the previous period minus the total assets of the current period divided by the total assets of the previous period. Gu, Lee and Rosett (2005) used growth as a control variable for EM. The indication is that, in case of company growth, the discretionary accruals would increase proportionately.
- Leverage =  $(Lev_{it-1} = DivLP_{it-1} / AT_{it-1})$ , calculated by dividing the long-term debt by the company's total assets. According to Watts and Zimmerman (1990), the higher the level of indebtedness, the greater the likelihood of managers acting to improve their earnings.
- Cost of debt =  $(Ki_{it} = Desp.Financ_{it} / PO_{it-1})$ , calculated by dividing the company's financial expense by the short-and long-term debt. Francis *et al.* (2005) indicate that, the greater the earnings management, the higher the cost of companies' external debt.
- Tangibility =  $(Tang_{it-1} = (Imobliq_{it-1} - RR_{it-1}) / (AT_{it-1} - RR_{it-1}))$ , calculated by reducing the revaluation reserve of the net fixed assets divided by the difference in total assets minus the revaluation reserve. According to Valle (2008), the amount of tangibles improves the capacity to raise funds by discouraging earnings management. The model variables were winsorized at 2.5% to eliminate possible outliers that could distort the result.

#### 4. Results Analysis

Table 2 shows the diagnostic tests to validate the estimator used and the statistical tests performed. To check for heteroscedasticity, the White test and the Breusch-Pagan test were performed. Both tests indicated the presence of heteroscedasticity, indicating the need to correct the standard errors. Thus, the estimator used for the econometric analyses is the OLS with White's correction. To test the normality of the residues, the Jarque-Bera and Wilk-Shapiro tests were performed. Both tests did not reject the null hypothesis of normality of the residues, indicating that the statistical results are reliable.

Table 2

**Diagnostic tests**

	Heteroscedasticity test		Normality test	
		P-valor		P-valor
White		0.0140	Jarque-Bera	0.4457
Breusch-Pagan		0.0000	Wilk-Shapiro	0.7573

Tables 3 and 4 present the results of the multiple linear regression OLS (Ordinary Least Squares) for the model proposed in the research. A variance inflation factor (VIF) test was also performed to check for the existence of multicollinearity in the proposed model, which would result in increased variance and loss of efficiency. As can be evidenced in both tables, the test did not indicate the existence of severe multicollinearity and the tests presented are reliable.

Table 3

**Earnings Management vs. Suspicious Companies**

This table presents the estimated coefficients for the Kothari model (2005) Discretionary accruals versus suspicious companies 10% (close to breaching the covenants).				
Variable	Dependent Variable Earnings management			
	Coefficient	P-value	Coefficient	P-value
Constant	0.122	0,070	0.0942	0.303
Suspicious	-0.0202	0.028	-0.0234	0.016
Size	-0.0053	0.159	-0.0047	0.365
BTD	-0.3140	0.055	-0.3515	0.065
Debt coverage	0.0114	0.695	0.0140	0.699
Growth	0.0651	0.122	0.0863	0.074
Leverage	0.0472	0.121	0.0606	0.128
Cost of debt	0.0673	0.213	0.1278	0.061
Tangibility	-0.0367	0.054	-0.0314	0.148
Observations	102		102	
R-squared	0.2103		0,2540	
FE Year	No		Yes	
FE Sector	No		Yes	
VIF	1,24		1,88	

**Obs.:** Earnings management (EM) calculated using the discretionary accruals through Kothari's model (2005). Companies close to 5% of the ratios established in the covenants represented by the variable suspicious, Size represents the company's total Assets (siz), Book Tax Difference represents the difference between the accounting profit and the tax profit (btd), debt coverage ratio *Ebitda* divided by the short and long-term debt (covdeb), asset variation that captures the company's growth (grow), leverage generated by dividing the long-term debt by the total Assets, the cost of debt variable demonstrates the result of the financial expenses confronted with the short and long-term debt, the tangibility (tang) demonstrates the net fixed assets, i.e. total assets minus revaluation reserves. The results presented are robust for heteroscedasticity.

The regression result is consistent according to the literature, as the results for the variable suspicious, which represents companies close to breaching covenants, is significant at 5%, suggesting a relationship between companies close to breaching covenants and the use of discretionary accruals. This result strengthens the research hypothesis that, when approaching the breach of covenants, Brazilian companies would act in order to manage their earnings and avoid the breach.

This result contributes to the positivist theory, establishing a discussion about the effectiveness of standards (covenants) and the practical effects in the business context, as suggested by Watts and Zimmerman (1990), because the closer a company is to the breach of the debt contract, the more managers tend to select accounting procedures to anticipate the recognition of profits. As demonstrated by Dechow (1996), which indicated that there is the possibility of accounting choices in order to improve earnings and avoid breaching the restrictive clauses. This also underlines the results by Silva (2008) that Brazilian companies use hardly conservative accounting practices and that their actions occur to affect the cash flow and avoid the breach of covenants.

It is also in line with the study by Dyreng, Vashishtha and Weber (2017) about evidences of bad accounting information quality, particularly about profits used in covenant performance measures.

The result for size, in accordance with Gu, Lee, and Rosett (2005), points out that company size could be negatively related to earnings management, as larger companies have more incentive to reduce political costs, which in turn would inhibit discretionary accounting choices. The result was not statistically significant though. The signal of the result for BTDD was contrary to the expectations, according to Ferreira *et al.* (2012), who appoint a directly proportional relationship between the *Book Tax Differences* (BTDD) and the discretionary accruals.

Nardi and Nakao (2009) present the debt coverage capacity, according to the company's cash flow, thus establishing a direct relationship with accounting choices that improve the earnings by anticipating revenues, but the results were not significant. The result for growth is significant when we consider the fixed effect of year and sector, in line with the literature. According to Gu, Lee and Rosett (2005), accruals vary more strongly in growing companies. Both results indicate the possibility of opportunistic behavior consistent with earnings management in order to avoid breaching covenants, seeking to increase the asset or EBITDA.

Table 4 shows the result for companies suspected of earnings management in order not to breach the covenant at less than 5% of the established limit. The results are qualitatively equal, generating robustness for the conclusions found in this article.

Table 4

**Earnings Management vs. Suspicious Companies**

This table presents the estimated coefficients for the Kothari model (2005)  
Discretionary accruals versus suspicious companies 5% (close to breaching the covenants).

Variable	Dependent Variable Earnings management			
	Coefficient	P-value	Coefficient	P-value
Constant	0.1288	0.064	0.0978	0.282
Suspicious	-0.0171	0.073	-0.0235	0.047
Size	-0.0058	0.134	-0.0049	0.340
BTD	-0.3350	0.044	-0.3543	0.070
Debt coverage	0.0137	0.637	0.0152	0.677
Growth	0.0661	0.133	0.0902	0.075
Leverage	0.0468	0.125	0.0598	0.135
Cost of debt	0.0650	0.235	0.1343	0.049
Tangibility	-0.0394	0.041	-0.0367	0.107
Observations	102		102	
R-squared	0.1972		0.2452	
FE Year	No		Yes	
FE Sector	No		Yes	
VIF	1.24		1.91	

**Obs.:** Earnings management (EM) calculated using the discretionary accruals through Kothari's model (2005). Companies close to 5% of the ratios established in the *covenants* represented by the variable suspicious, Size represents the company's total Assets (siz), Book Tax Difference represents the difference between the accounting profit and the tax profit (btd), debt coverage ratio *Ebitda* divided by the short and long-term debt (covdeb), asset variation that captures the company's growth (grow), leverage generated by dividing the long-term debt by the total Assets, the cost of debt variable demonstrates the result of the financial expenses confronted with the short and long-term debt, the tangibility (tang) demonstrates the net fixed assets, i.e. total assets minus revaluation reserves. The results presented are robust for heteroscedasticity.

In practical terms, the results focus on evidence that companies are inflating their earnings to avoid breaching operational covenants. The creditor, a directly interested party, when imposing performance benchmarks for companies, seeks a management behavior consistent with what is expected to ensure the payment of the debt the covenant is tied to. The result evidenced here is that the firm may be deliberately making up the indices to avoid contractual punishments that would grant greater economic security to the creditor.

## 5. Final Considerations

Earlier studies reported on the existence of covenants in order to reduce the agency conflict and protect third party capital by monitoring indicators that reflect the financial position and performance of the company. Therefore, sanctions are imposed in case of non-compliance with these covenants. Such sanctions range from the imposition of higher interest rates, limitation of investments, distribution of dividends to the anticipation of debt. Hence, companies close to breaching these ratios may be practicing earnings management to avoid the breach.

This study assessed the relationship between the suspicious companies at the verge of breaching the covenants and the presence of *discretionary accruals*. Companies with accounting ratios bordering on 10% of the ratios established in the covenants were considered suspicious.

The results indicate that the general average earnings management is higher in suspicious companies than in non-suspicious ones. The average is positive for the suspicious group and negative for the non-suspicious group, indicating that the suspicious companies make choices that increase their gains/earnings, while the non-suspicious companies act in the opposite sense, making choices that reduce/mitigate their gains/earnings. Thus, the results suggest that Brazilian companies on the verge of breaching the covenants would be acting in order to improve their performance and unilaterally circumvent the debt contract through accounting choices.

The choices would be directly related to the companies' profit/performance, as the main ratio related to the performance measure in the covenants is EBITDA. This indicates opportunistic behavior of the managers, who seek to avoid breaching the covenants and remain free from possible sanctions that would be imposed.

This research contributes to the fact that, by establishing profit-based ratios, generally using EBITDA as a proxy, creditors cannot limit the managers' actions, who through their accounting choices artificially misrepresent the earnings monitored, avoiding sanctions. Thus, the primary objective of the creation of covenants ends up being unilaterally annulled. Hence, the expectation is created that ratios with a lower level of influence of managers' discretionary action could be more effective in this control.

The limitations of this research are related to the fact that the magnitude of the sanction imposed in the covenants cannot be observed, which in theory could increase or decrease the need to avoid the breach. In addition, the results are limited to the analyzed period and the companies surveyed.

As a suggestion for future research, the magnitude of the debt and the restrictions imposed on companies can be analyzed as, in theory, this could increase or decrease the need to avoid the breach. In addition, the characteristics of the restrictions present in the covenants can be investigated, evaluating performance and equity ratios.

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# After all, what does reviewers' satisfaction with their activity in scientific communication depend on?

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## Abstract

**Objective:** To identify what stimulates or inhibits the reviewers' satisfaction in the performance of their tasks, based on the seminal approach by Katz and Kahn (1970) in which the role conflict and role ambiguity are analyzed with regard to the reviewer's role.

**Method:** Data were collected through a survey in the accounting and administration research community, resulting in 153 valid questionnaires. Descriptive statistics and structural equation modeling were used to treat the data.

**Results:** The journal's positioning in rankings, such as Qualis and JCR, figures among the aspects that most affect reviewer satisfaction in a favorable sense. The role ambiguity negatively affects the reviewer's satisfaction. The role conflict elements were not identified as having a negative influence on satisfaction.

**Contributions:** the reviewer of academic articles plays a fundamental role in the construction of knowledge by providing for the improvement and reliability of the publication. Therefore, understanding how the motivation, the role ambiguity and conflict affect reviewer satisfaction can increase the potential management by the editors of academic journals and value the role of the reviewer, especially at a time when the academic journals in the area are positioned competitively against international journals.

**Keywords:** : Reviewer. Role conflict. Role ambiguity. Reviewer satisfaction.

## 1. Introduction

Several actors are present in the communication of knowledge, such as editorial board members, editors, article reviewers, technical editorial assistants, providers of publishing, revision, and translation services, and readers. It is a complex ecosystem in which the agents (the author, the reviewer and the reader) stand out for being complementary and interconnected in academic publication, being fundamental to perceive the extent and quality of the knowledge communication system. The combination of the three provides the relationship that the community demands for knowledge to be created and communicated with credibility (Moizer, 2009).

Among reviewers and authors, blind review prevails, avoiding the constraint of knowing who did what. Behind blind review, the reviewer becomes powerful, although his/her role is advisory during the selection and improvement process of the articles (Moizer, 2009) Berk et al., 2017). Even so, the relationship between the three agents is unbalanced, disproportionately different and almost always tense. Telling the reviewer that the suggestion is inappropriate, useless and pretentious is not something that may seem possible in the evaluation system of contemporary academic articles.

On the other hand, by the way the community operates, a reviewer can use an article (s)he reviewed, just like an author can review an article by a reviewer, or a reader can be called upon to review a new work by an author he usually uses for new knowledge. In summary, collaborative combination is dynamic, hardly controllable, and the publication model demands the intense participation of the three agents with some perception of win/win. These types of tensions can strongly affect the agents' performance, creating wear that affects the willingness to develop their roles.

The gap found is the lack of research, especially in Brazil and in the area, on this relationship, especially with regard to the reviewers' satisfaction in developing their work, which is fundamental for the communication of innovation. The importance of understanding the interaction between the three agents in different environments demands this type of field research, because the area coexists with environments with different levels of maturity, knowledge and expectations in terms of the relationship between the agents.

The objective of the research is to understand their pressures and rewards, the latter translated by the concept of the satisfaction of being a reviewer. In this sense, the research innovates by using a role conflict and ambiguity approach to satisfaction (Katz & Kahn, 1970), previously used within the business environment, but not in the editorial ecosystem. Thus, the contribution consists in providing the agents who participate in the publishing ecosystem with a better understanding of elements that affect the role of the reviewer, allowing the editor to take actions in terms of the importance of clear instructions, valuing elements that lead to the loyalty of the reviewers, beyond the mere acceptance of the work, making efforts for the quality of the analysis itself. The impact of these contributions is linked to the potential to improve the quality of the articles accepted and published and, to some extent, to increase the citations of the articles.

The guiding question of the research is: **What are the elements that positively and negatively affect the satisfaction of the reviewers involved in the communication of academic research?**

To answer this question, a conceptual model was developed with three predictors of reviewer satisfaction: motivation, role ambiguity and role conflict, which was tested by modeling structural equations from data obtained from researchers/reviewers in the area of accounting and administration. The results did not confirm the impact of role conflicts, but confirmed the impacts of role ambiguity (-0.233,  $p < 0.01$ ) and motivation (0.387,  $p < 0.01$ ), resulting in an adjusted  $R^2$  equal to 23.3%.

## 2. The Agents in the Communication of Knowledge

The **reader** is an end user when he receives and uses what he learns in the area of Applied Social Sciences. Nevertheless, that person can also be the user who filters the knowledge for the purpose of application. After all, from the perspective of the academic area, the application in the field that provided the body for the development of the research is not always a relevant concern. There is an expected benefit for the readers though, of a communication that can be dimensioned with regard to the implementation of innovations as well as the improvement of the educational and management environment (Van De Ven & Johnson, 2006).

Through a methodological approach accepted by the same community, the **author** communicates innovation through the research developed, which is often challenging and complex for the reviewer and can entail the rejection of the article by the editor (Berk, Harvey, & Hirshleifer, 2017). Communication within the community is done through journals and goes through a process of legitimization that the knowledge offered is relevant, contributes and was developed following the appropriate method. The author needs to clearly provide his/her point of view on the topic discussed (Reuber, 2010) and depends on the positioning and support provided by the reviewers. Thus, the author is a user and knowledge provider, departing from communicated knowledge to be able to do so as well. In a study in the area of economics, it was verified that the current articles, when compared with the articles of some decades ago, are more extensive, probably due to the complexity of the problems treated as well as the need to meet the demand of the reviewers or demands for greater clarity (Berk et al., 2017). An effective contribution from a reviewer will impact the author's life in terms of citations and prestige.

The **editors** are responsible for defining both the direction (what will be done) and the depth (extent of the advancement) of the research, ensuring that the optimal relationship between both is reached based on a balance between the three logics: terminology, epistemology and methodology (Trzesniak, Plata-Caviedes, & Córdoba-Salgado, 2012). Among the activities necessary for them to perform their duties, the choice of the reviewers is one of the most relevant. In several areas of knowledge, it has been noticed that the amount of articles generated is very large in relation to the potential knowledge addition (Anderson, 1997). Many articles without contribution have been generated for other reasons than the communication of some innovation, and this increases the work of editors and reviewers, without benefitting the readers. Journal editors are expected to provide authors with information to "educate" them in terms of procedures, including ethics (Anderson, 1997).

Finally, the **reviewer** is the agent who analyzes, refines, proposes changes in the articles to be published. Usually invited by the editor, the reviewer should be trustworthy from the editorial group's perspective and provide support to the editors to structure the documents in which the decisions are informed (Sharma, 2016).

In some areas, the authors suggest names of reviewers of their articles (Rivara, Cummings, Ringold, Bergman, Joffe, & Christakis, 2007), but that is not the rule, as neutrality is relevant and its guarantee can be considered in different ways in the various areas of knowledge. Moizer (2009) indicates that the role of the reviewer is to evaluate the manuscripts in terms of professional competence, quality of presentation, relevance of the subject and the importance of contributing to the literature. Reviewers are expected to adopt an approach that is both critical and constructive (Rigo & Ventura, 2019).

The review is a collaborative activity that attracts researchers due to various reasons, depending on how the editors use the relationship to attract good reviewers who, in many cases, practically rebuild articles, dialoguing with the authors and recommending changes. Ultimately, the role of the reviewer is advisory and the final decision on whether or not to accept the article is the responsibility of the editor (Coniam, 2012). The practice of evaluating the reviewers' performance is already quite common in several areas, to the extent that even *rankings* exist for this purpose (Rivara et al., 2007).

Usually the routine of the journal includes wear between the agents, such as a situation in which the author does not accept a recommendation from a reviewer and considers it rude, or a complaint of an ethical issue, moving the reviewer to issue an opinion (Sharma, 2016). The study by Berk, Harvey and Hirshleifer (2017) indicates the reviewers' dissatisfaction with regard to evaluating articles that they would consider appropriate for immediate rejection and that are sent to several reviewers. This is a problem of understanding the limits of the reviewer's responsibility. In any case, the reviewers' work gives rise to the support for the editor to take a stance on the acceptance, or not, of the academic article (Berk et al., 2017), demanding the editor's trust in the analysis and critical positioning.

It is fundamental that reviewers strike a balance between the desire for a perfect article and a possible article with a contribution (Berk et al., 2017). In terms of work, some journals require one or two reviews (Berk et al., 2017) from the reviewers and others more than that, which causes a substantial workload, as well as a possible feeling of potential antagonism, now not only between reviewer and author, but also between reviewer and editor. What is hardly explored, and not always perceived, is all agents' potential learning from the editorial process.

One of the relevant properties of the review process stems from being able to provide the authors with feedback so that they can improve their research and respective communications (Coniam, 2012). Therefore, the ability to communicate, although filtered by the editor, should be a characteristic of a good reviewer. In fact, much more than that, there is no universally consolidated and consistent "code of ethics" in the area as far as the responsibilities of the reviewer are concerned (Bailey, Hermanson, & Louwers, 2008). Some studies identify authors' positive and negative perceptions regarding the reviewers' performance and activity (Bailey et al., 2008).

Oler and Pasewark (2016) discuss the reviewers' roles, who deal with two different and not always confluent dimensions at the same time, which are: (1) help journal editors fulfill their role of "gatekeeper" and (2) help authors in improving their research. Thus, the activity is highly conflicting and constantly demands the reviewer and the authors cited to consistently take a stance and indicate agency problems, because reviewers are anonymous to the authors and, often, there is a shortage of qualified reviewers (Gilmore, Carson, & Perry, 2006), which makes the review process vulnerable, as some reviewers may believe that they can require the authors to do what they want (Moizer, 2009). Although the reviewers' role is considered relevant, questions exist regarding the process in which they are involved and its effectiveness (Bailey et al., 2008). Still, despite the difficulties, no better alternative to the traditional review process is known and, at the moment, no relevant journal has proposed a substitute.

Academics are interested in ensuring that the review process is efficient and effective, highlighting the importance of conducting quality reviews. Reviews made and inappropriately communicated harm a magazine's reputation, frustrate editors, and discourage new research. In contrast, good reviews strengthen a journal's reputation, make the work of the editor easier and encourage innovative and interesting research (Oler & Pasewark, 2016).

Of the three agents, the reviewer is the one who has the least to gain and has the least recognition for his/her work and contribution. Although it is very relevant to the construction of knowledge and requires time and energy from the reviewers, the tradition of most journals takes into account that the work is not remunerated (Oler & Pasewark, 2016). In these conditions, understanding what can affect the reviewers' satisfaction becomes fundamental for their loyalty in the academic communication system.

### 3. Role Conflict

In the seminal work by Katz and Kahn (1970, p. 415), job satisfaction was considered as an individual's perception as to his/her current situation as responsible for an organizational position, as well as the perception that derives from the understanding of the content of the requirements to develop those work processes for which (s)he is responsible. Therefore, satisfaction is something that allows reviewers to develop their work in a perennial, continuous manner, and the conflicts they experience can cause satisfaction not to occur.

The role conflict emerges from the occurrence of two or more functional requirements in a way that provokes difficulties to perform or even the impossibility to fulfill the other person's requirement (Katz & Kahn, 1970; Fisher, 1995).

Operationally (Rizzo, House, & Lirtzman, 1970), role conflict can be understood as a result of the congruence/incongruence or compatibility/incompatibility between: (i) the patterns or values of the individual and the behavior defined for a role, (ii) the time, resources or capabilities of the individual, and the behavior defined to perform a role, (iii) the various roles that a single individual has to play, and (iv) the various organizational *inputs* in the policies, rules, and suggestions of people linked to the individual's role. An example of role conflict, item II above, a given reviewer receives an invitation to analyze an article with too little time for the complexity he will face.

In the case of this research, the role of reviewer may conflict with that of author and editor because they master the same type of knowledge, not always harmoniously. As an example (type iv above), we can cite the analysis of an article that intends to discuss the best alternative costing method for pricing by two reviewers with extensive experience in costs and who have different understandings about the direct method and the variable.

Mihalek (1989) specifies three opportunities in which role conflict can occur. The role conflict can arise on occasions when changes provoke situations when organizational goals are established that are incongruous with one of them over another. This can happen when a professional has a goal related to the time to develop an activity and another related to the quality of the same activity. If they are very challenging, the role conflict can actually happen for the professional. In the reviewer's case, a complex or even difficult to understand text can take a lot of time, challenging his ability to be efficient. Unlike operating within a company, for example, the support structures in the editorial ecosystem are more fluid, flexible and, at times, vague.

Another form of facing a role conflict (Tarrant, 2008) happens when new functions emerge in the professional activity, demanding a professional profile that is different from the customary. Similarly, the requirement for new skills to perform a given function will have a similar impact. This can be even more impacting if the professional does not have a professional background that permits adaptation in his/her career development. In this research, this element can flourish when someone invited to analyze a theoretical perspective has to take into account a statistical technique, for example, which (s)he is not comfortable with. Moizer (2009) indicates an important reality, because the reviewer learns by doing, which makes the feedback fundamental for his/her improvement. After all, what is the limit of his/her responsibility and what does the reviewer consider possible to make clear to the editor?

The author wants to publish as soon as possible and would like the reviewer not to profoundly change his/her work. The latter, in turn, has no commitment to the stability of what has been offered and his/her consultative logic occurs because (s)he is acknowledged as someone who knows, studies and knows how to contribute to the addition of knowledge, which is innovation.

A very demanding reviewer or who expects to turn the article into something award-winning can challenge the author beyond the expectation he would hold (Moizer, 2009). On the other hand, the interaction between the reviewer and the journals affects his/her posture and the way of looking at his/her own articles: a chance for unstructured learning. Another possible occurrence affecting comparability and motivation: starting from the rejection of a reviewer's work, affecting his/her mood as to the review of an article (s)he considers inferior to his/her own, for example.

#### 4. Role Ambiguity

Role ambiguity is the uncertainty about what the person responsible for a specific activity should do (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Fichter, 2010). This uncertainty can be materialized by a lack of definitions about the responsibilities, expectations and expected behaviors of an executive in a position, or the lack of information about the scope of his functions, which can create role ambiguity (Singh & Rhoads, 1991).

Fisher (1995) discusses, and refines the treatment of the potential stimulators of role ambiguity, while maintaining: (i) the relevant expectations for the performance of a function, but extending it with the inclusion of the value of the rights, duties, and responsibilities thereof, (ii) including the essential activities to be effective in the functions characteristic of the position, as well as the steps or the best way to do it, and (iii) the consequences of the execution and non-execution of the roles; and (iv) behavior that is rewarded, or punished, the nature of rewards and punishments, or the behavior that is satisfying or frustrating in the performance of that function, and, finally, (v) the opportunities for advancement. In the case of this study, the lack of clarity, the extension of the analysis, and even the scope can stimulate the perception of ambiguity.

In the case of the three agents' relationship, when sending the article to the journal, the author cannot assess what kind of recommendation from the reviewer would be indisputable and which recommendation would require a justification for its maintenance. The reviewer may experience a huge effort, arguing that the article is inappropriate and seeing the editor give another opportunity to the authors, frustrating his/her expectations. This can happen when the reviewer ignores that his/her main role is advisory. To analyze a paper that goes through the deadlock of broken communication, a new reviewer can give both himself and the author the feeling that the work never ends, increasing the tension in the process, affecting the role ambiguity concerning the expected responsibility or true impact in the process.

Particularly with regard to the rights, duties and responsibilities of the reviewer, when an editor insists on once again reviewing a given article, the reviewer may feel undervalued, given his/her effort to analyze and propose the rejection of a paper. This is an example of expectation as to the outcome of the reviewer's work, who would expect that his/her recommendation of rejection would be put in practice. This tension will probably affect the response to a future invitation to review a study. On the other hand, it could also provoke a reflection in the reviewer in terms of adjusting his/her way of valuing different elements of a given study, perceived by the editor.

#### 5. Conflict, Role Ambiguity and Satisfaction

Several studies have related role conflict and ambiguity with satisfaction in the work environment. Gregson and Wendell (1994) studied the relationship between variables, self-esteem, role conflict, role ambiguity and job satisfaction in a sample of 216 executives. The study concluded that role conflict and ambiguity were directly and negatively related to job satisfaction, with -0.19 and -0.57, respectively.

Another study by Karadal and Cuhadar (2008, pp. 179-180), in a sample of 219 employees from public and private sector companies in Turkey, showed that role ambiguity and conflict were negatively related to job satisfaction with -0.34 and -0.37, respectively, while organizational commitment showed a positive and strong relationship of 0.67 with the variable job satisfaction. According to the authors, these results are a consequence of poor management in the establishment of positions, delegation of authority, definition of responsibilities and roles, which consequently create these two types of tensions.

Tarrant (2008), in turn, based on a sample of nursing professionals, when assuming new responsibilities in their positions, found moderate levels of role conflict and ambiguity in relation to job satisfaction. The causes of the levels of tension derived from the perceived acknowledgement and opportunity to participate in new activities.

Montgomery (2011) discussed the constructs related to role conflict and ambiguity in organizations, in an organizational scenario where workers indicated to be responsible for various role, and where they cited not being sure about how to balance the various organizational needs required of them, which competed structurally according to priorities and objectives requested by more than one immediate manager of their position. The author concluded that role conflict and ambiguity were negatively related to job satisfaction, corroborating previous research.

Palomino and Frezatti (2016) Those studies addressed the subject with a focus on the controller of Brazilian organizations and the conclusions indicated that Brazilian controllers perceive role conflict and ambiguity in performing their roles. Role ambiguity affects the controllers' job satisfaction more intensely than role conflict but, despite noticing these two tensions, the executives are moderately satisfied with their current working conditions.

Satisfaction enters the research environment, similar to what occurs in the organizational environment (Katz and Kahn, 1970) as an element that permits addressing the reward for engaging in reading, reviewing, or even authorship. Low satisfaction can entail consequences ranging from not accepting an invitation to analyze a study or even doing it in a hardly committed manner (Berk, Harvey & Hirshleifer, 2017). Particularly with regard to the reviewer's role, this question becomes fundamental, as much of the quality of publications depends on the involvement and effort of the reviewer.

There is great difference in the treatment of the topic within a results-oriented organization and an entity that relies on the collaborative work of people who often will never meet. A review of an article can take a few hours or even weeks, depending on the complexity and the intended scope of analysis. It is a collaborative relationship that has no time dimension, nor a formal agreement on the quantity to be delivered. Even less so in terms of formal career, besides a dissipation of hierarchy and an obligation to answer for something that is accepted on a case-by-case basis, as the editor invites a reviewer for each article, depending on his/her skill. A senior reviewer or seminal author is acknowledged in the community that hosts them, but it is something that lies more in the perception than in a formal model.

## 6. Motivation to Accept the Role of Reviewer

Acceptance and experience in the role of the reader, the author and the reviewer stem from some kind of motivation (adapted from Katz and Kahn, 1970), related to aspects that can provide satisfaction for practicing the role. Some of the elements were objectively recognized in the literature (synthesis in Table 1 and detailing in Appendix 1). The Delphi method was applied to validate the assertions that permit capturing the concepts that operationalize the elements of the constructs, regarding role conflict as well as role ambiguity, motivation and satisfaction. Researchers were invited who possessed expertise in research and in the review of academic articles. Details of the elements and contents are displayed in Appendix 1.

Table 1

*Criteria considered in the structure of the questionnaire*

<b>Element and reference framework</b>
External assessment: Trzesniak, Plata-Caviedes e Córdoba-Salgado (2012); Harzing e Van der Wal(2008)
Qualitative assessment: EngerseGans (1998)
Article features: EngerseGans (1998); Coniam (2012)
Perceived benefit: Tarrant (2008); EngerseGans (1998); Cabral (2018); Katz and Kahn (1970)
Support and relationship interest: Moizer (2009)

Source: elaborated by the authors.

Considering the need to customize the elements for the research theme, additional work was done to characterize and confirm the clusters. The criteria clusters were created based on the researchers' identification, legitimized by a series of opinions by community members, inspired by the Delphi technique (Wright & Giovinazzo, 2000), in which a group of experts opined. In this case, the authors and five invited researchers played the roles of coordinators and experts, who were submitted to the process in order. After the first expert had opined, departing from an initial base of basic criteria, the second specialist received the new set, with the changes provided by the first group, and so on. The choice of researchers took into account the experience as authors, reviewers and readers of academic publications.

The following clusters were established (Appendix 1):

#### **External assessment**

The agents are motivated to accept their roles when journals have a favorable external assessment by an entity or institution with legal or community legitimacy (Trzesniak, Plata-Caviedes, & Córdoba-Salgado, 2012). This can mean the *QUALIS ranking*, inclusion on the list of JCR, SCIELO, SCOPUS or SPELL. This criterion should offer a relatively "objective" benefit as to the quality of the effort made (Harzing & Van der Wal, 2008).

#### **Qualitative assessment**

Derives from the agent's perception, independently of the external assessment, that exercising the role in community journals has merit.

#### **Article characteristics**

The agent's motivation may stem from journals' intrinsic characteristics.

Some of these are: clarity, simple communication, highly sophisticated content, for example; language in which the communication is offered, such as English, Portuguese and Spanish, among others. The editorial line or ontological range would also fit in here.

#### **Perceived benefit**

The agent's motivation may stem from the perception of some kind of benefit. Examples such as some kind of recognition, in the form of money or an award, journals in which one can learn something, journals in which one can teach something, can be considered.

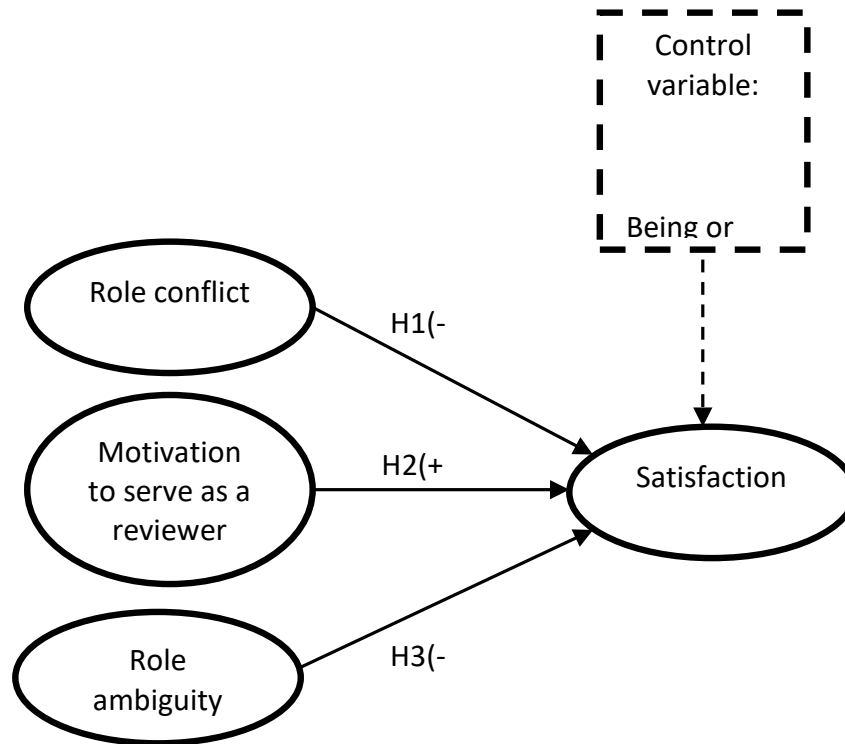
#### **Support and relationship interest**

The agent's motivation may stem from the perception of the possibility to support an institution or person. Among several examples, we can mention: trust in the journal's editorial board, relationship with the editorial board, intention to publish in the journal, having already published in the journal.



## 7. Conceptual Model and Hypotheses

Deriving from the construct required to address the research problem, the conceptual model is presented in Figure 1:



**Figure 1.** Conceptual model of the research.

Source: elaborated by the authors.

To structure the research and its analysis, the hypotheses developed were as follows:

- **H1. The role conflict negatively affects the satisfaction with being a reviewer of an academic journal article.**

It is related to the role conflict affecting the reviewer's function. The structure of the assertions that represent the variables stems from the reference framework (Montgomery, 2011; Karadal & Cuhadar, 2008, pp. 179-180; Gregson & Wendell, 1994; Palomino & Frezatti, 2016).

- **H2. Motivation positively affects the satisfaction with being a reviewer of an academic journal article.**

It is related to the motivation for the role to be accepted, affecting the reviewer's role (Katz & Kahn, 1970; Gregson & Wendell, 1994; Palomino & Frezatti, 2016).

- **H3. The role conflict negatively affects the satisfaction with being a reviewer of an academic journal article.**

It is related to the role ambiguity, affecting the reviewer's function. The structure of the assertions that represent the variables stems from the reference framework (Montgomery, 2011; Karadal & Cuhadar, 2008, pp. 179-180; Gregson & Wendell, 1994; Palomino & Frezatti, 2016).

## 8. Data collection and analysis

### 8.1 Data collection

The identification of the population was a relevant part of the research process, as there is no available source that could be used immediately. The authors built it from the combination of congress and journal databases. In total, invitations were identified and sent by e-mail to about 8,000 researchers working in journals and accounting and business administration congresses. Data collection took place between June and August 2017. Three hundred answers were received and, in function of the elimination of incomplete answers, 153 were considered valid. *Missing values* were treated as follows: even after eliminating the cases that contained more than 14% of missing values, the indicators *conf\_r\_4* and *conf\_r\_5* still presented 18% and 16% of missing values and, after some allocation attempts, their factor loadings were also low. Therefore, they were excluded from the model. For the other cases and variables, Little's test indicated that the distribution of the missing values was MCAR (*Missing Completely at Random*), which permitted allocating the average (Little, 2013). As a consequence of the construction presented, a convenience sample was used.

This quantitative research was developed through a survey applied to the accounting and administration research community. The questionnaire was elaborated based on the available constructs (role conflict and role ambiguity), validated in Portuguese by Palomino and Frezatti (2016) and the complement related to the motivation to serve as a reviewer. Researchers in the area validated the compliance variables using the Delphi technique (Appendix 1).

The pretest was applied by forwarding the questionnaire to five researchers with a background as authors and reviewers of academic articles. To validate reviewers, their background should have occurred in accounting and/or business administration journals. The argument for this practice is linked to the fact that the reviewers, regardless of their degree (Accounting, Administration, Economics, Production Engineering, Psychology, Mathematics etc.) can act in both Accounting and Administration journals over time. In addition, some area segments can be found in Accounting as well as in Business Administration (Finance, Public, Management etc.). This procedure was also applied when structuring the Delphi and inviting the respondents. The elements the invitees considered were: (i) potential response with and without identifying the respondent; (ii) aspects linked to the clarity of the questionnaire; (iii) other alternative items that could motivate/affect the actions. The return of the questionnaires was awaited, the elements that could possible serve as characteristics were adjusted and sent to another researcher from another research center and state, who did not suggest new revisions.

In total, 153 valid questionnaires were received, with the characteristics presented in Table 2. Fifty-five (36%) respondents are or were journal editors and 77 (50%) are Ph.D. graduates who work in teaching and research, and therefore have sufficient experience to properly answer what was questioned.

Table 2  
**Training and activities of the respondents**

Training and activities	Total	
	n	%
Editor (was or is)	55	36%
Ph.D. active in teaching	92	60%
Ph.D. active in research	85	56%
Ph.D. active in teaching and research	77	50%
Ph.D. obtained abroad	5	3%
Ph.D. obtained outside the place of activity	47	31%
M.Sc. active in teaching	23	15%
M.Sc. active in research	7	5%
Ph.D. candidate	25	16%
M.Sc. candidate	3	2%
<b>Total</b>	<b>153</b>	<b>100%</b>

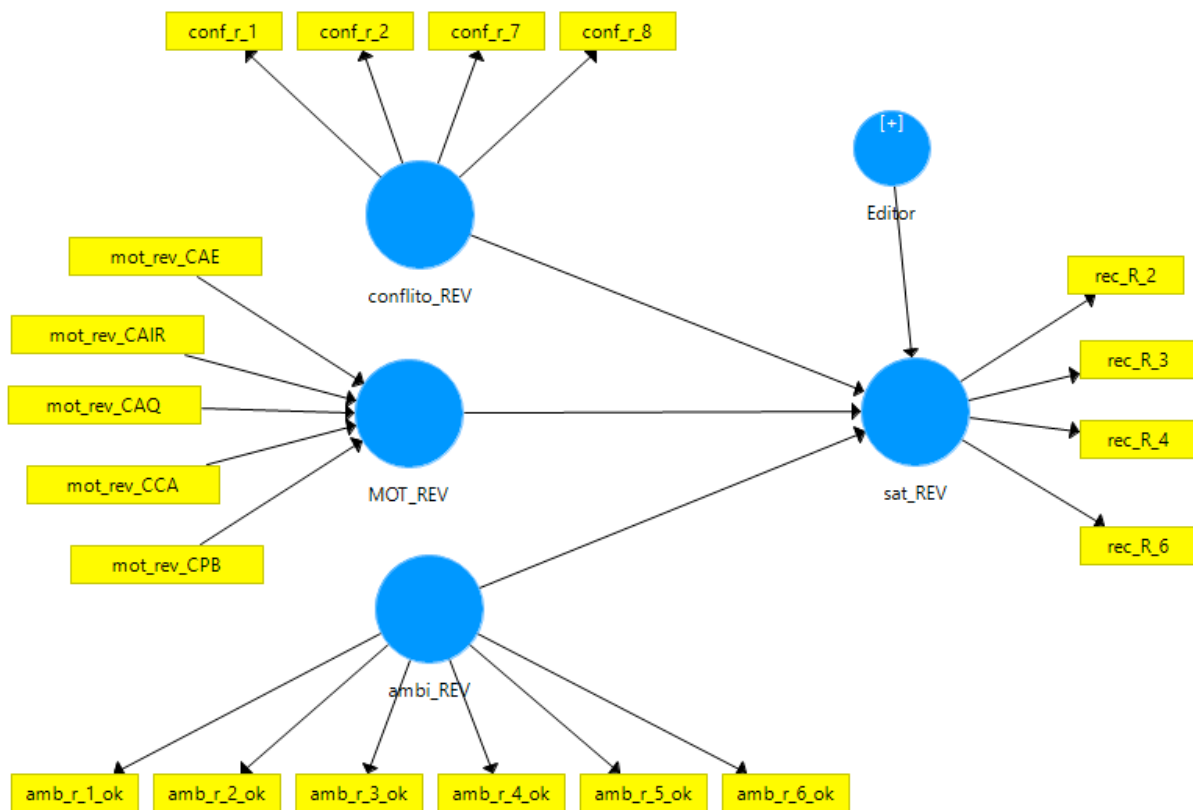
Source: Research results.

The structural equations models can be estimated using methods based on covariances with software such as AMOS, LISREL and MPLUS, but the main restrictions to their use in this case are: (i) complexity of the model, with second-order VL, (ii) presence of formative VL (Hair Jr. et al., 2016), so it was decided to estimate the model by partial least squares (PLS-SEM), using SmartPLS 3 *software* (Ringle, Wende, & Becker, 2015).

## 8.2 Evaluation of the measurement model

The motivation to act as a reviewer (MOT\_REV) was modeled as a 2nd-order formative latent variable, which was measured by five 1st-order reflexive latent variables (LV) (Appendix 1), namely:

- mot\_rev\_EAC = external assessment criteria;
- mot\_rev\_SRIC = support and relationship interest criteria;
- mot\_rev\_QAC = qualitative assessment criteria;
- mot\_rev\_ACC = article characteristics criteria (language);
- mot\_rev\_PBC = perceived benefit criteria.



Obs. 1: The indicators of the motivation to act as a reviewer (MOT\_REV) are factorial scores, which is known as a two-step approach (Hair Jr. et al., 2016) to measure the second-order LV.

Obs. 2: Jarvis, Mackenzie, Podsakoff (2003, p. 205) classify models with a first-order reflexive and second-order formative LV as Type II.

Obs. 3: the figure contains less indicators than the Appendix, as some were excluded during the analysis due to very low factor loadings (under 0.35).

**Figure 2.** Model estimated using partial least squares (PLS-SEM).

Source: Elaborated by the authors.

In a first round, we used the approach of repeating the indicators of the first-order LV in the second-order LV (Hair Jr., Hult, Ringle, & Sarstedt, 2016), but this procedure proved to be inappropriate for two reasons:

- As the indicators in the first-order VL were also present in the 2nd order VL, all factorial weights were significant ( $p < 0.05$ ), that is, the relationships between the second-order VL and its first-order VL. This indicates the relative importance of the five dimensions, but the doubt that remained was whether this result was reliable or occurred due to the repetition of the indicators (endogeneity).
- As EAC contained more indicators than the other dimensions (5 out of 17 indicators repeated in the second-order LV), its factorial weight was much higher than that of the other dimensions, i.e., 0.87, against 0.11 to 0.14 for the other dimensions.

Based on these results, the two-step approach was chosen (Hair Jr. et al., 2016), which consists in obtaining the factorial scores for the first-order LV in the first stage and then using these scores as indicators of the second-order LV (second stage). This procedure was developed in SPSS (v. 20) by analyzing the main components of one LV at a time, the results of which are presented in Table 3, being considered appropriate from the perspective of convergent validity and reliability.

Table 3

**Factor loadings of the first-order LV of the motivation to act as a reviewer**

mot_rev_CAE		mot_rev_CAIR		mot_rev_CPB	
items	factor loadings	items	factor loadings	items	factor loadings
ac_av_1	0,780	ac_av_15	0,54	ac_av_11	excluído
ac_av_2	0,955	ac_av_16	0,689	ac_av_12	0,433
ac_av_3	0,897	ac_av_17	0,829	ac_av_13	0,841
ac_av_4	0,958	ac_av_18	0,786	ac_av_14	0,847
ac_av_5	0,906	ac_av_19	excluded		
<b>AVE</b>	<b>0.812</b>	<b>AVE</b>	<b>0.518</b>	<b>AVE</b>	<b>0.537</b>
<b>CR</b>	<b>0.956</b>	<b>CR</b>	<b>0.807</b>	<b>CR</b>	<b>0.764</b>

mot_rev_ACC		mot_rev_QAC	
items	factor loadings	items	factor loadings
ac_av_8	0.811	ac_av_6	0.925
ac_av_9	0.837	ac_av_7	0.925
ac_av_10	0.699		
<b>AVE</b>	<b>0.616</b>	<b>AVE</b>	<b>0.856</b>
<b>CR</b>	<b>0.827</b>	<b>CR</b>	<b>0.922</b>

**Obs. 1:** all LV presented appropriate convergent validity (AVE>0.5), composite reliability (CR>0.7) (Hair Jr. et al., 2016), as well as one-dimensionality (1st eigenvalue > 1 and 2nd eigenvalue < 1).

**Obs. 2:** in the principal component analysis, the factor scores were saved and then imported into SmartPLS 3.2.8 to be used as indicators of the second-order LV.

**Legend:** mot\_rev\_EAC = external assessment criteria; mot\_rev\_SRIC = support and relationship interest criteria; mot\_rev\_QAC = qualitative assessment criteria; mot\_rev\_ACC = article characteristics criteria; mot\_rev\_PBC = perceived benefit criteria.

Source: elaborated by the authors.

With the scores obtained in the first stage, the model presented in Figure 3 could be estimated (second stage). Below, the results of the measurement of the LV in the structural model are presented.

Starting with the Motivation to act as a reviewer, Table 4 shows that all indicators had a significant factorial weight of 5%, except for mot\_rev\_SRIC (criteria for support and relationship interest), which indicates that it has no relative importance (when using the five indicators for measurement), but absolute importance, as its factor loading was equal to 0.46 ( $p = 0.022$ ) (Hair Jr. et al., 2016). In addition, in formative models, the removal of indicators causes a change in the definition of the construct, so Bido et al. (2010) recommend maintaining all items, even those without statistical significance.

Table 4

**Measurement of the formative construct (motivation to act as a reviewer)**

1st-order LV (scores)	weights (outer weights)	p-value of weights	loading (outer loadings)	p-value of loadings	VIF
mot_rev_EAC	0.383	0,069	0,453	0,019	1,097
mot_rev_SRIC	0.326	0,116	0,460	0,022	1,060
mot_rev_QAC	-0.455	0,004	-0,260	0,073	1,085
mot_rev_ACC	0.531	0,016	0,548	0,016	1,050
mot_rev_PBC	0.459	0,011	0,582	0,000	1,025

**Obs. 1:** All VIF (*VarianceInflationFactor*) coefficients are close to 1, indicating practically no multicollinearity.

**Legend:** mot\_rev\_EAC = external assessment criteria; mot\_rev\_SRIC = support and relationship interest criteria; mot\_rev\_QAC = qualitative assessment criteria; mot\_rev\_ACC = article characteristics criteria; mot\_rev\_PBC = perceived benefit criteria.

Source: Elaborated by the authors.

As the other LV in the model (Figure 2) are reflexive, Tables 4 and 5 were prepared, which show that the convergent and discriminant validity are appropriate at the level of the constructs (Table 5) and at the level of the indicators (Table 6), as well as the composite reliability, which is higher than 0.7.

Table 5

**Correlation matrix between the model constructs**

Variável	1	2	3	4	5
1 - Editor	-				
2 - mot_REV	-0,146	-			
3 - ambi_REV	0,123	-0,188	<b>0,769</b>		
4 - conflict_REV	0,168	0,025	0,263	<b>0,754</b>	
5 - sat_REV	-0,232	0,425	-0,319	-0,115	<b>0,784</b>
CompositeReliability	-	-	0,895	0,837	0,864
AverageVarianceExtracted	-	-	0,591	0,568	0,615

**Legend:** Editor is a *dummy* variable (1 = is or has served as an editor of an academic journal). sat\_REV = satisfaction with being a reviewer of an academic journal. mot\_REV = Motivation to Accept the Reviewer Role. conflict\_REV = role conflicts. ambi\_REV = role ambiguity.

**Obs. 1:** The coefficients on the diagonal are the square root of the AVE (*AverageVarianceExtracted*). As these coefficients are higher than the correlations between the constructs (coefficients outside the diagonal), discriminant validity exists (Hair Jr. et al., 2016).

**Obs. 2:** Correlations equal or superior to  $|0.188|$  are significant at 5%.

**Obs. 3:** The reviewer's motivation (MOT\_REV) is a formative latent variable. Therefore, the AVE and CR (*CompositeReliability*) coefficients were not presented for both variables.

Source: elaborated by the authors.

Table 6

**Cross-loading matrix for the reflexive constructs**

	<b>Editor</b>	<b>ambi_REV</b>	<b>conflict_REV</b>	<b>sat_REV</b>
editor	<b>1,000</b>	0,123	0,168	-0,232
amb_r_1_ok	0,128	<b>0,746</b>	0,194	-0,338
amb_r_2_ok	0,128	<b>0,824</b>	0,220	-0,137
amb_r_3_ok	0,104	<b>0,598</b>	0,277	-0,169
amb_r_4_ok	0,092	<b>0,724</b>	0,215	-0,132
amb_r_5_ok	0,054	<b>0,847</b>	0,148	-0,299
amb_r_6_ok	0,075	<b>0,845</b>	0,220	-0,234
conf_r_1	0,104	0,230	<b>0,605</b>	-0,039
conf_r_2	0,045	0,297	<b>0,737</b>	-0,050
conf_r_7	0,191	0,168	<b>0,694</b>	-0,026
conf_r_8	0,171	0,193	<b>0,939</b>	-0,139
rec_R_2	-0,257	-0,265	-0,202	<b>0,775</b>
rec_R_3	-0,221	-0,179	-0,096	<b>0,826</b>
rec_R_4	-0,085	-0,295	0,038	<b>0,816</b>
rec_R_6	-0,181	-0,247	-0,124	<b>0,715</b>

**Legend:** Editor is a *dummy* variable (1 = is or has served as an editor of an academic journal). sat\_REV = satisfaction with being a reviewer of an academic journal. mot\_REV = Motivation to Accept the Reviewer Role. conflict\_REV = role conflicts. ambi\_REV = role ambiguity.

**Obs. 1:** All factor loadings are significant at 5%.

**Obs. 2:** All indicators have higher factor loadings in their respective constructs than in any other construct. Therefore, discriminant validity exists at the indicator level (Hair Jr. et al., 2016).

**Obs. 3:** Editor is a *dummy* variable (Are you or have you served as an editor of an academic journal? yes/no).

Source: elaborated by the authors.

### 8.3 Evaluation of the structural model

Table 7 shows the results of the structural model estimated in three stages: model 1 = only the control variable, model 2 = complete model with the control variable, and model 3 = model without the control variable.

After discounting the effect of the control variable, the model explains 17.4% of the variance in the reviewer's satisfaction, which is considered a medium-sized effect in Cohen's classification (1988).

Hypothesis H1 was not confirmed: conflict is not related with the reviewer's satisfaction, even after controlling for the effect of being/having served as an editor (in models 3 and 2:  $f^2 = 0.004$  and  $0.002$ , respectively, which means an effect equal to zero for practical purposes; and non-significant structural coefficient –  $p > 0.10$ ).

Hypothesis H2 was confirmed: the motivation to be a reviewer is positively related with the reviewer's satisfaction, with an average effect size ( $f^2 = 0.168$  and the standardized structural coefficient is equal to  $0.363$ ,  $p < 0.01$ ).

Hypothesis H3 was confirmed: role ambiguity is negatively related with reviewer satisfaction, with a small effect size for practical purposes ( $f^2 = 0.060$  and the standardized structural coefficient is equal to  $-0.222$ ,  $p < 0.01$ ).

These results are discussed in the next section.

Table 7

**Results of the structural model**

Model	Structural relationship	Hypothesis	f <sup>2</sup>	Structural coefficient	Standard error	t-value	p-value	Adjusted R <sup>2</sup>
1	Editor → sat_REV	control	0,074	-0,262	0,063	4,15	0,000	6,9%
2	Editor → sat_REV	control	0,027	-0,145	0,071	2,03	0,042	24,3%
	conflict_REV → sat_REV	H1(-)	0,002	-0,042	0,110	0,38	0,705	
	mot_REV → sat_REV	H2(+)	0,168	0,363	0,061	5,96	0,000	
	ambi_REV → sat_REV	H3(-)	0,060	-0,222	0,072	3,11	0,002	
3	conflict_REV → sat_REV	H1(-)	0,004	-0,060	0,108	0,55	0,582	23,3%
	mot_REV → sat_REV	H2(+)	0,191	0,387	0,060	6,48	0,000	
	ambi_REV → sat_REV	H3(-)	0,064	-0,233	0,070	3,33	0,001	

**Legend:** The abbreviations for the construct names follow the definitions in the footnote to Table 5.

f<sup>2</sup> = Cohen's effect size (1988), with the following classification: f<sup>2</sup> = 0.02 = small; f<sup>2</sup> = 0.15 = medium;

f<sup>2</sup> = 0.35 = large.

**Obs.:** for model 1, there was no adjustment in R<sup>2</sup>.

Source: elaborated by the authors.

## 9. Discussion of the Results and Conclusions

The explanatory power of the model was considered appropriate according to Cohen's classification (1988). With regard to the analysis of the hypotheses, we need to consider:

- **H1. The role conflict negatively affects the satisfaction with being a reviewer of an academic journal article.**

The hypothesis was not statistically validated, similar to what was obtained by Palomino and Frezatti (2016). The variables considered in the analysis, related to disagreeing from the way things are done (“*I have to do things that should be done differently*”), developing the analysis without personal resources for development (“*I get tasks without the knowledge AND/OR time AND/OR experience needed to complete them*”), developing the analysis without resources (“*I get an assignment without the proper materials and systems to execute it*”), inappropriate time demand (“*I spend time working on unnecessary things*”), were not relevant to indicate that role conflict negatively affects the reviewers' satisfaction. This result strengthens the understanding that the issues intrinsic to participating in a review are part of the “package”, being tolerated by those who propose to do so. As a finding, in a practical sense from the point of view of the editor managing the process, it is valuable, as it allows to understand that a reviewer would not fail to accept an invitation for issues related to the role conflict.

- **H2. Motivation positively affects the satisfaction with being a reviewer of an academic journal article.**

The hypothesis was validated. Although the five Elements (External assessment, Qualitative assessment, Characteristic of the article, Perceived benefit and Support and relationship interest) influence the reviewer's satisfaction, the first element being the most relevant.



In summary, reviewing an article in a journal that is included in Qualis' A1 list provides more satisfaction than a B4, for example. Receiving an invitation to review an article for a journal that figures on the JCR list motivates a reviewer more than receiving the same invitation from a journal that does not. In conclusion, the editors should communicate their success in the various *ranking*, so as to attract not only authors, but mainly reviewers. In this line of reasoning, a better *ranking* could lead reviewers to some adjustment from the perspective of attractiveness to serve as an article reviewer. Finally, no improvement or position in the *ranking* was captured, but rather those that most affect the researcher's life.

- **H3. The role conflict negatively affects the satisfaction with being a reviewer of an academic journal article.**

The hypothesis was validated. The variables considered take into account aspects that editors can manage and concern definitions and communications of editors to reviewers, reducing the ambiguity (Kahnet al.,1964; Fichter, 2010; Montgomery, 2011). We can separate at least two groups on the list of elements: the definition of the **reviewer's role and his/her autonomy** ("My authority in the development of my work is clear", "The objectives of my work are clear", "I know that I will distribute my time accordingly in order to perform different tasks", "I know what my responsibilities are", "I know exactly what is expected of me," "It is clear to me what needs to be done") and **the product that is expected from the review** ("I know exactly what is expected of me", "It is clear to me what needs to be done"). The message that can be extracted is that information that lessens the ambiguity and uncertainty about what to expect can provide greater satisfaction. The reflection that remains concerns the form and intensity of how to communicate.

Experience as a current or past academic journal editor negatively affects the satisfaction with being a reviewer of an academic journal article. The set of questions does not permit identifying the cause itself and the possible causes are merely speculative, and can be tested in another research. One of these may mean that the academic journal editor or former editor does not value his or her time spent on a review because (s)he considers that it is a step already overcome in his or her trajectory. (S)he may also consider that developing the analysis for another journal may involve some kind of conflict of interest that should be avoided.

In an environment where national journals compete with structured international vehicles, which are relatively mature and have a widely tested editorial structure, this research contributes to the editors as well as the reviewers and authors, who can improve the editorial process in terms of process quality by directing their focus at the reviewers' work. The intention to discuss a complex theme like knowledge communication is linked to the challenge it poses to the academic environment as a whole. The publication itself is the main element to evaluate the researchers and, in his/her communication, the reviewer has an important role as a driver or as a blocker, whose recognition is verified in a very limited way. Thus, understanding how to get and count on the collaboration of reviewers is vital for the management of editorial activities, for the reviewers by providing a view of the interaction between their work and the editors' management perspective, as well as the reviewers' potential questioning of the editors regarding definitions and clarifications that enhance the motivation to participate in the process. From the perspective of eliminating inhibitions, the search also allows the editor to direct his/her efforts.

Based on the logic that the reviewer's satisfaction is something relevant for the maintenance of the ecosystem model of communication of new academic knowledge, the research focuses on this theme, considering the inhibitory elements, the role conflict and ambiguity, compensated by the stimulating factor on satisfaction, which is the reviewer's motivation.

As a result of the analysis of 153 questionnaires, two hypotheses were validated, namely that the role ambiguity negatively affects the satisfaction, while the motivation has a positive influence. In addition, analyzed separately, the fact that a reviewer is or has been an academic journal editor negatively affects the satisfaction. For the sample considered, the fact of being or having served as an academic journal editor, is something that negatively affects the reviewer's satisfaction. The causes of this perception cannot be pointed out in this article, as they would be mere speculation. Journal editors should be aware of this finding, however, when inviting the reviewers.

Role ambiguity can be managed through greater clarity in the communication with reviewers. This can be practiced through information made available on the journal portals and even through events where the topic publication is discussed.

Differently than expected, the role conflict was not validated as an element that negatively affects satisfaction, which is nevertheless relevant information for editorial management.

Regarding the limitations of this research, we can highlight the difficulty to have a database that could be used promptly and a reference framework on reviewers predominantly produced in countries with different cultural backgrounds. As for suggestions for future research, we recommend two dimensions: to deepen the understanding of the relationship between reviewers and editors and research on what editors understand as ethical in the performance of the role.

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## Appendix 1. Assertions used to measure the constructs

Alternative answers: 1 = totally disagree to 5 = totally agree		
Construct	Items	Assertions that cover the content
To what extent do you agree that the below elements are important to accept invitations to review articles?		
External Evaluation Criteria	ac_eval_1_EAC	Qualis ranking (prioritizing A1, A2, B1 or B2)
	ac_aval_2_EAC	Inclusion on Scielo's list
	ac_aval_3_EAC	Inclusion on JCR's list
	ac_aval_4_EAC	Inclusion on SPELL's list
	ac_eval_5_EAC	Inclusion in other bases, such as PROQUEST, REDALIC, CAPES Portal and EBSCO
Qualitative Assessment Criteria	ac_eval_6_QAC	Brazilian journals that you consider relevant to the area, regardless of inclusion in indexers or Qualis
	ac_eval_7_QAC	International journals that you consider relevant to the area, regardless of inclusion in indexers or Qualis
Article Characteristics Criteria (Language)	ac_eval_8_ACC	Articles written in Portuguese
	ac_eval_9_ACC	Articles written in English
	ac_eval_10_ACC	Articles written in Spanish
Perceived Benefit Criteria	ac_eval_11_PBC	You agree to review articles in journals that you consider to be a contribution to your area, regardless of inclusion in indexers or Qualis
	ac_eval_12_PBC	You agree to review articles in journals in which there is some kind of recognition (some form of award)
	ac_eval_13_PBC	You agree to review articles in journals that you consider to learn something
	ac_eval_14_PBC	You agree to review articles in journals that you consider to be able to teach something
Support And Relationship Interest Criteria	ac_eval_15_SRIC	You agree to review articles in journals of which you trust the Editorial board
	ac_eval_16_SRIC	You agree to review articles in function of the relationship with the Editorial board
	ac_eval_17_SRIC	You accept to review articles in a journals in which you want to publish
	ac_eval_18_SRIC	You accept to review articles in a journals in which you have published
	ac_eval_19_SRIC	<b>From your perspective, the activity of reviewing academic articles can bring you satisfaction</b>

Alternative answers: 1 = totally disagree to 5 = totally agree

Construct	Items	Assertions that cover the content
How do you feel in most cases in your activities as a reviewer?		
Role Conflict	role_conf_REVIEW_1	I have to do things that should be done differently.
	role_conf_REVIEW_2	I receive tasks without having personal resources (knowledge AND/OR time AND/OR experience) needed to complete them
	role_conf_REVIEW_3	I have to ignore and even break a rule or policy to accomplish the task entrusted to me
	role_conf_REVIEW_4	I work with two or more groups of people who act in quite different ways
	role_conf_REVIEW_5	I receive incompatible requests from several actors (editor and author) at the same time
	role_conf_REVIEW_6	I do things that are acceptable to some people and not acceptable to others
	role_conf_REVIEW_7	I get an assignment without the proper materials and systems to perform it
	role_conf_REVIEW_8	I spend time working on unnecessary things
The extent to which each assertion translates the satisfaction with the REWARD for serving as a reviewer.		
Role Ambiguity	ambiguity_REVIEW_1_inv	My authority in the development of my task is clear
	ambiguity_REVIEW_2_inv	The goals of my work are clear
	ambiguity_REVIEW_3_inv	I know that I distribute my time appropriately to complete different tasks
	ambiguity_REVIEW_4_inv	I know what my responsibilities are
	ambiguity_REVIEW_5_inv	I know exactly what is expected of me
	ambiguity_REVIEW_6_inv	What needs to be done is clear to me
Satisfaction	reward_REVIEWER_1	Remuneration for having obtained a benefit from someone else
	reward_REVIEWER_2	Accomplishment for being able to contribute to the success of others
	reward_REVIEWER_3	Pride to be engaged in function of one's competence
	reward_REVIEWER_4	Valued for influencing people
	reward_REVIEWER_5	Cash prizes
	reward_REVIEWER_6	Recognition for training

**Note:** the role ambiguity items are reversed.

Source: Role conflict and role ambiguity were taken from Palomino and Frezatti (2016) and the remaining items were structured based on the Delphi method.

# Factors associated with the adoption of financial management practices by farmers in the state of Minas Gerais, Brazil

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## Abstract

**Objective:** The main purpose of this research is to identify the characteristics associated with the adoption of financial management practices by Brazilian farmers, located in the region of Triângulo Mineiro.

**Method:** We collected the data using questionnaires. The database consists of the responses from 113 farmers who own rural properties in 20 different cities in the region of Triângulo Mineiro. We employed the multivariate regression analysis to test the study hypotheses. After obtaining the results, we addressed the robustness of the model through additional tests, which included the use of interaction variables and factor analysis.

**Results and contributions of the article:** The main results of the study suggest that the financial management practices are associated with the producer's age, knowledge of production costs, participation in training about financial management, and the perceived relevance of financial management. This study contributes by understanding the management characteristics of farmers located in an important Brazilian agribusiness region. It also provides information that may support government strategies, rural unions, rural cooperatives, financial institutions, and others interested in improving rural management.

**Keywords:** Agribusiness; Rural Management; Regionality; Brazilian Farmers; Minas Gerais.

## 1. Introduction

Monitoring the activity and seeking profitability, liquidity and solvency figure among the financial manager's main functions (Gloy & LaDue, 2003). In rural management, observing these practices is fundamental because, as highlighted by Barros, Xavier, Pessoa e Sobel (2015), several factors can generate negative impacts on agricultural activity, such as climatic conditions, diseases, and plagues. Especially in a sector permeated by such uncertainties, effective financial management becomes even more essential, as it can help to reduce and control the financial damage caused by these and other associated occurrences.

In this regard, Vogel and Wood Jr. (2012) stressed the importance of financial management, linking the absence of associated practice with emergency scenarios in which organizations find themselves compelled to seek external funding at high rates. In an analysis of agricultural enterprises in the United States, Khanal e Mishra (2016) also highlighted that management strategies and formal management controls can improve the performance and, considering the use of financial management technologies, factors like the farmer's education and age can also influence the performance, as well as experience in the activity, a characteristic identified by Seramim and Rojo (2016). According to Gloy, Hyde and LaDue (2002), property size is another element that can impact the adoption of management practices. Based on a research involving milk producers from the United States, these authors concluded that such practices can lead to greater profitability.

Despite the benefits and informational content generated from this management, in the Brazilian context, low adherence to these practices has been observed in the rural sector. Mazzioni et al. (2007) found that controls are precarious and that farmers lack knowledge of their results, characteristics that were also verified by Medeiros et al. (2012). This lack of management and financial control practices can negatively affect the performance, as observed by Khanal e Mishra (2016), and limit the growth of activity (Vogel & Wood Jr., 2012). In addition, Barros et al. (2015) reaffirmed the relevance of adopting these practices, verifying that financial management can reduce the risk of default in rural areas, while Miotto and Parente (2015) identified that effective financial management can reduce the risk of indebtedness.

Thus, studies on this topic are relevant and necessary because of the importance of rural activity for Brazil. The field of analysis in this research was delimited to the region of Triângulo Mineiro in the State of Minas Gerais. This state holds the third-largest share of the Brazilian GDP and its agribusiness performance is significant, as it holds the fourth-largest share of gross value added in Brazilian agriculture and the largest share in forest, cattle, fishing, and aquaculture production. The region of Triângulo Mineiro, in turn, stands out within the state because of its economic role, mainly in rural production, as three of the five cities in Minas Gerais with the highest gross value added in the agribusiness sector of the state's GDP are located in that region. Furthermore, cities in the Triângulo Mineiro figure among the largest producers in the state in terms of different items, such as milk, mango, orange, soy, corn, pineapple, sugar cane, goats, poultry, beef and sheep (IBGE, 2019).

In view of the economic and social relevance of rural activity, particularly in the Triângulo Mineiro region, and the importance of contributing for farmers to have the financial circumstances to stay in the trade, and in search of information that can lead to an understanding of how they operate in the management of their properties, the question that guided this study was: **What factors can be associated with the adoption of financial management practices by the farmers in the Triângulo Mineiro region?** Thus, the objective was to identify, through multivariate regressions, characteristics that can be motivating for farmers in this region to adopt financial management practices.



The results obtained in this research can help in the improvement of rural management, especially in relation to small producers who commonly have less support in the management of their business. The identified characteristics can also support the development of training programs by cooperatives and rural unions and the elaboration or improvement of public sector policies. Similarly, the findings can be of help for financial institutions' policies focused on the agribusiness sector with regard to credit granting, investment lines and the like.

While previous research focused on the financial management of rural cooperatives, on the presentation of the farmers and their management's characteristics and on factors correlated with the adoption of management practices (Costa, Chaddad, & Azevedo, 2012; Imlau et al., 2016; Tarifa & Schallenberger, 2016; Machado Filho, Caleman, & Cunha, 2017), in this research, factors were sought that can determine the adoption of these practices. Thus, the research can expand the literature on the subject by jointly testing a group of variables not observed in previous studies, based on data collected through a questionnaire developed by the authors and applied to an original sample.

In addition to these theoretical contributions, França, Mantovaneli Júnior and Sampaio (2012) also highlight the relevance of understanding regional aspects for the implementation of strategies that lead to integrated development. From this perspective, studies such as Fochezatto e Ghinis (2012), Felema, Raiher e Ferreira (2013), and Sjahza e Asmit (2019) highlighted this point of view. Thus, the analysis of the farmers' characteristics from a regional perspective can contribute to the development, besides providing subsidies for the elaboration of programs and policies aimed at the rural sector, a need observed by Borges, Guedes and Castro (2016).

The results obtained from this article showed that empowering rural producers and guiding them on the relevance of financial management can be fundamental for the adoption and improvement of management practices. Although they know their production costs, a shortage was found in the use of control tools. Hence, and considering that the farmers perceive that financial management is important, there may be a management *gap* that can be better understood and exploited, which would provide contributions with efficiency gains.

## 2. Literature review and study hypotheses

This research aims to identify characteristics that can influence the adoption of financial management practices by farmers from the Triângulo Mineiro. These practices are understood in this study as actions related to the control of payments and receipts, management of cash and bank accounts, budget or programming for expenses and investments, among others related practices. The following subsections present the research hypotheses as possible factors associated with the farmers' accomplishment of management, H1 to H6 being the main hypotheses and H7 to H10 the possible control variables.

### 2.1 Perceived relevance of financial management

Discussing African farmers' perception of climate change, Pauw (2013) highlighted that understanding an individual's view on the topic can contribute to knowledge sharing and to the elaboration of policies and strategies, as perception is reflected in behavior (Nyanga, Johnsen, Aune, & Kalinda, 2011). Thus, it is of interest to verify whether these associations are applicable in relation to the farmers' perception of financial management practices and, specifically, whether this perception positively affects the implementation of this management.

The use of perception as an element related to an attitude or behavior can be observed in the case study by Grøn (2018). He analyzed relevant aspects of the formation and development of perception concerning the implementation of management practices and, therefore, perception was considered a dependent variable, while the practices that were implemented were used as explanatory variables.

Furthermore, O'Reilly (2009) identified that the investors' perception on the external auditor's opinion about the company's going concern affects the decision making and stock value. Khanal and Mishara (2016) and Khan, Tan and Chong (2017) found signs that the investor's perception of the return obtained earlier with the use of portfolios can influence his/her decisions on trading and risk exposure. Robinson, Taylor and Brice (2016), in turn, demonstrated that executives' optimistic perception on the safety level of information guided their actions related to the theme. Thus, considering that the perception of a given topic can affect individual attitudes and behavior, the hypothesis is raised that:

- **H1: the perception about the relevance of financial management positively affects the adoption of related practices.**

## 2.2 Use of control tools

Analyzing and controlling the business figure among the rural manager's tasks and this includes financial control activities (Gloy & LaDue, 2003), which, in turn, generate information that helps with planning and decision making. Nevertheless, earlier studies have shown that, in the rural context, these - control-related - management practices are little used (Machado & Nantes, 2011; Oaigen et al., 2013; Simioni, Binotto and Battiston, 2015). In addition, although the use of technological resources can contribute to the control of costs or other elements related to the activity, which positively affects the management of rural property (Machado Filho et al., 2017), these resources are also underutilized and farmers need continuous education on the merit of using them (Gloy & LaDue, 2003).

In this sense, Machado and Nantes (2011) observed that farmers control costs in a precarious way. Although the use of spreadsheets is an interesting option, as many do not have access to specialized *software* that meets the needs of the rural property, these authors highlighted that, usually, this tool ceases to be used due to lack of knowledge of the producer. Besides the positive effect the adoption of control tools has on the effectiveness of financial management, especially for the identification of production costs, Oaigen et al. (2013) highlighted that the business attitude and the level of control are important elements for competitiveness, but also found that the farmers' use of management tools is lower than expected, being a feature for improvement.

In the study by Simioni *et al.* (2015), the informal nature of management practice was highlighted. The authors identified that only 17% of the farmers consulted used notebooks or spreadsheets to record technical or economic data, which is a characteristic that negatively affects management, as "the maximization and greater efficiency in the use of technologies and knowledge and the use of resources available on the property depend on the proper management and control process of all factors involved in the production" (Simioniet al., 2015, p.168). Thus, the recording of data related to the activity contributes positively to the effectiveness of financial management, especially by providing information that helps in the calculation of the income, profitability indices, among other elements.

Ferreira, Lasso and Mainardes (2017), in turn, found that attitudes such as controlling business expenses – not confusing them with family expenses –, knowing the profit or loss and making decisions in times of financial difficulties are characteristics that farmers consider innovative. Furthermore, identifying farmers with management focused on the financial aspect, Hey and Morozino (2018) highlighted that one of the main concerns perceived is getting resources to cover the activity costs at the end of the production cycle and having sufficient profit to remunerate the work and the use of the property. This indicates that farmers who spend more effort to perform financial management tend to have control over production costs, corroborating the idea that having this control is positively associated with the adoption of financial management practices. Thus, the objective is to test the following hypothesis related to management control:

- **H2: the use of control tools, such as spreadsheets and reports, is positively related to the farmers' adoption of financial management practices.**

Considering the relevance of knowing the production costs, as this makes it possible to calculate the result, the following hypothesis is also tested:

- **H3: farmers' knowledge about the production costs is positively related to the adoption of financial management practices.**

### 2.3 Indebtedness of farmers

According to Miotto and Parente (2015, p.53), “individuals who apply better management of their income and expenses tend to avoid situations in which their expenses exceed their earnings, thereby reducing their risk of default.” They identified that, among Brazilian low-middle-class families, developing planning and conducting financial administration tends to be positively associated with low default situations. As a considerable part of the rural production takes place in the family context (MAPA, 2017), it is relevant to verify whether this relation applies to farmers who consider themselves indebted, which could contribute to their payment compliance - especially considering the possibility of debts incurred for non-productive ends, which do not generate additional revenues (Datta, Tiwari, & Shylajan, 2018).

From the perspective of small and medium-sized companies in Minas Gerais, Camargos, Camargos, Silva, Santos and Rodrigues (2010) also identified, among the conditioning factors of default, aspects related to financial management, especially to the administration of working capital. For agricultural activities, Barros *et al.* (2015) observed that, among the farmers in the sample used, there was approximately 50% chance of non-payment of debts and that the execution of financial management practices was one of the factors that positively affected the payment compliance. Thus, the results indicate that the tools and actions related to the financial management of the business help to reduce the risk of indebted farmers' defaulting. Thus, based on the premise that the indebted rural producer adopts management practices to avoid default, the objective is to test the following hypothesis:

- **H4: farmers' considering themselves as indebted positively affects the adoption of financial management practices.**

## 2.4 Client default

Similarly to the justifications mentioned with regard to the indebtedness of farmers and the management actions they can adopt to avoid default, it is relevant to analyze whether part of the clients' default positively affects the farmers' adoption of financial management practices, a fact that can support them to adapt their sales strategies and their mean operating and financial terms.

Besides the relevance of financial controls and tools that help managers to have control over their debts (Barros et al., 2015), corroborating their payment compliance and, in certain cases, even avoiding the assumption of obligations, financial management can also contribute to reducing the risk of client default or, if it occurs, can provide managers with information necessary for the fitness of their budget and financial planning. In that sense, Castagnolo and Ferro (2014), Duan, Kim, Kim and Shin (2018), and Gabbianelli (2018) evidenced the positive association between financial information and the improvement of aspects related to reducing or predicting the risk of default, while Crespi Júnior, Perera e Kerr (2017) highlighted how financial management actions can avoid or contain the damage caused by bad payers. Thus, the following hypothesis was tested:

- **H5: the farmer's perception of client default as a difficulty positively influences him/her to adopt financial management practices.**

## 2.5 Professional training of farmers

When farmers are trained to deal with management routines or tools, they can learn to apply them, improving their management practices. Training can also help farmers to use technological resources for management purposes, which contributes to optimize their time and speed up processes (Islam, Habes & Alam, 2018). Thus, the farmers getting trained can be a key factor for effective financial management.

Zanin, Oenning, Tres, Kruger and Gubiani (2014) associated non-participation in training courses with the absence of controls that assist in farmers' decision making, demonstrating that farmer training can positively influence the adoption and implementation of best management practices. In this sense, Martínez-García, Ugoretz, Arriaga-Jordán and Wattiaux (2015) identified, using *cluster* analysis, that farmers who take training programs and use cooperative services have a higher output than other groups, including either older and more experienced farmers or younger farmers with more years of formal education.

Identifying farmers who precariously use financial and operational management tools, Simioniet al. (2015) stated that there is a need to expand qualification programs, thus suggesting that farmer training positively affects management, both financial and related to the production process. Latawiec *et al.* (2017), in turn, highlighted the lack of access to technical extension as a factor that impedes the adoption of best management practices, which, according to part of the rural producers they consulted, would lead to better administrative management of the property. In other words, the perception was found that qualifying the producer contributes positively to better management, even if the courses or training are focused on operational aspects. In addition, studies like Kumar and Shrestha (2014), Huang, Vyas and Liang (2015) and Nakano, Tsusaka, Ainda and Pede (2018) also highlighted the relevance of farmer training. In view of the above arguments, the following hypothesis was tested:

- **H6: participation in financial management training positively affects the adoption of related practices.**

## 2.6 The educational level of farmers

When taking higher formal education levels, managers are supposed to develop different personal and professional skills, which can direct- or indirectly contribute to their qualification in this function. Hence, there is a greater probability of farmers with a higher education level performing better in the activity they manage when they apply the knowledge gained in formal education.

This association is commonly investigated in the literature. Gloy *et al.* (2002, p.242) argued that “the farmers’ level of formal education is a measure of the quality of the human capital stored in the property”. Nevertheless, the authors did not find a significant relationship in their study between formal education and the farmers’ profitability. Similarly, Simioni *et al.* (2015) did not verify a significant relationship between the farmers’ education and the increase in their income. Wilson, Mishra and Williams (2009) identified a lower performance in properties managed by young farmers. Similarly to Martínez-García *et al.* (2015), they highlighted that this result does not necessarily derive from inefficient management, but from the possibilities of getting returns from non-agricultural work, compromising the management of the property, which generating a negative association between financial management practices and the education level.

Oaigen *et al.* (2013), in turn, found that rural producers in the South have a higher level of education than those in the North of Brazil and are more competitive, and that the use of financial indicators and strategic planning are some of the critical factors in this competitiveness. The results of the study by Barros *et al.* (2015) showed that the probability of the farmer defaulting reduces if (s)he holds a higher education degree. Effective financial management contributes to better control and planning of company resources, which can reduce the risk of default, also providing tools that assist in the analysis of the business, such as financial indicators. Thus, despite the diversity of results observed in the literature regarding this variable, the following hypothesis regarding formal education was tested:

- **H7: the farmers’ level of education positively affects the adoption of financial management practices.**

## 2.7 The size of the rural property

Aspects related to financial performance and obtaining satisfactory profit margins can be positively associated with the adoption of good financial management practices, as they are expected to provide the necessary structure for the knowledge of information useful to decision-making. These practices are expected to be more common in larger rural properties, as they tend to have more human, financial and technological resources to invest in this management, besides possibly having a larger volume of operations.

From this perspective, Gloy *et al.* (2002) identified that the size of the property is positively related to the financial performance and that the differences in the profitability of similar properties can be attributed to managerial factors. Zanin *et al.* (2014) found, based on a sample of 124 farmers, 81% of the properties being characterized as small, that in 54%, management controls were insufficient for decision making, and neither management reports nor rural accounting were used. Simioni *et al.* (2015), in turn, analyzed a sample in which more than 81% of the rural properties were small and identified that the management actions were basic and informal, without registers or process controls.

Machado Filho *et al.* (2017) observed a positive relationship between the size of rural properties and the adoption of control practices necessary to implement accounting and governance mechanisms. They highlighted the higher incidence of hired employees in these properties as a possible reason for this feature, which allows the farmer to dedicate more time to management. Similarly, Lai, Widmar and Wolf (2019) found that large farms tend to prioritize financial management, while Ndemewah, Menges and Hiebl (2019) obtained results that indicated the reduced use of management accounting practices in small properties.

Additionally, one can draw a parallel between the size of the rural property, the life cycle of the business and the management practices adopted. For Miller and Friesen (1984, p.1161), “certain transitions are expected to occur as young and small companies grow, age and become more complex”, and the use of management systems and controls figures among the elements that allow them to be classified in different life stages. This was observed by Auzair and Langfield-Smith (2005), who identified that these different stages influence the design of management control systems of Australian organizations, and by Davila and Foster (2005) when analyzing US *startups*, in which they found that the use of management tools, such as operating budgets, becomes more present as companies expand.

In view of the above, the following hypothesis of property size is tested:

- **H8: a positive relationship exists between the size of the property and the adoption of financial management practices.**

## 2.8 The farmer's age and experience

The farmer's characteristics, such as age and experience in the activity, can be factors that influence the financial performance. It is assumed that producers with more years of experience in rural activity have a better understanding of the business, of factors that can negatively affect their finances, and, thus, tend to have more accurate management practices, improved over time according to their experiences. As they gain this experience over time, the farmer's age would also be a variable likely to influence the adoption of management practices, and other age-related characteristics could also generate this effect, such as the degree of responsibility assumed, consolidation in the market and greater financial stability.

The impact of age on rural management was observed by Wilson *et al.* (2009), who identified that financial performance is lower when producers are young and higher when they are older. Barros *et al.* (2015, p.190), in turn, found that “producers in a higher age range tend to commit more strongly to repaying their debts”. In other words, the probability of default decreases as age increases, a characteristic that may indicate that the producer’s age positively influences the use or quality of the financial management practices adopted. Simioni *et al.* (2015), however, did not identify that a relationship tends to exist between the farmer’s income and age, whereas the results by Brown, Daigneault and Dawson (2019) demonstrated a positive association between age and prioritization of financial management. The correlation these authors obtained was positive only up to the age of 58 years though, when it became negative. According to them, after this age, farmers tend to change their lifestyle, which reduces the priority granted thus far to financial management practices.

Regarding experience, Martínez-García *et al.* (2015) observed that younger farmers tend to have less experience, while Seramim and Rojo (2016) identified that the farmer’s length of experience affects the activity’s profitability and economic sustainability. Similar associations were obtained in other activity sectors (Mion & Opramolla, 2014; Matemilola, Bany-Ariffin & Azman-Saini, 2018). Thus, having experience tends to be associated with a higher probability of positive financial results (Eschker, Gold, & Lane, 2017). In the search for consistent and continuous profit generation, financial management practices, such as the control of costs and expenses, are relevant and necessary factors, also for managers to know the result.

Despite the results of these studies, using cluster analysis, Hey and Morozini (2018) analyzed the relationship between strategies and the production cycle of agricultural commodities and, among producers with up to 10 years of activity, 50% were allocated to the group that focused on financial management. Among the farmers with more than 11 years of experience, this percentage was 38%, indicating that producers with fewer years of experience focused more on financial management. Compensating the length of experience by a higher level of education among younger farmers would lead to better management performance, being a positive reason for the result found. In this case, the farmer’s length of experience would not be positively related to financial management actions. Considering the factors exposed, the following hypotheses are tested:

- **H9: the farmer’s age positively influences the adoption of financial management practices.**
- **H10: experience as a farmer positively influences the adoption of financial management practices.**

### 3. Methodological procedures

The sample analyzed in this study consisted of 113 farmers from the region of Triângulo Mineiro, in the state of Minas Gerais. To collect the data, the survey method was used. A questionnaire developed for this research was applied to the farmers who were willing to answer it and who agreed with the Free and Informed Consent Form (TCLE). In total, there were 116 participants. Three questionnaires were excluded which had not been fully answered. The research project, together with the questionnaire elaborated based on the references reviewed, received approval from the Ethics Committee for Research involving Human Beings (CEP) at the Federal University of Uberlândia in December 2018.

The application of the questionnaires took place between January and April 2019 and focused on rural unions, cattle auctions, agribusiness fair, agro-ecological product fairs and the public service sector of the Minas Gerais Institute of Agriculture (IMA). At the start of the approach, the possible participants were asked whether they were farmers. After getting their confirmation, they received the TCLE, which included clarifications on the study objective, and the research questionnaire.

The participants were informed that their participation was voluntary, that their participation involved neither gains nor resources and that their identity would not be revealed. The mean response time was fifteen minutes, and the authors of the study waited with the respondents until the latter had finished their participation.

The rural properties of the 113 participants are distributed across the cities of Araguari, Capinópolis, Cascalho Rico, Estrela do Sul, Ibiá, Indianópolis, Itarumã, Ituiutaba, Lagamar, Monte Alegre de Minas, Prata, Romaria, Tapuirama, Tupaciguara, Uberaba and Uberlândia. Besides these cities in the Triângulo Mineiro, some participants owned properties in these cities and other places, which is why this list included the cities of Buritizeiro, Lagoa dos Patos and Várzea do Sul, in the North of Minas Gerais, and Cachoeira Alta, in the South of the state of Goiás.

Multivariate regression analysis was applied to identify the possible factors associated with the farmers' adoption of financial management practices. The regression model with robust standard errors was chosen to consistently estimate the variances, even if some form of heteroscedasticity were present in the sample. The farmer's financial management (FM\_Performed) was the dependent variable in the study, obtained by the mean scores registered for items 7 to 12 of the research instrument and on which the influence of the explanatory variables presented in Table 1 was tested. It should be mentioned that the answers for each of the items in the variable FM\_Performed were obtained on a Likert scale ranging from 1 ("I strongly disagree") to 5 ("I strongly agree").



**Table 1**

Variables used in the study

Dependent variable: Financial management performed - FM_Performed (Obtained using a 5-point Likert scale)	
Corresponding items in the research instrument:	
Q7. Does the farmer perform financial management?	
Q8. Does the farmer perform cash/bank management?	
Q9. Does the farmer perform payment control?	
Q10. Does the farmer perform control of debt collections?	
Q11. Does the farmer perform debt budgeting/programming?	
Q12. Does the farmer perform the budgeting/programming of new investments?	
Explanatory variables	
Variable	Corresponding item in the research instrument:
Relevance of financial management - FM_Relevance (Obtained on a 5-point Likert scale)	Q1. Is financial management relevant for the farmer?
	Q2. Is cash/bank management relevant for the farmer?
	Q3. Is payment control relevant for the farmer?
	Q4. Is the control of debt collections relevant for the farmer?
	Q5. Is the budget/programming of expenses relevant for the farmer?
	Q6. Is the budget/programming of new investments relevant for the farmer?
Use of control tools	Q22. Are there financial and production control tools (e.g.: reports, spreadsheets...)?
Knowledge of costs	Q18. Does the farmer know the cost of the products (s)he sells?
Indebtedness	Q17. Does the farmer consider that (s)he had debts?
Client default	Q13. Does the clients' default represent a factor of difficulty for the farmer?
Training	Q19. Has already participated in a financial management training?
Education	Q23. Has a technical degree?
	Q24. Has an undergraduate degree?
	Q25. Has a specialization degree?
	Q26. Has a master's or doctoral degree?
Size (ln)	Q14. Size of the property (in hectares)
Age	Q15. Farmer's age (in years)
Experience	Q16. Length of experience as a farmer (in years)

Source: elaborated by the authors.

Like FM\_Performed, the explanatory variable referring to the farmer's perception of the relevance of financial management practices (FM\_Relevance) was obtained by the average answers to a group of questions, whose answers are based on the Likert scale from 1 ("I strongly disagree") to 5 ("I strongly agree"). The reliability of these constructs was verified and certified using Cronbach's alpha as, for both, the coefficient obtained was higher than the 0.70 recommended by the literature (Hair et al., 2009; Bagozi&Yi, 2011).

The explanatory variable on the farmer's perception about client default being a difficulty was also measured by the Likert scale, while the variables related to indebtedness, knowledge of production costs, use of control tools and participation in financial management training were generated from dichotomous questions, whose answers were "yes" or "no".

Each item related to the farmer's formal education level, in turn, received one point, so that the variable education represents the sum of these scores, that is, each farmer received a score from 0 to 4. Thus, a farmer who possessed the four levels of education presented (technical, higher, specialization and master/doctorate), received 4 points; a farmer who had only taken the technical course, for example, received 1 point; farmers without any of these levels of education did not receive any point. Thus, the model tested in this study was based on the following equation:

$$FM\_Performed = GF\_Realizada = \beta_0 + \beta_1 GF\_Relevância + \beta_2 Controles + \beta_3 Custos + \beta_4 Endiv + \beta_5 Inadim + \beta_6 Capacit + \beta_7 Escolar + \beta_8 Tam + \beta_9 Id + \beta_{10} Exper + \varepsilon$$

where:

- FM\_Performed = mean answers on the adoption of financial management practices (items Q7 until Q12), which can thus vary from 1 to 5;
- FM\_Relevance = mean answers on the perceived relevance of financial management practices (items Q1 until Q6), which can thus vary from 1 to 5;
- Controls = *dummy* for use of control tools, such as spreadsheets and reports, equal to 1 for farmers who answered "yes" and 0 in other cases;
- Costs = *dummy* for knowledge of production costs, equal to 1 for farmers who answered "yes" and 0 in other cases;
- Indebt = *dummy* for indebted farmers, equal to 1 for farmers who answered "yes" and 0 in other cases;
- Default = farmer's perception as to whether the clients' default is a difficulty, answered on a Likert scale from 1 to 5;
- Training = *dummy* for participation in financial management training courses, equal to 1 for farmers who answered "yes" and 0 for the other cases;
- Educ = sum of answers to the four questions on the levels of education. For each question, farmers who answered "yes" receive score 1 and the others 0;
- Siz = natural logarithm of the size of the rural property in hectares;
- Ag = farmer's age in years;
- Exper = farmer's experience in years;
- $\beta$  = regression coefficient of each variable;
- $\varepsilon$  = error term of the regression.

Table 2 below displays the descriptive statistics of the study variables. Panel A summarizes the information related to the scalar variables, while Panel B contains the information of the dichotomous variables:

**Table 2**  
Descriptive statistics of the study variables

<i>Panel A</i>					
Scalar Variables	n	Mean	Stand. Dev.	Min.	Max.
FM-Performed	113	3.941	0.797	1.667	5
FM-Relevance	113	4.661	0.427	3.167	5
Size (hectares)	113	244.92	337.9	3	1700
Size (Ln)	113	4.607	1.490	1.099	7.438
Age (years)	113	52.575	15.24	21	85
Experience (years)	113	25.717	16.17	2	77
Education	113	0.912	1.023	0	4
Default	113	4.363	1.009	1	5
<i>Panel B</i>					
Dichotomous Variables	n	Yes	No		
Has Contr. Tools?	113	54.87%	45.13%		
Knowl. Production Cost?	113	79.65%	20.35%		
Financ. Manag. Training?	113	42.48%	57.52%		
Indebted?	113	13.27%	86.73%		

Source: research results.

On a scale from 1 to 5, the mean relevance of financial management was 4.661, demonstrating that, in general, the farmers perceive that it is important for the activity. Despite this, and considering the same scale, the mean score for the adoption of financial management practices was 3.941, indicating that the farmers perceive some practices as relevant, but do not adopt them or perform them precariously.

The sample components' profile was diverse and ranged from young farmers with few years of experience to eighty-year-old farmers who had been farming for decades, which can be verified based on the mean and median age (52.58 and 53 years, respectively) and the experience as a farmer (25.71 and 20 years, respectively). The average size of the properties was 245 hectares, with the median of 120 hectares. Regarding education, 27% of the participants hold a technical degree, 42% an undergraduate degree, 19% a specialization degree, and 4% an M.Sc. or Ph.D. On the other hand, approximately 45% of the respondents do not hold any of these levels of formal education.

The farmer's mean perception of whether client default is a difficulty, also measured on the Likert scale, corresponded to 4.363. In other words, most participants agreed that the clients' not paying their debts to the farmers represents a difficulty for the latter.

About 13% of the respondents considered themselves indebted. Among these, the average adoption to financial management practices was 3.72, lower than the average of 3.97 observed among farmers who did not consider themselves indebted. As for knowing the production costs, 79.65% of the farmers affirmed that they would know the costs incurred until the product is ready for sale. Despite this, only 54.87% reported using control tools such as reports and spreadsheets. Appendix A contains the correlation matrix between the study variables.

## 4. Results

To test which factors can influence the farmers' adoption of financial management practices. Multivariate regression with robust standard errors was applied, the results of which are displayed in Table 3:

**Table 3**  
Multivariate regression results

Variables	Coef.	Rob. Standard Error	t	signif.
FM_Relevance	0.493	0.158	3.12	0.002 ***
Control Tools	0.139	0.133	1.04	0.300
Knowledge Production Costs	0.525	0.192	2.73	0.007 ***
Indebtedness	-0.206	0.171	-1.21	0.229
Default	0.048	0.068	0.71	0.479
Training in Financial Management	0.387	0.141	2.74	0.007 ***
Education	0.015	0.078	0.20	0.844
Size (Ln)	0.047	0.040	1.17	0.246
Age (years)	0.013	0.005	2.44	0.016 **
Experience (years)	-0.004	0.005	-0.80	0.423
Constant	-0.028	0.793	-0.04	0.972

number of observations: 113  
 r-squared: 36.46%  
 adjusted r-squared: 30.23%  
 VIF (mean): 1.36                      VIF (maximum): 1.77

**Notes:** \* $p < 0.10$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Source: Research results.

The mean coefficient related to the variance inflation factor (VIF) was 1.36, indicating the absence of multicollinearity between the variables. The adjusted *r-squared* demonstrated that the proposed model explains 30.23% of the variance observed in the farmer's financial management. Considering the significance observed, the results of the regression showed evidence that the farmer's age, knowledge about the production costs, participation in training and perceived relevance of financial management influence the effective adoption of associated practices positively.

Before starting the discussion of the hypotheses, an additional analysis was carried out, in view of the positive, moderate, and significant correlation between the variables age and experience. Although the VIF statistic suggested the absence of multicollinearity, the correlation matrix (Appendix A) suggests that the variables age and experience are moderately correlated. Thus, the quantitative model was estimated again, alternating the variables age and experience. The results are available in Appendix B, and, in general, are equivalent to those set forth in Table 3 in terms of sign and level of statistical significance for the other variables in the model (except for the variable Financial Management Training, which was significant at 1% in the general model and in the model without the age variable, and became significant at 5% in the model without the experience variable).

Based on the results obtained, hypothesis H1 that the farmer's perception on the relevance of financial management influences the adoption of associated practices was not rejected. This relationship corroborates the statement by Nyanga et al. (2011) that perception is reflected in behavior and, moreover, is in line with previous studies that reported the association between perception and behavior (Robinson, Taylor, Brice, 2016; Khan, Tan, Chong, 2017). In this sense, the importance of factors that can influence the farmer's perception regarding financial management is observed, as the results indicated the association between this perception and the actual adoption of related practices.

Knowledge about production costs is another variable that permits identifying farmers who adopt financial management practices, as hypothesis H3 was significant, which states that knowing about these costs positively affects the management practices. Nevertheless, the regression results related to this variable do not permit disagreeing from Machado and Nantes (2011), who stated that rural producers control costs precariously and find it difficult to use control tools, such as spreadsheets. This is because, as highlighted earlier, it was observed that there are producers who say that they know their costs, but do not use control tools. Moreover, hypothesis H2 was not statistically significant, regarding the positive association between the use of controls and the adoption of financial management practices.

The significance of hypothesis H3 can derive from the factor reported by Hey and Morozino (2018). According to these authors, farmers who focus their management on the financial aspect know their costs, because the main concern observed is to obtain sufficient profit to pay for work and property. Thus, cost control tends to figure among the practices commonly adopted among farmers who focus on financial management. As this study did not aim to identify the different management profiles of rural managers, it cannot be said that, in fact, the significance stems from this justification. The significance of hypothesis H3 and the non-significant effect of H2 may indicate, however, that farmers adopt only sufficient financial management practices to know their costs.

Hypothesis H6 on the positive impact of financial management training on the adoption of practices related to this management was not rejected either. This is in line with the results by Zanin et al. (2014), which indicated the positive influence of professional training on the adoption and execution of best management practices, and also aligns with the perception by Simioni, Binotto and Battiston (2015) on the positive association between training and management. Thus, the evidence shows that professional training can play a relevant role in the adoption or improvement of management practices by rural managers.

On the other hand, hypothesis H7 was not significant regarding the possible impact of education on the adoption of financial management practices. Hence, it cannot be affirmed that more years of formal education influence producers to accomplish financial management. The non-significance of this variable was also verified in the studies by Gloyet *et al.* (2002) and Simioni, Binotto and Battiston (2015), which associated it with the farmers' profitability. This result may be related to the observation by Wilson *et al.* (2009), who highlighted that farmers with an undergraduate or graduate degree may have other sources of income, so that property management becomes a secondary factor. In addition, the possibility of farmers' education including areas of knowledge that are not directly associated with the development of managerial skills is not excluding, thus not affecting their performance as a rural manager.

It was also identified that the farmers' age positively affects their financial management, so that hypothesis H9 is not rejected. This result supports the argument by Wilson *et al.* (2009) as to whether financial performance is superior among older producers - if the relationship indicated by Gloy and LaDue (2003) between financial management and performance is considered. For Barros *et al.* (2015), the increase in age reduces the likelihood of the producer defaulting, which may be an indication of the adoption of best management practices. Based on the study by Brown *et al.* (2019), it was verified that the significance of this variable persisted when it was replaced by age squared, without affecting the result of the other variables, which indicates the consistency of the association between age and the farmer's financial management.

Although the literature provides evidence that experience affects performance and, therefore, management practices (Gloy&Ladue, 2003; Seramim& Rojo, 2016; Matemilola et al., 2018), hypothesis H10 was not significant, which refers to the positive impact of experience on financial management practices, as this variable was not statistically significant. Thus, the positive association of the farmers' age with their financial management practices does not seem to stem from experience, but from other factors. In addition to hypotheses H2, H7, and H10, the variables indebtedness (H4), default (H5), and size (H8) were not significant either. Hence, it cannot be affirmed that these factors affect the farmers' adoption of financial management practices. The lack of statistical significance of hypothesis H8 does not support the results obtained by Machado Filho *et al.*(2017) and Lai *et al.* (2019), which associated the size of the property with greater adherence to management practices. This may indicate that the small producers in the sample tend to engage in financial management acts or that large producers do not.

The non-significant effect of the variable H5 did not corroborate the claims by Castagnolo e Ferro (2014), Duan et al. (2018) and Gabbianelli (2018) regarding the benefits that the information generated by financial management can provide to reduce the risk of client default. As most producers agreed that clients' default represents a difficulty, the non-significance of this variable may indicate that they are unaware of the advantages that effective financial management can offer in relation to this problem. Another possible justification is the reduction of the risk of default when selling production indirectly, through cooperatives for example, a situation in which, as a result of a more effective guarantee of receipt, this variable would not generate reflections in management.

The results of this study also differed from those of Camargos et al. (2010) and Barros et al. (2015), which argued that a relationship exists between the defaulting farmer and financial management. Thus, it could not be affirmed that indebted farmers perceive that financial management can reduce the risks of default.

## 5. Robustness tests

To check the robustness of the model and the results found, the tests were repeated, making some adjustments. To support the argument presented in the analysis of the results that the significance of the *Age* variable does not seem to derive from the years of experience in rural activities, initially, using multiplication of *dummies*, the effect of a possible interaction between these variables was tested, with score 1 for farmers with above-average age and years of experience and 0 for farmers below the average. In the multivariate regression, the effect of this interaction was not significant, which indicates a non-association between the interaction of the responses of older and more experienced producers with the dependent variable, which supports the interpretation in the analysis of the results.

As the measurement of the variables *GF\_Performed* and *GF\_Relevance* was based on the mean of their respective items, the choice was made to also replicate the regression, changing the way of obtaining these variables, *ceteris paribus*, replacing the mean of the answers with factor loadings. This factor analysis procedure is possible, considering that both variables (*GF\_Performed* and *GF\_Relevance*) were obtained from a set of six questions each. For both variables, the first factor recorded loadings superior to the second factor in relation to most items. Hence, the first factor of each analysis was selected and the variables *GF\_Performed* and *GF\_Relevance* were measured in this new round of analyses through the *scores* of the factor analysis.

The results indicated that the *r squared* of the new model decreased to 24.47%, pointing out that this model explains the variation observed in the dependent variable less than the original version. The variables corresponding to the knowledge of production costs and the perception about the relevance of financial management remained significant, but at 5%. The *Age* variable, in turn, was no longer significant, with a significance level bordering on 10%. In comparison with the originally proposed model, there was no change in the sign of the variable, and no new variable gained significance after these changes.

## 6. Final considerations

Agribusiness in Brazil is relevant both economically and socially and, as demonstrated in previous studies (Medeiros et al., 2012; Kruger et al., 2014), in many cases, the farmers' management is precarious or even non-existent, which can compromise their performance and, therefore, generate negative impacts for society and the economy. Therefore, the main contribution of this study, was the understanding of characteristics that can influence farmers to develop financial management in their properties, which, in turn, can contribute to the development of actions that aim to clarify or train the rural managers to deal with bottlenecks that make management practice unfeasible.

The main results of the study indicated that training farmers in financial management aspects can be a key element for them to adopt these practices. Simioni, Binotto and Battiston (2015) and Nakano *et al.* (2018) highlighted the relevance of developing professional qualification measures for the farmers and this study contributed by demonstrating that these actions aimed at professional improvement tend to offer practical returns.

Age was also shown as a characteristic that is associated with the adoption of financial management practices, and it is suggested in this study that, similar to what Brown *et al.* (2019) indicated, this relationship stems from the farmer's stage or lifestyle. In an additional robustness analysis, the age variable loses significance, which indicates that its effect may be stronger for certain types of activities related to financial management.

The significance found for hypothesis H3 indicated that farmers are concerned with carrying out management practices necessary to know their production costs. Due to the points observed and highlighted in the descriptive statistics and in the hypothesis H2, it was assumed that, despite the knowledge about the production costs, they are not necessarily monitored with formal controls. Finally, the farmers' perception of the relevance of financial management practices is another factor that influences financial management. This information is relevant, as it demonstrates that family members, rural unions and public authorities, among other possible influences of farmers' behavior, can indirectly help them to adopt managerial practices.

The identification of these characteristics associated with farmers from the Triângulo Mineiro region can contribute to the development of public actions or policies aimed at the sector. Initiatives in this sense can be enhanced when knowing regional aspects, so that they are adapted to the particularities of farmers in the region, in addition to allowing comparisons with other localities, which can support the development of integrated strategies.

Regarding the limitations of the study, a convenience sample was used. Thus, the results of the research are not necessarily generalizable. Similarly, the delimitation of the sample to the Triângulo Mineiro region provides useful information about farmers in the region, but does not permit extending the results to other locations. Nevertheless, the informational relevance of comparing the results obtained here to those obtained for other regions of the country is highlighted, and this is a suggestion for future studies. As the choice was made to generate a dependent variable based on the farmers' perception of their practices, it is relevant to seek other means or new scales to measure the financial management actions practiced, especially because some changes occurred in the results when the financial management variables were obtained using factor analysis. Therefore, it is suggested that future studies propose new ways of obtaining this variable in order to compare the results found here.

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## Appendix A. Correlation Matrix between the Study Variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<b>FM_Performed</b> (1)	1,000										
<b>FM_Relevance</b> (2)	0,363	1,000									
<b>Size (Ln)</b> (3)	0,177	0,055	1,000								
<b>Age (years)</b> (4)	0,051	-0,214	0,073	1,000							
<b>Experience (years)</b> (5)	-0,102	-0,282	0,058	0,591	1,000						
<b>Education</b> (6)	0,256	0,234	0,247	-0,227	-0,182	1,000					
<b>Default</b> (7)	0,080	0,078	-0,138	-0,152	-0,114	0,023	1,000				
<b>Has Manag. Contr.?</b> (8)	0,347	0,301	0,187	-0,221	-0,237	0,358	0,062	1,000			
<b>Knowl. Production Cost?</b> (9)	0,392	0,157	0,171	-0,077	-0,148	0,194	0,073	0,381	1,000		
<b>Financ. Manag. Training?</b> (10)	0,331	0,223	0,063	-0,223	-0,069	0,479	0,117	0,348	0,123	1,000	
<b>Indebted</b> (11)	-0,081	0,057	0,110	0,009	0,162	0,034	0,118	-0,065	-0,061	0,033	1,000

Notes: the upper part of each line shows Pearson's correlation coefficient between the variables; the lower part indicates the level of significance.

## Appendix B. Additional analysis about the effect of the age and experience variables

Variables	Complete Model		Model w/ Exper		Model w/ Age	
	Coef.	signif.	Coef.	signif.	Coef.	signif.
<b>FM_Relevance</b>	0,493	0,002 ***	0,515	0,002 ***	0,495	0,003 ***
<b>Control Tools</b>	0,139	0,300	0,147	0,262	0,119	0,380
<b>Knowledge Production Costs</b>	0,525	0,007 ***	0,533	0,006 ***	0,545	0,005 ***
<b>Indebtedness</b>	-0,206	0,229	-0,237	0,157	-0,257	0,168
<b>Default</b>	0,048	0,479	0,053	0,421	0,044	0,502
<b>Financial Management Training</b>	0,387	0,007 ***	0,368	0,009 ***	0,329	0,029 **
<b>Education</b>	0,015	0,844	0,020	0,796	0,004	0,963
<b>Size (Ln)</b>	0,047	0,246	0,046	0,258	0,056	0,180
<b>Age (years)</b>	0,013	0,016 **	0,011	0,014 **		
<b>Experience (years)</b>	-0,004	0,423				
<b>Constant</b>	-0,028	0,972	-0,135	0,867	0,487	0,547
<b>number of observations</b>	113		113		113	
<b>r-squared</b>	36,46%		36,09%		32,55%	
<b>adjusted r-squared</b>	30,23%		30,51%		26,66%	

Notes: \*p<0.10; \*\*p<0.05; \*\*\*p<0.01.

Source: Research results.

# Relationship between Cynicism and Expected Cheating in Academic and Professional Life: A Study involving *Lato Sensu* Graduate Students in Accounting

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## Abstract

**Objective:** To analyze the relationship between cynicism and the expectation that cheating will be necessary in the academic and professional life of *lato sensu* graduate students in accounting.

**Method:** Electronic and on-site questionnaires were used, with the participation of 92 students from two higher education institutions in the South of Brazil. The questionnaire was divided into three parts: (i) sociodemographic information of the participant; (ii) questions to measure the construct of cynicism, measured in two ways and called CIN1 and CIN2; and (iii) questions about the behavior and expectation that cheating will be necessary in the participants' academic and professional life.

**Results:** The initial tests indicated that the participants' level of cynicism is similar when analyzed by gender, area in which they work and academic background. The binary logistic regression models indicated that there is a positive relationship between cynicism and the expectation that cheating will be necessary, in academic and in professional life.

**Contribution:** This study contributes to the discussion, which is still scarce, on the trait of cynicism in the Brazilian accounting context; it provides evidence that a positive relationship exists between cynicism in academic life, but also in professional life; and it alerts to individual cynicism for the adoption of policies and codes of conduct in order to reduce cheating as a result of cynicism.

**Key words:** Cynicism; Cheating; Academic and professional life; Personality; Accounting.

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## 1. Introduction

Case reports of financial fraud that probably involves an accountant are not rare in the media. Therefore, behavioral elements of business professionals have stood out on the agenda of accounting research in Brazil. Studies focusing on how personality traits affect the behavior and decision-making of managers, accountants and students are particularly noted. For example, while Avelino, Lima, Cunha e Colauto (2017) aimed to examine the relationship between the trait of non-pathological narcissism and the perception of dishonesty of accounting students, D'Souza e Lima (2019) aimed to understand the relationship between Accounting students' cultural values and the non-pathological personality traits that make up the Dark Triad (Machiavellianism, narcissism, and psychopathy). Thus, the field of behavioral accounting, more specifically focused on the personality of individuals, gained prominence, mainly because the interdisciplinarity between accounting and psychology is relatively recent.

Evidence of this is found in Thaler (2019). In his book *Misbehaving*, it is indicated that there was no postgraduate course in behavioral economics in 1992, at least to the best of his knowledge. So, the first course was created by the Behavioral Economics Roundtable<sup>i</sup>, which Thaler (2019) was part of. Therefore, it is reasonable to assume that behavioral accounting does not exist either, particularly in Brazil. A recently created area of research has fertile ground for further exploration. Personality traits were inserted in this branch, which can be investigated to better understand accounting professionals' behavior (Wheeler, 2001; Wheeler, Jessup, & Martinez, 2002), as well as that of other professionals involved in the business area.

One of the personality traits still little explored and that can contribute to this research area is cynicism. First, it should be highlighted that there are differences between contemporary cynicism and ancient cynicism. In this research, contemporary cynicism is studied. For the sake of brevity and focus, ancient cynicism will not be addressed. Background literature has provided different definitions and types for the study of this personality trait, as its conception depends on the area of knowledge, context, and historical moment. Therefore, in this study, cynicism is defined as a general belief about human nature that individuals are unreliable (Chiaburu, Peng, Oh, Banks, & Lomeli, 2013; Costa, Zonderman, McCrae, & Williams, 1986). Consequently, individuals with a strong trait of cynicism are those who see other people as dishonest and distrust them (Bernardi & Adamaitis, 2006; Cook & Medley, 1954). Due to the way cynics perceive other people, the cynicism of managers, accountants, and business professionals, in general, entails implications for their behavior and decisions, particularly in what can be broadly considered as cheating conduct. There is evidence that business students report and are more likely to cheat than those in other areas of knowledge (McCabe, 2005; McCabe & Trevino, 1995). In addition, business students have stated that immoral behaviors are dominant in the business world and, in order to advance their professional careers, they will need to cheat somehow (Lawson, 2004). In this sense, it is relevant to understand how the strong sense of dishonesty and distrust, characteristic of cynicism, is related to cheating behaviors<sup>ii</sup>. Thus, the objective of this study is to analyze the relationship between cynicism and the expectation that cheating will be necessary in the academic and professional life of *lato sensu* graduate students in accounting.



The expectation that cheating will be necessary of individuals with more intense traits of cynicism can help to anticipate some of their unwanted behaviors and decisions, contributing to better human resource management within the companies. The identification of employees' cynical personality through academic or clinical instruments also helps to ascertain the human resources' level of cynicism. Thus, the company can take action and adopt policies and codes of conduct that diminish the feeling of distrust and dishonesty in relation to its image and among its employees. The construct of cynicism investigated in this study is non-pathological, although the instruments used for its measurement are part of the medical and psychological literature. Therefore, the clinical diagnosis of cynicism as a pathology goes beyond the scope of this study, which is its mere analysis for academic purposes.

This research contributes to the background literature by analyzing the possible relationship between cynicism and the expectation that cheating will be necessary in the academic and professional life of *lato sensu* graduate students in accounting at two higher education institutions in the South of Brazil. This audience was chosen because it is concurrently acting in the professional and academic areas. In addition, as will be discussed in Section 2, the study contributes by reporting results based on two proxies for cynicism. The need to use two measures for cynicism is also discussed in Section 2 and its implications are discussed in the final considerations section.

Besides this introductory section, the article is organized as follows: Section 2 presents the literature review and the development of hypotheses. Section 3 explains the methodological procedures used in the development of this study. Section 4 reports and discusses the results and Section 5 describes the conclusions, implications, limitations and recommendations for future research.

## 2. Literature review and hypotheses

### 2.1 Cynicism and cheating

Researchers have defined the trait of cynicism as a general belief regarding the human nature that other individuals are not reliable (Bernardi & LaCross, 2004; Chiaburu et al., 2013; Costa et al., 1986). Similarly, cynicism can also be considered as a moral dimension that involves stronger levels of distrust and hostility towards other people's motives and actions (Adorno, Frenkel-Crunswik, Levinson, & Sanford, 1950; Turner & Valentine, 2001).

The cynicism of managers, accountants, and other business professionals entails serious consequences for their productivity and form of behavior (Andersson & Bateman, 1997; James, Miles, & Mullins, 2011), as well as for their health, as there is evidence that cynicism is related to the Burnout syndrome (Viljoen & Claassen, 2017) and other health problems (Stavrova & Ehlebracht, 2018; Why & Johnston, 2008). For example, a head of the accounting department with a stronger cynical personality can often be suspicious that his or her team is not performing the designated jobs as qualitatively as wanted and, therefore, (s)he ends up doing his or her work plus that of his or her team, burdening and wearing him out. Likewise, cynical employees are inclined to believe that the company's management will take advantage of their hard work (Kanter & Mirvis, 1989) and that their contribution to the company will not be acknowledged (James et al., 2011). In addition, employees with a strong cynical personality can take positions contrary to the company's actions and publicly mock its initiatives (Serrano Archimi, Reynaud, Yasin, & Bhatti, 2018). Therefore, excessive cynicism – or exaggerated distrust of something or someone – can affect the organizational climate and cooperation between employees, making it essential to regain the employees' trust (Serrano Archimi et al., 2018). Studies also indicate that a negative relationship exists between cynicism and job satisfaction (Kökalan, 2019; Leung, Ip, & Leung, 2010). The greater the sense of dishonesty and mistrust, the lesser the satisfaction in the professional environment.

As they do not trust other individuals, cynics may exhibit individualistic behaviors. James et al. (2011) report that “individuals who are highly cynical are not naturally prone to engage in voluntary helping behaviors” (p.168). Thus, cynical professionals are more inclined to prioritize their personal interests over those of the company (Kökalan, 2019), or the public interest. Cynics are willing to benefit at the expense of others. For this reason, ethical competence has been considered relevant for business professionals, and more specifically for accountants (Lawson et al., 2015).

From a comprehensive perspective, studies suggest that cynicism is the source of reduced economic growth and individuals’ civic engagement, being equally responsible for granting the opportunity to commit crimes (Andersson & Bateman, 1997; Stavrova & Ehlebracht, 2018). Based on this reasoning, the more pronounced the cynicism of business professionals, the greater the propensity to cheat. Particularly in Accounting, research has pointed out that cynicism is positively correlated with cheating. In this sense, if the cynicism of business professionals is more pronounced, they are more likely to cheat in the work environment.

Particularly in the Accounting area, research shows that there is a positive relationship between cynicism and cheating behavior (Ameen, Guffey, & McMillan, 1996a; Bernardi & Adamaitis, 2006; Bernardi & LaCross, 2004; Salter, Guffey, & McMillan, 2001), although those studies have been developed with students and were focused on cheating in the academic environment. Adding to this literature, this study seeks to focus on the relationship between cynicism and cheating in the research participants’ professional life.

It is relevant to emphasize that cynicism at *reasonable levels* is important for individuals, so that they can act cynically according to the context in which distrust arises. For example, Figure 1 represents an advertisement taken from a website in which it is indicated that the user is the 999,999th visitor of a particular website and that he has been selected as a possible winner of a prize. In general, this type of advertising on websites has a link that contains viruses or redirects the user to other pages that are not related to the promised prize. Therefore, if the user is excessively innocent and/or has little knowledge of internet fraud, (s)he may be attracted by this type of misleading advertising and end up suffering undesirable consequences. Therefore, as Tsay, Shu and Bazerman (2011) argue, the opposite of cynicism is innocence.



**Figure 1.** Image of an advertisement on an internet page.

Source: <https://www.tecmundo.com.br/phishing/1680-dicas-para-identificar-janelas-fraudulentas-nas-paginas-da-web.htm>

Cynicism at reasonable levels tends to be healthy and provide protection to individuals. Eventually, people who repeatedly experience cheating situations tend to become (more) cynical. For example, a person who is betrayed in a love relationship becomes more cynical about the motives of the partner's actions. Thus, cynicism prevents the person from continuing to make the mistake of trusting the partner. In the business context, the same occurs with companies and colleagues. For example, companies that present financial fraud or compete unfairly with their competitors are more likely to be watched with distrust by society, and may lose essential economic transactions with customers, suppliers and other related parties. Therefore, cynicism can be interpreted as a psychological defense mechanism (Horney, 1992) by the victims of cheating.

Based on this debate, it is observed that excessive cynicism can provoke a lack of cooperation and commitment and prioritization of private over public interests, even if cheating is needed. This overlapping of private and public interests (company or society) is a motive for many crimes committed in the financial and non-financial world. On the other hand, cynicism, at reasonable levels, can represent a mechanism for preventing and protecting potential targets of cheating. Despite this, the concept adopted in this study is of high levels of cynicism, in which individuals generally believe that the human nature of third parties is unreliable (Bernardi & LaCross, 2004; Chiaburu et al., 2013; Costa et al., 1986). In addition, it is emphasized that there is evidence that cynicism is positively related to cheating (Ameen et al., 1996a; Bernardi & LaCross, 2004).

## 2.2 Related research

Little empirical exploration has been done thus far concerning the point at which accounting, cynicism and cheating meet. In the Brazilian accounting literature consulted<sup>iii</sup>, studies were found that only slightly approach cynicism, as being, for example, one of the aspects of Machiavellianism (D'Souza & Lima, 2019). Similarly, relevant international accounting journals<sup>iv</sup> have been consulted, in which there are studies that subtly cite cynicism, whether as a subconstruct or just as a word, and not as a research focus (ex: Bowen, Rajgopal, & Venkatachalam, 2014; Klein & Speckbacher, 2019; Majors, 2016). This study differs by focusing particularly on the construct of cynicism, using specific academic instruments for its measurement.

In addition to earlier research that investigated cynicism in a peripheral way, in the international accounting literature, empirical studies could be detected that actually discuss cynicism as one of its main topics. These studies are described next and, at the end, it is argued how this study contributes to the literature on accounting and cynicism.

Ameen et al. (1996a) studied the academic dishonesty of accounting students, as well as the influence of environmental factors and the propensity to cheat. One of these factors was cynicism, which was measured by the three questions of Sierles et al. (1980). Specifically concerning the results of the relationship between cynicism and the propensity to cheat, a lower level of cynicism was found in non-cheating students. The findings of the binary logistic regression also supported a positive correlation between cynicism and cheating. The results concerning the construct of cynicism should be observed with caution though, as the Cronbach's alpha found for this construct was 0.554, suggesting that there is fragile internal consistency.

Ameen, Guffey and McMillan (1996b) investigated the relationship between gender and the willingness to tolerate immoral behavior in a sample of 285 accounting students from four major public institutions in the United States. The results indicated that male students tend to be more tolerant of cheating than female students. With regard to cynicism, measured by the three questions of Sierles et al. (1980), the test of means showed that male students have higher levels of cynicism than female students.

Salter et al. (2001) investigated the determinants of cheating based on a sample of 370 students enrolled in upper-level accounting courses at public universities in the United States and the United Kingdom. The authors also used the questions of Sierles et al. (1980) to measure cynicism. After the statistical analyses, a positive relationship between cynicism and cheating was found for students from the United Kingdom, but this relationship was not established when students from the United States were analyzed. One potential explanation for this result is that there were more men in the UK student sample, who tend to be more tolerant of cheating. This finding also suggests that cynicism may vary according to the country culture.

Bernardi and LaCross (2004) evaluated the effects of the social desirability response bias (SDRB) in the model built by Salter et al. (2001), as the authors believed that the SDRB contaminated the variables, including cynicism, which were used in previous research that modeled cheating. Thus, data were collected from 174 students in the business area and particularly cynicism was measured through the questions of Sierles et al. (1980). Regarding the results for the cynicism variable, a negative relationship was observed between cynicism and SDRB. This result was as expected, as students' cynical responses are not seen as socially desired.

Bernardi and Adamaitis (2006), in a similar study, examined the effects of SDRB on cheating behavior, controlling for a series of variables, including cynicism (also measured based on the three questions of Sierles et al. (1980)). Data were collected from 290 Australian, Chinese, Irish, and Japanese students, in addition to the 174 students of the research by (Bernardi & LaCross, 2004). The results indicated that students with strong traits of cynicism are more likely to report cheating than students with a subtler cynical personality. In addition, a negative relationship was found for cynicism and VRDS, similar to (Bernardi & LaCross, 2004).

Based on this literature review, there is evidence of a positive relationship between cynicism and cheating in the students' academic life. Furthermore, the studies observed in this literature review exclusively used the three questions of Sierles et al. (1980) to measure cynicism. Ameen et al. (1996a) found fragile evidence that this form of measurement is appropriate. Therefore, the use of a second proxy is justified to evaluate cynicism. This second proxy was selected based on the study by Greenglass and Julkunen (1989), as will be explained in Section 3. According to the theoretical discussion and empirical findings, the following hypotheses are formulated:

- **Hypothesis 1: Cynicism is positively related to the expectation that they will need to cheat in academic life.**
- **Hypothesis 2: Cynicism is positively related to the expectation that they will need to cheat in professional life.**

### 3. Method

#### 3.1 Context of the study

The research was conducted in two higher education institutions (HEIs) – one private and one public - located in the South of Brazil. Based on the objective of the study, questionnaires were applied to collect data on the respondent's profile, cynicism and cheating. At the private institution, the questionnaires were applied via the internet (Google Forms) in October 2019 and, at the public institution, they were applied on site in November and December 2019. All participants agreed to participate in the research under the conditions of the free and informed consent form, which provided a general description of the purpose and method, the secrecy in the use and reporting of the data, the form of participation, the risks and benefits and the researchers' contact data. The study included 92 students from four *lato sensu* graduate courses in the business area, being three specific accounting courses and one course in financial management, accounting and controllership. It is highlighted that not all students from the four courses participated in the research, as some were absent on the day of the class when the data was collected. The *lato sensu* graduate students were chosen because they are working and continue studying. Thus, it is more likely that they remember and potentially cheat in their academic and professional lives.

#### 3.2 Variables and models

Table 1 shows the details of the research variables. Following the order of the questionnaire, the respondents were first asked to complete their personal data, such as gender (SEX), age (IDD), type of work (TRB) and undergraduate academic education (FAC). Subsequently, the questions about cynicism were answered. Questions C1, C2, and C3 were translated freely from Sierles et al.(1980)<sup>v</sup> and used to constitute the first proxy (CIN1) by calculating the arithmetic mean of the answers to these questions, as stated in the column "measurement" of Table 1, following the original formulation by Sierles et al. (1980). The higher the coefficient of CIN1, the more cynical an individual is.

Questions C4, C5 and C6 refer to the three-item version of Cook-Medley's Cynical Mistrust Scale, obtained from Greenglass and Julkunen (1989)<sup>vi</sup>. The items were also freely translated and were used to form the second proxy of cynicism (CIN2), which represents the factor scores extracted from the main components factor analysis (FA) (regression method). To comply with the premises, Bartlett's sphericity test was performed, which indicated that the generated factor is appropriate ( $\chi^2 = 74.376$ ;  $p = 0.000$ ) (Fávero & Belfiore, 2017). Cronbach's alpha also showed that the level of internal consistency of the items is acceptable ( $\alpha = 0.7507$ )(Hair Jr., Black, Babin, & Anderson, 2009). Therefore, evidence was found that the FA is appropriate. Just like the first proxy of cynicism, higher values for CIN2 represent higher levels of individual cynicism. Finally, the questions on cheating were answered. The variables TRVA and TRVP indicate, respectively, whether the respondent has ever cheated in any way in his/her academic and professional life (yes or no). This form of measurement was used in the background literature (Ameen et al., 1996a; Bernardi & LaCross, 2004). And the variables EXVA and EXVP indicate, respectively, the student's expectation that it will be necessary to cheat, in some way, in academic and professional life in the future, with yes and no as the possible answers. These questions have also been used in earlier studies (Ameen et al., 1996a; Bernardi & Adamaitis, 2006; Salter et al., 2001).

Table 1  
Study variables

Acronym	Description	Measurement
SEX	Gender	1 = male; 0 = female.
IDD	Age	Years.
TRB	Work	1 = accounting area; 0 = not in the accounting area.
FAC	Academic education (undergraduate)	1 = accounting; 0 = not accounting.
C1	People who say they never cheated are hypocrites	1 to 5 points.
C2	Everyone steals, cheats or lies at least once in a lifetime	1 to 5 points.
C3	People need to cheat in this heavily competitive world	1 to 5 points.
CIN1	"Cynicism 1"	(C1 + C2 + C3) / 3.
C4	Most people internally do not like to make themselves available to help other people	1 to 5 points.
C5	Most people will use somewhat unfair means to make a profit or gain an advantage rather than losing them	1 to 5 points.
C6	I think most people would lie in order to gain an advantage	1 to 5 points.
CIN2	"Cynicism 2"	Factor score generated by Factor Analysis. <sup>(A)</sup>
TRVA	Have you cheated, in any way, in academic life?	1 = Yes; 0 = No.
TRVP	Have you cheated, in any way, in professional life?	1 = Yes; 0 = No.
EXVA	Do you expect that you will need to cheat, in any way, in academic life?	1 = Yes; 0 = No.
EXVP	Do you expect that you will need to cheat, in any way, in professional life?	1 = Yes; 0 = No.

First, the data were observed based on descriptive statistics on the respondents' profile, questions about cynicism and questions about cheating. Subsequently, Welch's t-tests were performed to check for potential differences in the level of cynicism between groups of distinct gender, work, and academic background. When the assumptions of normality and homogeneity of variance are violated in the t-test, the correction of Welch (1947) can still be used, which adjusts its formula to make the test feasible by compensating for the violation of the assumptions. In this analysis, the two proxies of cynicism (CIN1 and CIN2) were analyzed. For age, the correlation tests were performed.

Next, the relationship between cynicism and expectation that cheating will be necessary was analyzed through binomial logistic regression models, which are appropriate when the response variable is binary qualitative (Chatterjee & Simonoff, 2012; Fávero & Belfiore, 2017; Menard, 2002). The event in question is the positive expectation that cheating will be necessary, in some way, in academic (EXVA) or professional (EXVP) life in the future. Thus, the following models were developed:

- **Model 1A:**  $EXVA_i = 1/1 + e^{-(a + b_1.CIN1 + b_2.TRVA + b_3.TRVP + b_4.SEX + b_5.IDD + b_6.TRB + b_7.FAC)}$
- **Model 1B:**  $EXVA_i = 1/1 + e^{-(a + b_1.CIN2 + b_2.TRVA + b_3.TRVP + b_4.SEX + b_5.IDD + b_6.TRB + b_7.FAC)}$
- **Model 2A:**  $EXVP_i = 1/1 + e^{-(a + b_1.CIN1 + b_2.TRVA + b_3.TRVP + b_4.SEX + b_5.IDD + b_6.TRB + b_7.FAC)}$
- **Model 2B:**  $EXVP_i = 1/1 + e^{-(a + b_1.CIN1 + b_2.TRVA + b_3.TRVP + b_4.SEX + b_5.IDD + b_6.TRB + b_7.FAC)}$

The response variables are the expectations that cheating will be necessary in academic life (models 1A and 1B) and professional life (models 2A and 2B). The difference between the models is the proxy for cynicism. CIN1 and CIN2 are the proxies for cynicism. The questions for CIN1 were taken from Sierles et al. (1980) and those for CIN2 from Greenglass e Julkunen (1989). While CIN1 has already been used in previous studies in the accounting area (Ameen et al., 1996b, 1996a; Bernardi & LaCross, 2004; Salter et al., 2001), no accounting studies using CIN2 were found in the literature consulted. For further details about the variables, review Table 1.

## 4. Results

Table 2 shows the respondents' profile. The study sample includes mostly women (63.04%), people who work in accounting (52.17%) and graduates in Accountancy (79.35%). As the *lato sensu* graduate courses are in Accounting, a preponderance of the accounting area would be expected in terms of the participants' academic background as well as their area of work. Most students are female, which is consistent with the increasing female participation in the undergraduate accounting degree that has been occurring in recent years. In addition, the participants' mean age is 28.76 years, with a standard deviation (SD) of 6.15 years.

Table 2

### Participants' profile

Variable	Absolute Frequency	Relative Frequency
SEX - Male	34	36.96
SEX - Female	58	63.04
TRB - Accounting area	48	52.17
TRB - Not in the accounting area	44	47.83
FAC - Accounting	73	79.35
FAC - Not accounting	19	20.65

Next, Table 3 shows the descriptive statistics of the cynicism and cheating variables. Regarding cynicism, while the mean values of items C1 and C2 are 3.3043 and 3.6196 points, respectively, item C3 has an average value of 1.4565, below the intermediate level of the scale (3.0 points). This indicates that participants tended to agree more with C1 and C2 than with C3. The first proxy (CIN1) of cynicism had an average of 2.7935, also below 3.0, suggesting that, in general, the participants in the sample have a cynical personality that can be considered moderate. It is important to highlight that Cronbach's alpha was calculated for C1, C2 and C3, which resulted in 0.5719. This suggests that there is little internal consistency. This result is similar to that reported by Ameen et al. (1996a), who found an alpha of 0.544. Therefore, caution is needed in the analysis performed with the use of this proxy, as there is no strong evidence of one-dimensionality in the measurement of the construct.

With regard to items C4, C5 and C6, it is observed that C4 has an average of 2.9674 points, pointing out that the participants tended to agree less with this statement. On the other hand, the mean values for items C5 and C6 were 3.0326 and 3.1196 points, respectively, indicating greater agreement. The mean for CIN2 is 0.0000, indicating that, according to this proxy, participants have a moderate cynical personality, as the mean remains far from the minimum value (-1.9590) and the maximum value (2.3684). For CIN2, Cronbach's alpha is 0.7507. This indicates an acceptable level of internal consistency of the items that measure the same construct (Hair Jr. et al., 2009). Therefore, the analyses using this second proxy for cynicism (CIN2) are more reliable.

In relation to cheating, cross-tabulation analyses and chi2 tests were performed, as they are categorical variables. As for the variables EXVA and TRVA, 12 cases were verified in students who have already cheated and intend to cheat again in academic life. On the other hand, 59 students stated that they had not cheated in their earlier academic life and do not intend to cheat in the future. One potential explanation for these results is that participants tend to respond according to what society expects them to respond (SDRB), in which participants tend not to admit they will need to cheat. In addition, 11 students declared that they had not cheated in the past, but believe that they will need to cheat in the future. Ten other students indicated that they have already cheated, but do not believe that they will have to cheat in the future. The chi2 test for this cross-tabulation analysis indicated significance ( $p = 0.000$ ). This evidences that TRVA and EXVA are not randomly associated.

Concerning the variables TRVP and EXVP, their contingency table shows that 14 students admit having cheated in the past and that they feel the need to do so in the future in their professional lives. In contrast, there are 30 students who stated that they have not cheated in their professional lives in the past and will not need to do so in the future. Again, it is emphasized that the respondents are subject to SDRB. Also, only one student replied that he did not cheat in professional life, but believes that he will have to do so in the future. And finally, 46 students responded that they have cheated before, but do not expect to reproduce this behavior in the future. The chi2 test for this cross-tabulation was significant ( $p = 0.0014$ ). Thus, TRVP and EXVP are not randomly associated. A relevant association exists between their categories.

Table 3

**Descriptive statistics - Variables of cynicism and cheating**

Cynicism (N = 92)	Mean	Standard deviation	Minimum	Maximum
C1	3.3043	1.3965	1.0000	5.0000
C2	3.6196	1.3736	1.0000	5.0000
C3	1.4565	0.9307	1.0000	5.0000
CIN1	2.7935	0.9190	1.0000	5.0000
C4	2.9674	1.1526	1.0000	5.0000
C5	3.0326	1.1716	1.0000	5.0000
C6	3.1196	1.2996	1.0000	5.0000
CIN2	0.0000	1.0000	-1.9590	2.3684

Expectation that cheating and cheating in academic life will be necessary (N = 91)	TRVA		Chi2	P-value
	Yes	No		
EXVA	14	1	6,00	0,014
	46	30		

Expectation that cheating and cheating in professional life will be necessary (N = 92)	TRVP		Chi2	P-value
	Yes	No		
EXVP	12	10	13,46	0,000
	11	59		



Subsequently, Table 4 shows the mean values of CIN1 and CIN2 according to the research participants' gender (SEX), work (TRB), and academic background (FAC). Men have a stronger cynical personality than women, both for CIN1 and CIN2, when the descriptive analysis is considered. Nevertheless, Welch's t-test pointed out that this difference is not statistically significant, suggesting that the level of cynicism is similar between men and women in the study sample. This result differs from Ameen et al. (1996b), which found significantly higher levels of cynicism for male than for female students. One potential explanation is that, in general, the sample has moderate levels of the cynicism trait, as reported in the previous table.

When considering the area of work, the descriptive analysis showed that participants working in accounting have a stronger cynical personality than their colleagues in other areas, considering CIN1 as well as CIN2. Welch's t-test indicated that there is no statistically significant difference between the levels of cynicism of workers in accounting and other areas though. Therefore, there is no evidence that accounting professionals are more cynical than workers from other areas.

Regarding the academic background, CIN1 indicates that students who did not graduate in Accountancy (2.81) have slightly more intense cynical personality than those who graduated in Accountancy (2.79). Welch's t-tests indicated that there is no statistically significant difference. The same is true for CIN2, whose descriptive results suggest that students who graduated in Accounting (0.05) have higher levels of cynicism than those who graduated in other courses (-0.21), but this difference is not significant either. Overall, the two proxies of cynicism have shown to be reasonably consistent to date, as both indicated that the groups have statistically similar levels of cynicism.

Table 4

**Level of cynicism (CIN1 and CIN2) according to SEX, TRB and FAC**

Filter	Groups		Result
	Male	Female	
SEX			P-value (two-tailed)
CIN1	2.82	2.78	0.8141
CIN2	0.14	-0.08	0.3493
TRB	Accounting area	Not in the accounting area	P-value (two-tailed)
CIN1	2.82	2.77	0.7805
CIN2	0.15	-0.17	0.1245
FAC	Accounting	Not accounting	P-value (two-tailed)
CIN1	2.79	2.81	0.9448
CIN2	0.05	-0.21	0.2751

As for age, Pearson's and Spearman's correlation tests were applied, respectively. For the relationship between IDD and CIN1, coefficients of -0.0426 ( $p > 0.10$ ) and 0.0040 ( $p > 0.10$ ) were found. These results suggest that the first proxy of cynicism is not significantly correlated with age. For the relationship between IDD and CIN2, coefficients of -0.2851 ( $p < 0.01$ ) and -0.1951 ( $p < 0.10$ ) were found. These findings indicate that age is negatively associated with the second proxy of cynicism. Therefore, the lower the student's age, the higher the level of cynicism. This is the first result that distinguishes the proxies for cynicism (CIN1 and CIN2). In addition, for the Pearson's and Spearman's correlation between CIN1 and CIN2, coefficients of 0.4235 ( $p < 0.01$ ) and 0.4195 ( $p < 0.01$ ) were found, indicating that they are significantly related, although these coefficients cannot be considered high.

Next, the relationship between cynicism and expectation that cheating will be necessary was analyzed using binomial logistic regression models, as specified in Section 3. The results for the expectation that cheating will be necessary in academic life (Model 1) are reported in Table 5. The prob chi2 inferior to 0.05 points out that at least one of the explanatory variables is significant to explain the probability that the student expects that cheating will be necessary in academic life (EXVA). McFaden's pseudo R<sup>2</sup> can be used as a criterion to choose the best fit model when the models are compared (Fávero & Belfiore, 2017). The higher the pseudo R<sup>2</sup>, the better the fit of the model. In this case, model 1A has a pseudo R<sup>2</sup> of 0.2530, against 0.2877 for model 1B. The same interpretation can apply to the function of likelihood (log-likelihood). The higher, the better fit the model will be. In this case, it is verified that model 1B has a higher log-likelihood (LL = -27.71) and, therefore, is more suitable compared to model 1A (LL = -29.05).

In Model 1A, it is observed that cynicism is not a relevant factor to influence the expectation that cheating will be necessary in academic life ( $p > 0.10$ ). This result suggests that the cynical personality of the sample participants does not significantly affect their expectations that cheating will be necessary. This finding differs from the background literature (Ameen et al., 1996a; Bernardi & Adamaitis, 2006; Bernardi & LaCross, 2004; Salter et al., 2001), which found a positive correlation. The only significant factors were TRVP (coef. = 1.16;  $p < 0.10$ ) and FAC (coef. = -1.80;  $p < 0.05$ ). These results point out that students who have already cheated in professional life are more likely to cheat in academic life in the future and that accounting graduates are less inclined to expect that cheating will be necessary in their academic lives. The TRVA result of model 1A suggests that students who have already cheated do not necessarily feel the need to cheat in the future. This finding is counterintuitive, as those who practiced cheating in the past are more likely to commit cheating in the future.

Model 1B shows different results. Cynicism (CIN2) is positively correlated with the expectation that they will need to cheat in academic life (EXVA). This result is an indication that students with a more prominent cynical personality expect to have to cheat in their academic life in the future. This finding is consistent with previous studies (Ameen et al., 1996a; Bernardi & Adamaitis, 2006; Bernardi & LaCross, 2004; Salter et al., 2001) and supports hypothesis 1. In addition, students who have already cheated in their academic (coef. = 2.53;  $p < 0.10$ ) and professional lives (coef. = 1.39;  $p < 0.10$ ) are also positively related to the expectation that they will need to cheat. This indicates, for example, that professionals who have already cheated in the job market are more inclined to cheat in their academic life if they come to take a second degree course, graduate courses or other kinds of courses involving the teaching-learning process. Still in Model 1B, it is observed that, the higher the IDD (coef. = 0.12;  $p < 0.10$ ), the higher the expectation that they will need to cheat. Additionally, accounting students are less inclined to think they will need to cheat in their academic lives compared to students graduated in other areas of knowledge. This is a promising finding for accounting professionals and regulators. Finally, the models were also applied using the probit estimation method, with results similar to the logit model.

Table 5

**Results of the logistic regression models: EXVA**

EXVA	Model 1A		Model 1B	
	Coefficient	Standard error	Coefficient	Standard error
CIN1	0.44	0.46		
CIN2			0.76*	0.42
TRVA	2.19	1.40	2.53*	1.41
TRVP	1.16*	0.69	1.39*	0.71
SEX	0.51	0.68	0.13	0.73
IDD	0.09	0.07	0.12*	0.07
TRB	0.95	0.83	0.97	0.84
FAC	-1.80**	0.86	-2.31**	0.92
CONSTANT	-7.19	3.04	-6.84	3.02
N		90		90
prob chi2		0.0063		0.0022
Pseudo R <sup>2</sup>		0.2530		0.2877
Log likelihood (LL)		-29.05		-27.71

\*\*\*, \*\* and \* represent the level of significance at 1%, 5% and 10%, respectively.

The results on the expectation of the need to cheat in professional life (EXVP) are shown in Table 6. As observed, the prob chi2 are inferior to 0.05, indicating that at least one of the explanatory variables is significant. Model 2A has the highest R<sup>2</sup> and log likelihood, which suggests that the model fits the data better.

Based on the analysis of model 2A, the positive influence of CIN1 (coef. = 1.18;  $p < 0.05$ ) on EXVP was observed, supporting hypothesis 2. This finding points out that the stronger an individual's cynical personality, the more likely (s)he is to expect to have to cheat in professional life. This finding is also troubling, as accountants with high traces of cynicism may be cheating more intensely in the work environment. Previous studies also found a positive relationship between cynicism and expectation that they will need to cheat (Ameen et al., 1996a; Bernardi & Adamaitis, 2006; Salter et al., 2001). The variable TRVP was also relevant (coef. = 2.47;  $p < 0.01$ ) in relation to EXVP. This means that individuals who have already cheated expect to cheat again in their professional lives. Thus, the teachers need to alert the students to moral behavior when practicing the accounting profession. This point can and should be reinforced, especially in the disciplines of accounting ethics, an opportunity in which cases and situations of moral conflict which accountants are subject to should be discussed and what should be the most appropriate conduct. Also, the variable SEX (coef. = 1.42;  $p < 0.05$ ) obtained a positive relationship with EXVP. This result suggests that male students are more inclined to think they will need to cheat in their professional lives in the future. In a profession in which the majority are men (CFC, 2019), it becomes worrisome for the accounting profession to know that male individuals expect to cheat more than female ones.

Model 2B presented similar results to model 2A. The same variables were significant in relation to EXVP. Cynicism (coef. = 0.90;  $p < 0.05$ ), for example, obtained a positive relationship with the expectation that cheating will be necessary in professional life. Thus, individuals with higher levels of cynicism tend more strongly to expect that they will need to cheat in professional life compared to those with lower levels of cynicism. This finding supports hypothesis 2. Male students who have already cheated in professional life also presented positive coefficients. This evidence suggests that male students are more inclined to think they will need to cheat in their professional lives in the future. The results alert to potential cheating behaviors in the accounting work environment, as cynical male students who have already cheated think more intensely about cheating again than less cynical male students, female students and students who have not cheated. The latter may suffer the consequences of the former's cheating. Finally, it is emphasized that the models 2A and 2B were also estimated via probit and yielded results similar to the logit results.

Table 6

**Results of the logistic regression models: EXVP**

EXVP	Model 2A		Model 2B	
	Coefficient	Standard error	Coefficient	Standard error
CIN1	1.18**	0.49		
CIN2			0.90**	0.37
TRVA	-1.10	0.92	-0.64	0.86
TRVP	2.47***	0.76	2.61***	0.78
SEX	1.42**	0.67	1.17*	0.65
IDD	0.05	0.05	0.08	0.06
TRB	1.18	0.82	0.92	0.79
FAC	-0.72	0.85	-0.96	0.86
CONSTANT	-7.19	2.53	-4.62	2.11
N	90		90	
prob chi2	0.0001		0.0002	
Pseudo R <sup>2</sup>	0.3049		0.2956	
Log likelihood (LL)	-33.14		-33.58	

\*\*\*, \*\* and \* represent the level of significance at 1%, 5% and 10%, respectively.

Overall, the results of models 2A and 2B were similar. As verified, the expectation that they will need to cheat in professional life (EXVP) does not depend on the participants' age (IDD), work area (TRB), and academic background. No relevant difference was found between students who graduated in accounting or in other areas in terms of their expectations of cheating in the professional context. The same interpretation applies to the age and work area of the students in the sample when analyzed together with other variables in the models.

## 5. Final considerations

The objective of this study was to analyze the relationship between cynicism and the expectation that cheating will be necessary in the academic and professional life of *lato sensu* graduate students in accounting. In this sense, data were collected from 92 students from four graduate courses through a questionnaire applied electronically and on-site. For the data analysis, descriptive statistics, Welch's t-tests, and binary logistic regression models were conducted.

Descriptive statistics indicated that most students admitted to cheating in their academic life. The same was not found for working life though, in which the majority did not admit having cheated. This finding is intriguing, as the background literature suggests a positive relationship between cheating behavior in academic and professional life. One potential explanation for this result is that the students in the sample are relatively young (mean = 28.76 years) and, therefore, may have little professional experience since the end of the undergraduate course or have been exposed to few moral conflicts in the work environment. This finding still needs further investigation.

Regarding Welch's t-tests, no statistically significant difference was observed in the students' level of cynicism -considering the two proxies - when separated by gender, work area and academic background. In the binomial logistic regression, evidence was found that cynicism is positively related to the expectation that cheating will be necessary in academic and professional life. This evidence suggests that, the higher the individuals' trait of cynicism, the greater their expectation that cheating will be necessary in the future. Thus, hypotheses 1 and 2 find restricted support as, in Model 1A, cynicism was not significant to explain EXVA. Additionally, students who have cheated previously are more inclined to think that they will need to cheat again. This finding is consistent with Smyth e Davis (2003) and suggests that the habit of cheating can turn into a vicious circle in which its practitioners need to be detected and the punishments in the norms and codes of conduct need to be applied for the cheating cycle to be interrupted.

The results obtained entail reflections and implications for accounting education and, more broadly, for business students' education. First, teachers may want to identify students with a more obvious cynical personality, in order to adopt educational policies that restrict their cheating behavior. Secondly, no difference was observed in the level of cynicism of students when separated by gender, work, and academic background. Therefore, the students showed to have similar traits of cynicism. If the teacher gets to know the level of cynicism of the students in his/her class, (s)he can take measures according to elements of the student behavior that are related to this personality. Thirdly, evidence was obtained that students who have already cheated in their professional lives more strongly expect that they will need to cheat in the future. In other words, cheating generates cheating. Course coordinators and teachers need to be aware of this fact, in order to develop policies and rules that limit the students' cheating behavior. Fourth, the results can also assist in the selection of future professionals in the business area. Considering the positive relationship between cynicism and cheating, human resources managers may want to measure the level of cynical personality in order to reduce the likelihood of cheating behavior of their employees.

As a limitation of the research, it is highlighted that there are few studies on cynicism in the accounting area, especially in the Brazilian context. Therefore, the discussion of the results was restricted to the international literature. A second aspect is the proxy CIN1, for which strong evidence of internal consistency of its items was not obtained, as Cronbach's alpha did not reach an acceptable level. The result of Cronbach's alpha obtained by this investigation is similar to Ameen et al. (1996a). Therefore, cynicism may not be measured properly when considering the questions of Sierles et al. (1980). Therefore, caution is recommended in the interpretation of the results involving the proxy CIN1, especially those in which they differ from the proxy CIN2. In addition, evidence of fragility in the form of cynicism measurement through the questions of Sierles et al. (1980) can raise deeper questions on the results of previous research that used them.

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## End Notes

- <sup>i</sup> The graduate program in behavioral economics known as the *Behavioral Economics Roundtable* was originally called “*Russell Sage Foundation Summer Institutes in Behavioral Economics*”, informally known as the “Russell Sage holiday colony”. For further details, see Chapter 19 by Thaler (2019).
- <sup>ii</sup> The meaning of the term cheating is treated comprehensively in this study. That is, cheating can be any act in which injustice is perceptible as a function of treatments and applications of different rules or behaviors to achieve a certain end, with consequences in the criminal sphere or not.
- <sup>iii</sup> The Brazilian accounting journals consulted are available at: <http://anpcont.org.br/periodicos-de-contabilidade/> (Accessed on 03/19/2020). The keywords entered in the journal search engines were as follows: “cinismo”, “cínico” and “cínica”. Furthermore, the following words were inserted in English: “*cynicism*”, “*cynic*” and “*cynical*”. Specifically in the journal *Custos e @gronegóciosOnline*, there is no search engine. Therefore, the issues of this journal were consulted manually. The *Revista Contabilidade & Controladoria (RC&C)* at UFPR was unavailable on the day of the search. Therefore, a new attempt took place on 03/28/2020, when RC&C was available and the search revealed no studies on cynicism.
- <sup>iv</sup> The following international accounting journals were consulted: *The Accounting Review*, *Contemporary Accounting Research*, *Journal of Accounting Research*, *Journal of Accounting and Economics*, *European Accounting Review*, *Accounting Horizons*, *Journal of Accounting Education*, *Accounting Education*, *Issues in Accounting Education*, *Behavioral Accounting Research*, *Journal of Forensic Accounting Research*, *Journal of Information Systems*, *Journal of International Accounting Research*, *Journal of Management Accounting*, *Accounting in Europe*, *The Journal of the American Taxation Association*. The keywords entered in the journal search engines were: “cynicism”, “cynic” and “cynical”.
- <sup>v</sup> In English: “*People who say they have never cheated are hypocrites*” (C1); “*Everybody steals, cheats or lies at least once in his lifetime*” (C2); and “*People have to cheat in this ‘dog eat dog’ world*” (C3). (Sierles et al., 1980).
- <sup>vi</sup> In English: “*Most people inwardly dislike putting themselves out to help other people*” (C4); “*Most people will use somewhat unfair means to gain profit or an advantage rather than lose it*” (C5); and “*I think most people would lie in order to get ahead*” (C6). (Greenglass & Julkunen, 1989).

# Objectives and performance of interfirm cooperation: effects of cooperation management practices and transaction scope

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## Abstract

**Objective:** This study analyzes the effect of cooperation management practices and transaction scope on the relationship between the objectives of cooperation and the cooperation performance in enterprises of the textile industry.

**Method:** a survey was conducted in companies of the Brazilian textile industry, with the 93 managers who answered the research serving as respondents of the survey. To analyze the hypotheses the structural equations modeling technique was applied.

**Results:** The survey results show that the respondents rated the cooperation as strategically important. To achieve the desired objectives of the strategic alliance, however, the cooperation management practices and the transaction scope are aligned. The strategic relevance of the cooperation positively affected the cooperation performance, when associated with information sharing, interaction between the partners and activities developed between the cooperation partners.

**Contributions:** the study contributes to the literature and the practice of companies by associating constructs of cooperation focused on the strategy for competitiveness with the performance of interfirm cooperation. The results revealed that, the greater the interaction of the stakeholders, the information sharing and the activities developed in the interfirm cooperation, the greater the association between the objectives and the performance of the cooperation.

**Keywords:** Objectives of cooperation. Cooperation management practices. Transaction scope Interfirm cooperation performance.

## 1. Introduction

The Theory of Cooperation, deriving from social and economic perspectives, departs from the premise that all or almost all partners involved in the cooperation can reach the objectives (May & Doob, 1937). Organizations have increasingly adopted interfirm cooperation in recent decades as a strategy to obtain competitive advantages (Dekker, Sakaguchi & Kawai, 2013; Ding, Dekker & Groot, 2013; Anderson & Dekker, 2014; Dekker, 2016; Dekker, Ding & Groot, 2016). Cooperation occurs not only through the existence of an activity carried out jointly though, but through the dynamics of the interactions inserted in this environment (Das & Teng, 1998).

Several types of interfirm relationships are addressed in the literature, such as: supply chain (Mouritsen, Hansen & Hansen, 2001), outsourcing (Langfield-Smith & Smith, 2003), franchise (Wu, 2015), joint production agreement (Eiriz, 2001), *joint venture* (Groot & Merchant, 2000). Some companies outsource non-core activities, such as training and employee benefits, while others close cooperative agreements with partner organizations (Groot & Merchant, 2000). Interfirm relationships can permit the insertion of actions to enhance the learning process and incentives for process and product innovations in the context of the partner organizations (Dias, 2018).

Cooperation is relevant in the interfirm relationships (Das & Teng, 1998). Nevertheless, it requires partner organizations to be aligned with the defined collaborative strategy, which implies planning metrics to measure the extent to which this strategy is being achieved. Communication should serve as a support to disseminate a common vision and encourage partners to improve the relationships and the results of the cooperation. The partners' involvement permits reporting on difficulties and occasional disputes, besides sharing information and adapting the strategy to monitor the evolution of the organizations' conditions (Kaplan, Norton & Rugelsjoen, 2010).

The involvement of various organizational activities in the cooperation requires greater commitment of the partners to the alliance (Kalaignanam, Shankar & Varadarajan, 2007), in order to provide strategic benefits to the partner companies. In this perspective, Contractor and Lorange (1988) and Groot and Merchant (2000) investigated the strategic reasons for organizations to engage in inter-firm cooperation. Mahama (2006) investigated the importance of information sharing between partner companies. Dekker et al. (2013) analyzed the interaction between employees in the cooperation process.

Some studies have reported a high failure rate in interfirm cooperation due to the risks involved in these transactions (Lunnan & Haugland, 2008). Vertical networks of interfirm cooperation can cause small companies to perform intermediary activities without receiving appropriate benefits in the cooperation, resulting in superficial relationships between partner companies and the absence of coordinated control mechanisms (Dias, 2018). Different types of interfirm relationships can stimulate competition though, especially in more fragmented sectors, and few companies can achieve success without partnerships (Groot & Merchant, 2000).

For organizations to achieve their goals, the interests of the partners need to be aligned. In this perspective, Dekker et al. (2016) examined the influence of the cooperation objectives on management practices and the performance of interfirm relationships from the perspective of financial management professionals registered at the *Controllers Institute* of the Netherlands. Based on the research results, the authors suggest that future studies analyze how the alignment between the objectives of cooperation, the transaction scope and the cooperation practices affect the organizational performance.

Given the above, the research question is: **How do the cooperation management practices and the transaction scope affect the relationship between the objectives of cooperation and the performance of interfirm cooperation?** Interfirm operations can be found in several industries, but some have a stronger orientation to the establishment of alliances due to the nature of the activities they develop, like in the case of the textile industry, target of this study, whose production chain covers the production of yarns and filaments, manufactured textiles, stamping (La Rovere, Hasenclever & Melo, 2001) and comprises the segments of spinning, weaving and finishing (Dias, 2018).

Gibbon (2002) points out that, since the 1990s, industrial textile companies have been undergoing transformations and most of them have sought alternatives such as technical innovations, quality improvements and strategic partnerships (supply chain, outsourcing, franchises, joint production agreements and *joint ventures*) to expand information exchanges and increase efficiency. Hence, the general objective of this study is to analyze the effect of cooperation management practices and transaction scope on the relationship between the objectives of cooperation and the cooperation performance in enterprises from the textile industry.

Theoretical-empirical studies have focused on these relationships and their impacts on interfirm relationships (Dekker et al., 2016). Ding et al. (2013) observed that, when there is a higher risk in the context of interfirm relationships, companies become more careful in the selection of their partners. Dekker et al. (2016) found that the characteristics of transactions are determined by the strategic relevance of the cooperation, which influences the performance management practices of organizations. These studies did not investigate the influence of cooperation management objectives and practices and the transaction scope on the performance of interfirms cooperation though (Dekker et al., 2016).

Brazilian research on interfirm cooperation is growing due to the proximity between the literature and the daily life of organizations regarding the impacts of the cooperation the partners establish (Balestrin, Verschoore & Reyes Jr, 2010). In recent decades, the role of accounting in the management of interfirm relationships has become a topic of interest of researchers, whose attention coincided with the significant increase in interfirm cooperative relationships (Anderson & Dekker, 2014). Thus, this study seeks to expand the literature on the strategic formulations of cooperation and the impact of these relationships on organizational performance.

The theoretical contribution of the study is to provide evidence of cooperation management practices and the transaction scope as mediators of the relationship between the objectives and performance of the cooperation. It contributes by demonstrating that the alignment between the objectives and the interfirm cooperation management practices, as well as the transaction scope, tend to result in a better performance of these relationships (Dekker et al., 2016). Another contribution is practical, assessing the effects of these factors in the interfirm cooperation among companies in the textile industry, which play a determining role in their competitiveness and survival, due to the greater expected impact on the partners' organizational performance in relation to the performance of companies outside the cooperation (Centenaro & Laimer, 2017).

The remainder of the study is structured as follows: the second section is focused on the association between the objectives and the performance of the cooperation, and the mediating effect of management practices and the transaction scope in this regard; in the third stage, we present the research method; in the fourth, the results of the empirical research and the analysis of the results are shown; and, in the last section, the final remarks are presented.

## 2. Theoretical Basis And Hypotheses

### 2.1 Objectives of cooperation and cooperation performance

The Theory of cooperation, created by May and Doob (1937), puts forward that individuals cooperate when they devote themselves to achieving similar or complementary goals that can be shared, and achieve superior performance when the partners achieve the goal in the same proportion. Das and Teng (1998) define cooperation as a partner organization's intention to achieve mutual interests compatible with other organizations instead of acting opportunistically.

The objectives of the cooperation refer to the strategic reasons that lead companies to participate in interfirm cooperation relationships (Dekker et al., 2016). According to Groot and Merchant (2000), the main objectives of cooperation are: cost reduction (access to relatively cheap labor); access to markets (overcoming trade barriers); technological development; and risk reduction.

When the objectives of the cooperation and individual objectives diverge between partner companies, there are conflicts of interest. This requires greater involvement of employees to cope with these conflicts (Kaplan et al., 2010). The companies often seek multiple objectives, which enhances the strategic relevance and complexity of controlling the cooperating (Reuer & Ariño, 2007). If individual objectives prevail, this will influence the cooperation (Dekker et al., 2016).

In this context, the management control system should promote the balance between the interests and the decisions to be made in relation to the objectives and strategies of interfirm cooperation (Kaplan et al., 2010). The facilitating function of the system is in making decisions consistent with the organizational strategy (Grafton, Lillis & Widener, 2010). Therefore, its function is to facilitate decision making in order to achieve the cooperative objectives, besides conciliating the divergent objectives among the partner companies (Ireland, Hitt & Vaidyanath, 2002).

This suggests that the performance of the strategic alliances needs to be evaluated. Although previous studies have investigated the performance of the cooperation, there is no consensus among researchers on the use of cooperation performance measures (Das & Teng, 2003). Some researchers propose subjective measures, such as perceived satisfaction or expectation achieved with the cooperation (Mahama, 2006). Others use objective measures such as profit, costs, revenues (Contractor & Lorange, 1998). It is highlighted that the interfirm relationship can serve not only to achieve economic-financial purposes, such as generating profits, but also to facilitate the exchange of knowledge and information between partner companies (Kogut, 1988).

Cooperation involves a more balanced and subjective measurement approach to the promise of what can be achieved (Anderson, 1990). Using more formal cooperation performance evaluation metrics can cause the relationship to break early due to the lack of time required for the cooperation to demonstrate its value. Therefore, the measures of the partners' perceived satisfaction with the performance of the cooperation provide broader information on what is intended with the cooperation (Dekker, 2016). In this sense, the first research hypothesis is formulated:

- **H<sub>1</sub>: A positive relationship exists between the objectives of the cooperation and the cooperation performance.**

When the relevance of the cooperation objectives increases in the organizations, so do the coordination and control of cooperation practices (Dekker et al., 2016). For these authors, when a company pursues multiple strategically relevant cooperation objectives, this influences the type of assets used in the relationship, the interaction of the *boundary spanners*, the transaction scope, management practices and cooperation activities.

## 2.2 Objectives, cooperation management practices and performance

The cooperation management practices include the interaction of *boundary spanners* and information sharing (Mahama, 2006), which are determinant for the cooperation objectives and are expected to impact the performance of the interfirm relationship (Dekker et al., 2016). Cooperation management practices are necessary to manage the interfirm relationship, for example, planning, setting performance goals, interaction between partners, support to stakeholders, joint problem solving, information sharing and periodical monitoring (Dekker et al., 2013).

The interaction of the boundary spanners encourages companies to work together and monitor partner behavior and performance in the cooperation (Ittner, Larcker, Randall & Rajan, 1999). This interaction is performed by individuals responsible for interfirm management and who frequently interact with the partner companies (Wilson & Barbat, 2015). The individuals in this interaction are the formally designated managers to control the alliances, the supply chain managers, and those involved in the companies' business relationships, who come together to exchange information related to the cooperation (Wilson & Barbat, 2015).

Information sharing implies the exchange of relevant and particular information between the partners (Mahama, 2006). Sharing information is paramount to reduce information asymmetry and encourage the union of collaborative efforts between the partners (Corsten, Gruen & Peyinghaus, 2011). Even if the cooperation practices can be carried out in different stages of the interfirm relationship, they overlap and are interdependent to strengthen the effectiveness of the relationship.

The cooperation management practices are complementary, so that the conditional use of one practice is associated with the greater use of another (Mahama, 2006). Hence, when cooperation is considered strategically relevant, it stimulates the companies to boost the performance measurement activities. This will be associated with greater information sharing and interaction of the boundary spanners (Mahama, 2006). When the strategic relevance of cooperation and transaction risk increases, the practices complement one another, generating greater value for partner organizations (Mahama, 2006; Dekker et al., 2013).

Dekker et al. (2016) argue that increasing the strategic importance of cooperation results in greater interaction of the boundary spanners and requires greater information sharing between the partners to carry out more activities together, so as to align resources and benefit partners. The performance of the cooperation improves when understanding the objectives and activities of the strategic alliance, since the sharing of information permits correcting actions, reducing uncertainties, promoting learning, aligning companies' expectations and expanding the interaction between those responsible for the cooperation (Mahama, 2006). Thus, when a company aims to achieve its cooperation objectives, this will affect the cooperation management practices and, consequently, the performance of this relationship (Dekker et al., 2016).

The objectives of the cooperation are designed to improve the performance of the companies (Mahama, 2006), and the sharing of information and the interaction of the *boundary spanners* mediate this interference as, when the partner companies aim for multiple objectives, this results in greater exposure to different internal factors which can interfere in the organizational activities and, as a result, co-operation, which requires that greater control, monitoring and communication between the partners from the managers (Dekker et al., 2016). Mediation is expected due to the importance of alignment between the objectives and cooperation management practices, with a view to the performance of the cooperation (Mahama, 2006). Thus, the second hypothesis is formulated:

- **H<sub>2</sub>: A positive relationship exists between the objectives of the cooperation and the cooperation performance, mediated by the transaction scope.**

In addition to the cooperation management practices, another factor that can influence the relationship between the objectives and the performance of the cooperation is the extent to which partner activities are overlapping and assist in the knowledge, the transaction scope (Khanna, Gulati & Nohria, 1998).

### 2.3 Objectives of cooperation, scope of transaction and performance of cooperation

The transaction scope is defined as the breadth of activities developed in organizations, such as research and development, marketing and production, which they agree to carry out in the interfirm cooperative relationships (Varadarajan & Cunningham, 1995). According to Oxley and Sampson (2004), the transaction scope refers to the combination of multiple value chain activities in one cooperation. The transaction scope can be used as a proxy for the commercial value of the cooperation, as investors use it to estimate the future revenue flow of the partner companies (Kalaiganam et al., 2007).

This scope may influence changes in the values of partner companies (Varadarajan & Cunningham, 1995). The cooperations with a broader transaction scope are likely to generate greater revenues and gains than cooperations with a more restrictive scope. Thus, a cooperation that encompasses several sectors evidences a greater financial potential than one that covers only a few sectors (Kalaiganam et al., 2007).

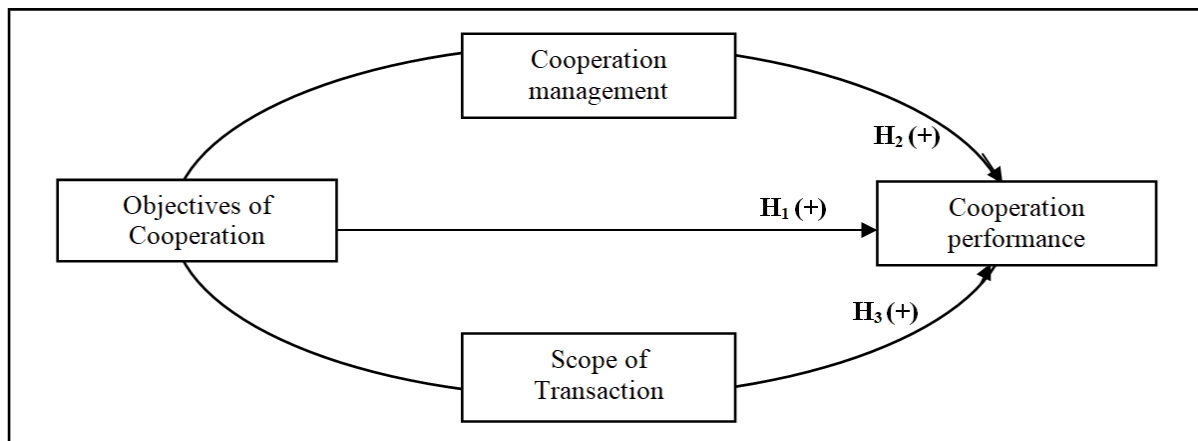
A broad transaction scope may indicate greater commitment of the partners to the cooperation than a narrower transaction scope (Kalaiganam et al., 2007). Organizations with a wider transaction scope are expected to benefit more broadly than those with a narrower scope, as cooperation with a wider transaction scope provides more opportunities for earnings than a narrower scope, which limits the profit capacity (Li, Tang, Okano & Gao, 2013). Cooperative relationships with a wider transaction scope, however, are more complex to administer, as it implies managing coordination and cooperation aspects of the activities carried out in the cooperation to positively impact the performance (Dekker, Donada, Mothe & Nogatchewsky, 2019).

Thus, the companies choose mechanisms to achieve their cooperation objectives and the scope of transaction can mediate this relationship. The mediation effect is expected because the transaction scope portrays the internal environment of the cooperation, the sectors involved that influence the alignment between the objectives and the scope of the partner companies' performance (Dekker et al., 2016). Based on the above, the third research hypothesis is formulated:

- **H<sub>3</sub>: A positive relationship exists between the objective of the cooperation and the cooperation performance, mediated by the transaction scope.**

The transaction scope is an important characteristic of the cooperation and establishes the structure (Mishra, Chandrasekaran & McCormack, 2015) and the challenges to manage the cooperation (Dekker et al., 2016). The cooperation with a larger scope tends to provide partners with greater benefits, but exposes them to greater risks and interdependencies, which need to be managed (Dekker et al., 2019). Thus, it is expected that the objectives of the cooperation and its management practices are interrelated (Dekker et al., 2016), and affect the cooperation performance (Mahama, 2006).

Figure 1 shows the theoretical model of the research, highlighting the hypotheses proposed in this study.



**Figure 1.** Theoretical research model

Source: elaborated by the authors.

Figure 1 shows the proposed relationships for the three research hypotheses. In accordance with the literature review presented, a positive relationship is expected in the three hypotheses formulated.

### 3. Research Method

A descriptive research was conducted based on a survey of companies in the Brazilian textile industry. The research population consisted of the Brazilian importing and exporting companies listed at the Ministry of Industry, Trade and Services (MDIC) and the companies participating in the Program for the Internationalization of the Textile and Fashion Industry in Brazil (Texbrasil), the Brazilian Association of the Textile and Clothing Industry (ABIT) in partnership with the Brazilian Agency for the Promotion of Exports and Investments (Apex-Brazil). The choice for these companies is due to their national prominence and because they meet the outlines of the research proposal.

In this search, 1,104 companies were identified. Of these, 773 were located on the social network *LinkedIn*. After identifying the companies, the professionals who act in the positions of President, Chief Executive Officer (CEO), financial director, Chief Financial Officer (CFO), Manager, coordinator and controller were sought on *LinkedIn*. These research subjects were chosen because they are part of the management process and, consequently, of the transactions related to cooperation activities. These were also the research subjects in the study by Dekker et al. (2016), under the argument of their importance in the organizational management process.

Then, the invitation to participate in the research was sent to the 1,122 professionals identified, within the limit of three managers per company. In total, 465 professionals accepted the invitation, who received the link to the search tool through the *Google Forms* platform, and 96 answered questionnaires were returned. Of these, 93 were considered valid, as two respondents did not have the function established for this study, and one respondent indicated the same answer options, which suggests a lack of quality in the answers.

Faul, Erdfelder, Buchner and Lang (2009) point out that the minimum sample size can be calculated using the *G\*Power* 3.1.9 software. In this study, one construct (cooperation performance) receives the largest number of arrows, which is four. Thus, the minimum sample should consist of 85 respondents, at a 5% significance level and average effect size. It should be noted that the level of analysis focuses on the companies.



In order to evaluate the effect of interfirm cooperation management practices and the transaction scope on the relationship between the cooperation objectives and cooperation performance, all constructs were measured by means of multiple items, whose assertions were based on previous studies (Appendix A). Each assertion was based on a *Likert* scale or a five-point semantic differential.

The objectives of the cooperation were based on previous studies that identified the strategic reasons for companies to engage in interfirm relationships (Dekker et al., 2016). The authors based this construct on the studies by Contractor and Lorange (1988) and Groot and Merchant (2000). Dekker et al. (2016) identified 14 objectives of cooperation, considered in this research.

As for the transaction scope, the cooperative relationships with a larger scope are more complex to control, requiring greater coordination of the stakeholders (Kalaigianam et al., 2007). Ding et al. (2013) and Dekker et al. (2016) measured the transaction scope based on eight items that identify cooperation activities: research and development, purchases, engineering, production, marketing and sales, after-sales service, knowledge exchange and service provision.

The cooperation management practices used in this study include information sharing and the interaction of boundary spanners and were based on the studies by Dekker et al. (2016). For these authors, information sharing covers six items, which refer to the extent to which partners exchange information on: costs, sales, product development, *marketing* activities, operational performance and recruitment and training.

The interaction of boundary spanners can occur at different organizational levels and the greater the involvement of employees, the greater the likelihood of achieving the intended goals (Dekker et al., 2013). Dekker et al. (2016) measured this construct using three items, questioning how frequently employees consult senior management, active managers and participants in the cooperation to discuss the results.

For the cooperation performance, the research instrument by Dekker et al. (2016) was used. Based on 20 items, they evaluated the cooperation performance, combining financial and non-financial measures. They questioned how relevant different dimensions of performance are, such as costs, profit, cash flow, market share, product quality, customer satisfaction, employee satisfaction. A higher score indicates the use of a broad set of measures to evaluate the cooperation performance.

The most mentioned types of interfirm cooperation in the literature are indicated based on the definitions by Eiriz (2001) and Meira, Kartalis, Tsamenyi and Cullen, (2010), with six selection alternatives. The respondent could select several types, as an organization may engage in different forms of cooperation, in addition to the option to include another type of cooperation not mentioned. These types were used as control variables to distinguish the types of cooperation and their influence on the cooperation.

The research instruments used by the authors mentioned were translated from English into Portuguese and, afterwards, the back-translation was elaborated to validate the translation. An expert researcher on the theme reviewed the instrument to validate the translation and propose any adjustments. To eliminate possible inconsistencies and mitigate comprehension difficulties, the questionnaire was submitted to three researchers in the area and, after their considerations, some semantic adjustments were made.

Data collection was performed from October 2018 to May 2019. The Structural Equations Modeling technique was applied to the collected data, using *SmartPLS* version 3.0. To test the mediations proposed in the hypotheses, *bootstrapping* was used as recommended by Hayes (2009), considering that this test does not presuppose the normal distribution of the sample and, therefore, is superior to Sobel's test. According to the author, *bootstrapping* creates an empirical representation of the distribution of the indirect effect, with resampling to reproduce the population and provide greater robustness to the results.

## 4. Analysis Of Results

### 4.1 Characteristics of survey respondents and companies

Table 1 shows the profile of the survey respondents, with emphasis on gender, age group, education, academic background and function/position they occupy in the company.

Table 1.

#### Profile of survey respondents

Gender	Qty.	%	Age Range	Qty.	%
Male	76	82%	Under 30 years	9	10%
Female	17	18%	From 31 to 40 years	27	29%
<b>Total</b>			From 41 to 50 years	35	38%
Education	Qty.	%	From 51 to 60 years	15	16%
Secondary Education	3	3%	From 61 to 70 years	7	7%
Higher Education	25	27%	<b>Total</b>	<b>93</b>	<b>100%</b>
Specialization or MBA	51	55%	Function/Position	Qty.	%
Master's or Doctorate	14	15%	Director	32	35%
<b>Total</b>	<b>93</b>	<b>100%</b>	Manager and Coordinator	56	60%
Academic Background	Qty.	%	Controller	4	4%
Business	68	73%	Not declared	1	1%
Other areas	23	25%	<b>Total</b>	<b>93</b>	<b>100%</b>
Not declared	2	2%			
<b>Total</b>	<b>93</b>	<b>100%</b>			

**Obs.** Business (Administration, Accountancy, Economics). Other areas (Teaching Diploma in Languages, Law, Information Technology, Physics, Architecture, Chemistry and Engineering).

Source: survey data.

As observed in Table 1, 82% of the respondents are male. The respondents' age range is concentrated between 41 and 50 years, representing 38% of the sample, and 29% is between 31 and 40 years of age. Regarding the respondents' level of education, 27% hold a higher education degree, 55% a *lato sensu* postgraduate degree (specialization), 15% a *stricto sensu* postgraduate degree (master's or doctorate). Of the three respondents who indicated secondary education, two did not declare academic training and one indicated technological training, being thus classified under other areas. It is noteworthy that 73% of the respondents have an educational background in the business area.

The position or function with the largest number of respondents in this survey was manager and coordinator, totaling 56 respondents, representing 60% of the sample analyzed, followed by director with 35%. The average length of time in the position or function is 10 years, which indicates that the respondents have worked in these companies for some time. The respondents' profile suggests that they meet the necessary conditions to answer the questions of the research instrument.

Table 2 shows the companies' main economic activities, in addition to their classification by size and market.

Table 2.

**Activity segment and company classification**

<b>Economic activity</b>	<b>Qty.</b>	<b>%</b>	<b>Market</b>	<b>Qty.</b>	<b>%</b>
Industry	82	88%	Regional	2	2%
Trade	10	11%	National	29	31%
Services	1	1%	National and International	62	67%
<b>Total</b>	<b>93</b>	<b>100%</b>	<b>Total</b>	<b>93</b>	<b>100%</b>
<b>Average annual turnover</b>				<b>Qty.</b>	<b>%</b>
Less than or equal to R\$ 2.4 million				<b>10</b>	<b>11%</b>
More than R\$ 2.4 million and less than or equal to R\$ 16 million				14	15%
More than R\$ 16 million and less than or equal to R\$ 90 million				31	33%
More than R\$ 90 million and less than or equal to R\$ 300 million				23	25%
More than R\$ 300 million				15	16%
<b>Total</b>				<b>93</b>	<b>100%</b>

Source: survey data.

In Table 2, the economic activity that stands out in the research sample is the industry, which corresponds to 88%. The average annual turnover in 33% of companies is in the range between more than R\$16 million and less than or equal to R\$ 90 million, 25% between more than R\$ 90 million and less than or equal to R\$ 300 million and 16% has an annual turnover of more than R\$300 million. This indicates that 74% of these companies are medium to large, according to parameters of the National Bank for Economic and Social Development (BNDES, 2015). In addition, 67% of the companies operate in both the national and international markets, confirming that the Brazilian textile sector stands out internationally (ABIT, 2017).

Regarding these companies' time of operation, 61% have been active between 11 and 50 years, 29% have been operating in the market for more than 50 years and, of these, one company has 139 years and only 10% has existed for up to 10 years. These companies' location is concentrated in the South and Southeast, with 46% and 39%, respectively. As for the number of employees, about 36% have between 100 and 499 employees and 39% more than 500 employees, confirming that the companies in the sample are medium and large.

As for the types of cooperation they practice, 60 companies indicated supply chain, 57 outsourcing, 26 joint production, 10 franchises and 7 joint ventures. On average, the respondents pointed out that the company engages in more than one type of cooperation, especially the supply chain and outsourcing, while the least practiced is the joint venture. This indicates that the relationships between customers and suppliers and the hiring of another company to perform activities are the most practiced types.

## 4.2 Measurement model

In the measurement model, the (convergent and discriminant) validity and the (internal and composite) reliability of the measurements of the constructs were evaluated (Hair Jr, Black, Babin, Anderson & Tatham, 2014). In the original model, none of the constructs was able to reach the minimum values for convergent validity (Average Variance Extracted - AVE), above 0.5, and some indicators showed an internal factor loading below 0.4. Thus, the indicators were excluded until the constructs reached the minimum values for the AVE and the internal factor loading. Three test rounds and exclusions of indicators were necessary to validate the reliability of the constructs.

After the tests and the exclusion of variables that did not meet the model's reliability criteria, the following remained: 10 items in cooperation objectives; 6 in transaction scope; 6 in cooperation management practices; and 13 in cooperation performance (Appendix A). The Composite Reliability and AVE of the adjusted model are presented in Table 3. After excluding items from the theoretical model, the AVE reached the minimum values recommended in the literature (Hair Jr et al., 2014).

Table 3.

#### Adjusted model

Constructs	Composite Reliability	AVE
Objectives of Cooperation	0.913	<b>0.515</b>
Transaction scope	0.862	<b>0.512</b>
Cooperation Management Practices	0.857	<b>0.502</b>
Cooperation Performance	0.928	<b>0.503</b>

Source: survey data.

The factor loadings are superior to 0.5 and no indicator that is highly correlated with another indicator is present in the adjusted model. Next, the discriminant validity of the first and second-order latent reflexive variables was verified, which presents the correlations between the variables and the square root of the AVE diagonally. The correlation between the latent variables should be lower than the square root of the AVE to achieve discriminant validity (Fornell & Larcker, 1981). Table 4 shows the discriminant validity of the adjusted model for the first and second-order latent variables.

Table 4.

#### Discriminant analysis of the first and second-order latent variables

First-order latent variables	1	2	3	4
1. Objectives of Cooperation	<b>0.718</b>			
2. Transaction scope	0.578	<b>0.715</b>		
3. Cooperation Performance	0.459	0.618	<b>0.709</b>	
<b>Second-order latent variable</b>				
4. Cooperation Management Practices	0.422	0.566	0.473	<b>0.709</b>
Composite Reliability (CR)				<b>0.812</b>
Average Variance Extracted (AVE)				<b>0.683</b>

Source: survey data.

Table 4 shows that the latent variables of the measurement model have a higher square root of the AVE than the correlations with the other latent variables. After calculating the second-order latent variable, it is noticed that the CR and AVE are higher than the minimum limit, confirming the validity of the construct. The validation tests of the measurement model permit analyzing the structural model.

### 4.3 Structural model

The structural model analysis was performed in two stages. First, we analyzed  $R^2$ , which the variance percentage of a dependent latent variable that is explained by the independent variables (Hair Jr et al., 2014). *Bootstrapping* was calculated with 5,000 subsamples. To validate the research hypotheses, initially, the structural model was tested. To confirm the results found, the control variable was included in the structural model. Table 5 shows the results of the structural model with the control variable.

Table 5.

**Result of the structural model**

Structural relationships	Hypotheses	Structural coefficient	T-value	P-value	F <sup>2</sup>	R <sup>2</sup>
OC→CP	H1 (+)	0.115	1.293	<b>0.196</b>	0.016	
OC→CM→CP	H2 (+)	0.092	1.986	<b>0.047**</b>	-	0.424
OC→TS→CP	H3 (+)	0.255	4.061	<b>0.000***</b>	-	
Direct Relationships						
Structural relationships		Structural coefficient	T-value	P-value	F <sup>2</sup>	R <sup>2</sup>
OC→CM		0.414	3.965	<b>0.000***</b>	0.224	0.219
CM→CP		0.223	2.346	<b>0.019**</b>	0.056	0.424
OC→TS		0.575	7.653	<b>0.000***</b>	0.500	0.324
TS→CP		0.443	4.365	<b>0.000***</b>	0.192	0.424
Total Relationship						
OC→CP		0.462	5.162	<b>0.000***</b>	0.016	0.424
Control Variables						
TC→CM		0.241	0.915	<b>0.360</b>	0.076	-
TC→TS		0.072	0.424	<b>0.672</b>	0.008	-
TC→CP		-0.192	0.979	<b>0.328</b>	0.062	

Obs.: significance at \*\* 5% and \*\*\* 1%.

Legend: OC = Objectives of Cooperation; CM = Cooperation Management Practices; TS = Transaction Scope; CP = Cooperation Performance; TC = Types of Cooperation.

Source: survey data.

According to Table 5, all relationships have signs consistent with the formulation of the research hypotheses, that is, a positive sign. No support is found for the statistical acceptance of hypothesis H<sub>1</sub>. Hypotheses H<sub>2</sub> and H<sub>3</sub> confirm the mediation. To assess whether the mediation is complete or partial, one should check the direct, indirect and total effects. The direct relationship of H<sub>2</sub> involves the objectives and performance of the cooperation and was not statistically significant. The indirect relationship between the objectives and performance of the cooperation, mediated by the cooperation management practices, was statistically significant (p<0.05). The total effect between the objectives and performance of the cooperation was statistically significant (p<0.01). Thus, support is found for the statistical acceptance of H<sub>2</sub> and mediation is total.

With regard to hypothesis H<sub>3</sub>, the direct relationship involves the objectives and performance of the cooperation, but was not statistically significant. The indirect relationship between the objectives and performance of the cooperation, mediated by the transaction scope, was statistically significant (p<0.01). The total effect between the objectives and performance of the cooperation was statistically significant (p<0.01). Thus, H<sub>3</sub> is statistically accepted and the mediation is total.

As for the control variable, no statistically significant relationship was found, which indicates that the types of cooperation the companies practiced do not statistically influence the other cooperation elements investigated. The inclusion of this variable in the model, however, intensified the significance of the relationships proposed in this study.

#### 4.4 Discussion of the results

The research results indicate that support is found for the statistical acceptance of hypotheses  $H_2$  and  $H_3$  formulated in the theoretical model. Hypothesis  $H_1$ , which predicts a positive relationship between the objectives and performance of the cooperation, has not been confirmed. This indicates that the impact of the objectives on the performance does not happen directly, considering that the mediations of hypotheses  $H_2$  and  $H_3$  were accepted.

The objectives of the cooperation are the strategic reasons for companies to participate in the interfirm cooperation (Dekker et al., 2016). The interfirm relationships seek to reduce costs, access new markets and technologies, and maximize profits or reduce risks (Groot & Merchant, 2000). Dekker et al. (2016) found a significant and positive relationship between the objectives and performance of the cooperation, and concluded that the cooperation is relevant because it causes positive impacts on the performance of the cooperation, contrary to the results found in this research.

In the industrial enterprises from the textile sector surveyed, the managers evaluate cooperation as strategically important. Nevertheless, for the companies to achieve the desired objectives of the strategic alliance, the cooperation management practices and the transaction scope need to be aligned. For the companies in the sample, the strategic relevance of the cooperation positively affects the performance of the cooperation if it is associated with the sharing of information, the interaction between partners and the activities developed between the partners of the cooperation, a fact that justifies the rejection of  $H_1$ .

The increase in the strategic importance of the cooperation objectives depends on the alignment between the interests and actions of the partners, which implies the need to coordinate and control the cooperation management practices (Reuer, Ariño, 2007; Dekker et al., 2016). According to the importance of these relationships for the partners, there will be a need for access to relevant information, which influences the increased sharing of information. The demand for information requires greater engagement of managers to manage these relationships, coordination of actions, recognition of areas that need improvement and alignment of expectations, goals and contributions between the partners (Dekker et al., 2013).

The interdependence between the partners' interests, one of the premises of the Theory of cooperation (Deustch, 2011), implies that the objectives of the cooperation relate positively to the cooperation management practices, as well as between these practices and the performance of the cooperation. In addition to being influenced by the objectives of the cooperation, the cooperation management practices influence the performance of the interfirm relationship. The positive relationship found in this study between the objectives and cooperation management practices reveals the importance perceived by the respondents that information sharing and interaction between partners are fundamental to achieve the desired performance, and the greater this interaction, the greater the positive impact on the interfirm relationship.

Besides generating revenues and reducing costs, interfirm cooperation helps in the exchange of knowledge and information between partners (Kogut, 1988). Thus, the management of interfirm cooperation needs to join the partners through the interaction of the boundary spanners, which implies the provision of information that favors decisions aligned with the partners' interests (Mahama, 2006; Dekker et al., 2013). Information sharing helps the stakeholders in resolving uncertainties, achieving goals and executing the cooperation (Mahama, 2006; Dekker et al., 2013).

In this sense, the cooperation management practices should be aligned with the objectives of the cooperation because they positively impact the performance of the interfirm relationship (Mahama, 2006; Dekker et al., 2016). The mediation test of hypothesis  $H_2$ , which predicts a positive relationship between the objectives and performance of the cooperation, mediated by the cooperation management practices, indicated total mediation.

The strategic importance of cooperation perceived in the surveyed companies is associated with greater information sharing and interaction of the boundary spanners, greater use of cooperation management practices, which drives the use of performance measurement mechanisms (Mahama, 2006), which positively affect the cooperation performance. Moreover, when the objectives of the cooperation are relevant, like in this study, the cooperation practices complement one another to reduce the risks involved, generating greater value for the partners (Dekker et al., 2013).

The result found in this research regarding information sharing differs from the findings by Mahama (2006) though. The cooperation dimensions the author investigated are joint problem solving, willingness to adapt to changes, restriction of power use and information sharing, only three of which (problem solving, willingness to adapt to changes, restriction of power use) showed a direct association with the performance of the cooperation. The relationship between information sharing and cooperation performance is indirect. The investigated company managers' perception of the importance of sharing relevant information between the partners to achieve the intended goals can explain this result.

Besides the cooperation management practices, another factor that influences the relationship between the objectives and performance of the cooperation is the extent to which the activities developed overlap and generate knowledge among the partners, the transaction scope (Khanna et al., 1998). Hypothesis H<sub>3</sub>, which predicts a positive relationship between the objectives and the performance of the cooperation, mediated by the transaction scope, indicated total mediation. This indicates that, as the relevance of the cooperation objectives and the inclusion of activities in the cooperation increase, the scope becomes larger (Reuer & Ariño, 2007). Cooperation with a wider transaction scope increases the possibility of extracting benefits, but also the partner's risk of exposure, which needs to be managed (Dekker et al., 2019).

A wider transaction scope signals that more activities are developed in cooperation, and this involvement tends to generate greater financial gains (Kalaighnam et al., 2007). Organizations with a wider transaction scope have more benefits than those with a narrower scope, as a cooperation with a wider transaction scope generates more earnings opportunities (Li et al., 2013). This explains the evidence found in this study, in that the greater the extent of the activities carried out in the cooperation, the greater will be the effect size between the objectives and the performance of the cooperation.

The mediation effect is also confirmed because the transaction scope portrays the internal environment of the cooperation, the sectors involved in this relationship that interfere positively in the alignment between the objectives and the performance of the partner companies (Dekker et al., 2016). This explains the positive influence of the cooperation objectives on the performance of the cooperation, mediated by the transaction scope in the analyzed companies, in line with the study by Dekker et al. (2016).

The performance of the cooperation was positive, which suggests that the partners' objectives have interfaces. Thus, when the objectives of the partners are interrelated, a relationship of positive interdependence exists for the achievement of the goals, which results in a positive impact on the performance of the cooperation, in accordance with the Theory of Cooperation (Deustch, 2011).

## 5. Final Considerations

**Objective:** This study analyzed the effect of the cooperation management practices and transaction scope on the relationship between the objectives and the performance of the cooperation in enterprises from the textile industry. The results indicated that the relationship between the objectives and the performance of the cooperation is mediated by the cooperation management practices and the scope of the transaction. Although the relationships with both mediations were statistically significant, the effect size of the cooperation management practices and the transaction scope in relation to the cooperation performance was different. The effect size of the cooperation management practices was low (0.056), while the transaction scope was high (0.500).

Thus, the greater the interaction among the stakeholders and the sharing of information, the greater will be the association between the objectives and the performance of interfirm cooperation in the companies surveyed. In addition, for the managers of these companies, the activities developed in the cooperation may be more relevant than the sharing of information and the interaction of the boundary spanners in the performance of interfirm cooperation. This is due to the fact that most of these companies practice different combinations of cooperation forms, which requires more operations in the interfirm relationships.

The study findings contribute to the literature by providing evidence on the effects of the cooperation management practices and the transaction scope in the relationship between the objectives and performance of interfirm relationships. The findings indicated that the alignment between the objectives and the interfirm cooperation management practices, as well as the transaction scope, result in a better performance of these relationships. Another contribution lies in the understanding of the phenomenon based on the Theory of Cooperation, which is centered on the alignment of strategic objectives among the participants of interfirm relations, which directs the partners' effort of the partners to the mutual goals (Mahama, 2006).

The practical contribution of the study lies in the relevance of the theme in relation to the strategy the organizations adopt to obtain competitive advantages and provide value creation among the companies participating in the cooperation. Textile organizations can promote cooperation as a strategy to meet market demands, as part of an innovative and technological network (Bruno, 2016), assisting in companies' strategic competitiveness.

The limitations imposed on the design of this study offer opportunities for new research on interfirm cooperation. Future studies can analyze the cooperation from the perspective analyzed here in other contexts than the textile sector, aiming to compare the results with those of this research. They can also broaden the analysis of other cooperation management practices in the interfirm relationship, such as reward and *feedback* systems. Interfirm cooperative relationships also entail transaction risks for their partners, which can affect the performance and success of these relationships. Thus, for the sake of future research, further investigation of the transaction risks and their impact on interfirm cooperation is recommended.



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## Appendix A. Research Instruments

### 1. Objectives of the Cooperation (OC) (Dekker et al., 2016)

Indicate how important the objectives below are for your company to participate in cooperation, on a scale from 1 (not important) to 5 (highly important).

- OC1.Stabilization of gains (\*)
- OC2.Investment sharing (\*)
- OC3.Access to cheap labor (\*)
- OC4.Access to raw materials or semi-finished products (\*)
- OC5.Access to local markets
- OC6.Reduction of competition
- OC7.Reduction of business risk
- OC8.Access to technology and/or *know-how*
- OC9.Learn management skills
- OC10.Access to another company in another industrial sector
- OC11.Overcome barriers (trade/investment)
- OC12.Increase in productive capacity
- OC13.Learn local business practices
- OC14.Access to political or business networks

Note: (\*) Items removed from data analysis.

### 2. Scope of transaction (ST) (Ding et al., 2013; Dekker et al., 2016)

Indicate to what extent cooperative operations include the activities below, on a scale from 1 (little) to 5 (very).

- ST1.Research and development
- ST2.Engineering
- ST3.Purchasing
- ST4.Production
- ST5.Marketing and sales
- ST6.After-sales service (\*)
- ST7.Knowledge exchange
- ST8.Service provision (\*)

Note: (\*) Items removed from the data analysis.

### 3. Cooperation management practices (CM) (Dekker et al., 2016)

#### Information sharing (CM\_IS)

Inform how much information your company and its partner exchange about the items below, on the scale from 1 (little information) to 5 (a lot of information).

- CM1\_IS.Costs (\*)
- CM2\_IS.Sales
- CM3\_IS.Product/technology development (\*)
- CM4\_IS.Marketing activities
- CM5\_IS.Operational *performance* (\*)
- CM6\_IS.Recruitment and training

Note: (\*) Items removed from the data analysis.

### **Interaction of *Boundary Spanners* (CM\_BS)**

Point out how often employees meet to consult those mentioned below, on the scale from 1 (do not consult) to 5 (periodically).

- CM1\_BS.Senior management of cooperation
- CM2\_BS.Active managers in cooperation
- CM3\_BS.Employees who work in cooperation

### **4. Cooperation Performance (CP) (Dekker et al., 2016)**

Inform how important the below items are to assess the cooperation performance, on the scale from 1 (not important) to 5 (highly important).

- CP1.Profit (\*)
- CP2.Sales (\*)
- CP3.Cash flow
- CP4.Costs (\*)
- CP5.Market share
- CP6.Quality of products/services (\*)
- CP7.Customer satisfaction (\*)
- CP8.Used (production) capacity (\*)
- CP9.Labour productivity
- CP10.Delivery time (\*)
- CP11.Success of technology transfer
- CP12.Number of new product introductions
- CP13.Employee loyalty
- CP14.Employee training
- CP15.Number of improvements in products or services
- CP16.Timely introduction of products
- CP17.Cost per employee
- CP18.Quality of after-sales service
- CP19.Improvements in (production) systems
- CP20.Employee satisfaction

Note: (\*) Items removed from the data analysis.

### **5. Cooperation types (CT) (\*Eiriz, 2001; \*\* Meira et al., 2010)**

Indicate the type(s) of interfirm cooperation your company practices.

- CT1.Supply chain (agreement between the producer company and its suppliers for the preparation of the product intended for the final consumer)\*\*.
- TC2.Joint production and/or product development (when two or more companies jointly produce the same products to meet market needs)\*.
- CT3.Franchises (a process in which one company (franchisor) grants another company (franchisee) the right to exploit a trademark, product or technique it owns under certain contractual conditions)\*\*.
- CT4.Outsourcing (a process in which a company hires another company to carry out external activities the contracting company could carry out internally)\*.
- CT5.*Joint ventures* (when two or more partner companies form a new company to meet a common goal)\*\*.
- CT6.Other. Specify: \_\_\_\_\_

# The mediating effect of management control proxies on the relationship between characteristics of the entrepreneur and organizational performance

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## Abstract

**Objective:** In order to understand the influences of the entrepreneur's characteristics on the financial and non-financial organizational performance, in this study, we aim to evaluate the mediating effect of management control proxies in this relationship.

**Method:** The sample consisted of fish farmers assisted by a Brazilian technical support program. The data were collected through a questionnaire, applied between October and November 2018, and analyzed using structural equation modeling (SEM), with the help of SmartPLS® software.

**Results:** The mediation of the management control proxies, in the established relationship, occurs in a partial and concurrent way. The initial model had to be respecified in accordance with the indications of the analyses. The final model indicated that the characteristics of the entrepreneur have a direct and negative influence on the organizational performance by 36.4%, while, and through the management control proxies, the effect was positive by 41.3%.

**Contributions:** The presence of entrepreneurial characteristics alone does not generate as many expected positive effects on organizational performance as when combining them with the use of management controls. Management control proxies contribute significantly to the performance of fish farms. The research also meets the demand for management accounting studies in small organizations and for accounting research that uses PLS-SEM.

**Key words:** Characteristics of the entrepreneur; Management accounting proxies; Performance: Fish farming; Agribusiness.

## 1. Introduction

Entrepreneurship as a scientific research area received greater attention since the 1970s (Cooper, 2003), gaining a multifaceted aspect (Low & Macmillan, 1988). Considering that both entrepreneurial actions and their characteristics are important for the entrepreneurial process (Silva, Gomes & Correa, 2009), the analysis of the entrepreneur's personal characteristics and how they are interrelated with organizational performance shows a plausible line of studies. For the sake of a better understanding of the entrepreneurial process and adjacent themes, it is necessary to consider the individual entrepreneur as a key agent (Obschonka & Stuetzer, 2017).

The literature recommends the existence of mediating variables in the relationship entrepreneur *versus* performance (Rauch, Wiklund, Lumpkin & Frese, 2009). Spillecke and Brettell (2013) demonstrated that entrepreneurial characteristics, when connected to management control, are significantly related with performance. Similarly, Daciê (2016) identified that the mediation of the use of management control proxies potentiated the positive effect between entrepreneurial orientation and organizational performance.

It is continuously appointed in the literature that management control plays a relevant role in supporting organizational management (Otley, 1994; Padoveze, 1999; Frezatti, Carter & Barroso, 2014). This conjuncture stimulates the interest in gaining a better understanding of the relationship between management control and other factors that permeate organizations and that can trigger better results.

Thus, if management control truly acts positively on the relationship between the characteristics of the entrepreneur and performance, the question that arises is: **What is the mediating effect of management control proxies on the relationship between the characteristics of the entrepreneur and the organizational performance of fish farms in the state of Mato Grosso do Sul?**

Concerning the research population, aquaculture and fish farming have represented an important economic sector. Estimates demonstrated that aquaculture will continue being the fastest growing food production sector (IPEA, 2017). With regard to Brazilian fish farming production, the state of Mato Grosso do Sul (MS) ranks 17th, with production figures well below those of its neighboring states. Data presented by IBGE (2015) expose the need to develop the activity in the state of MS, as well as in most Brazilian states.

Therefore, in view of the research question, the general objective of this study is to evaluate the mediating effect of management control proxies on the relationship between the characteristics of the entrepreneur and organizational performance of fish farms in the state of Mato Grosso do Sul. The justification focuses on its contribution to the theoretical area that aims to search for entrepreneurial characteristics related to the success or performance of enterprises, so that these characteristics are sometimes pointed out as elements that influence the performance (Man, Lau & Chan, 2002; Mitchelmore & Rowley, 2010). Likewise, it also aims to explain the role of management accounting proxies in an agribusiness activity, being an important sector of the Brazilian economy.

In addition, research on the role of management accounting in micro and small companies (SMEs) is in demand, as most of the existing research in the area considered the environment of large companies (Mitchell & Reid, 2000; Ahmad & Zabri, 2016). Accounting research that uses structural equation modelling with Partial Least Squares estimation - PLS/SEM - is also in demand (Nascimento & Macedo, 2016). The next sections consist of the theoretical framework, the methodological procedures, the analysis and discussion of the results, and the final considerations.

## 2. Theoretical Framework

The theoretical support of the research was obtained by means of exploratory bibliographic survey (first stage) and systematically, using the software Start® (second stage). At the end of the systematic review, we identified two articles that discuss the relationship between the characteristics of the entrepreneur and performance; one article that addresses the relationship between the characteristics of the entrepreneur and management control practices; and two articles that deal with management control practices and performance - according to the established protocol. These returns indicate the lack of studies on the relationship between these constructs. Based on these surveys, in the following topics, the relationships between the constructs are discussed and the research hypotheses are presented.

### 2.1 Characteristics of the Entrepreneur and Performance

The literature on entrepreneurialism includes two main research areas: economics and psychology. In the contemporary economic area, Joseph Schumpeter, one of its primary authors, presents the entrepreneur as an agent of innovation, considering this attribute as the basis for economic development (Fillion, 1999). In the psychological area, David McClelland (1972) argues that, besides the rational form implied in human decisions, there are other psychological and sociological factors that can justify the economic growth.

In an attempt to characterize the entrepreneur, McClelland (1987) – primary author of the psychological area of entrepreneurship – presented, in the report of his study on the characteristics of the successful entrepreneur, a list with nine most significant skills that characterized these entrepreneurs. Based on McClelland's studies, a model was developed in which ten entrepreneurial skills were classified, grouped into three distinct sets: accomplishment; planning; and power (Lenzi, 2008; Zampier & Takahashi, 2011).

Some authors criticized studies relating to traits of entrepreneurial personality (Gartner, 1989), questioning the multiple definitions of entrepreneurship and the use of research methods to distinguish a sublime personality related to performance (Kerr, Kerr & Xu, 2018). Others cited the weak relationship between characteristics of the founders of the business and the performance of the enterprise, triggered by heterogeneous results (Chandler & Jansen, 1992; Herron & Robson Jr., 1993; Masakure, Cranfield & Henson, 2008). According to Fillion (1999), however, discussions regarding small businesses are intrinsically linked to the figure of the entrepreneur.

In some of the studies related to the performance analysis of new enterprises, such as Sandberg (1986), McDougall (1987) and McDougall, Robinson, and Denisi (1992), the entrepreneur was absent, and returned through the hands of researchers whose results have shown the effect of the entrepreneur's characteristics on this performance, rather than only elements such as structure and strategy (Carland & Carland, 1996).

Entrepreneurial characteristics such as goal setting, planning, and systematic monitoring, independence and self-confidence, commitment, and demand for quality and efficiency were associated with higher organizational performance (Fontenelle & Hoeltgebaum, 2006). Performance was also explained by factors in the entrepreneurial profile, constituted based on the competencies found in the literature (Man, Lau & Snape, 2008; Veit & Gonçalves Filho, 2008; Lizote & Verdinelli, 2014; Lizote & Verdinelli, 2015; Eravia, Handayani & Julina, 2015; Daciê, Espejo, Gimenez & Camacho, 2017).



Although the presence of entrepreneurial characteristics does not guarantee the success in a business, they certainly contribute to organizational performance (Bomfim & Torkomian, 2017). Moreover, the absence of characteristics such as leadership and the ability to take risks may represent barriers to the development of entrepreneurship in family farming, in line with Schumpeter's perspective of innovation (Tomei & Souza, 2014).

Given this heterogeneity of results, the question arises whether entrepreneurial characteristics are truly important for organizational performance and, thus, provoke the awakening to this relationship in little-explored environments such as rural production. Despite the lack of a certain convergence in the literature on entrepreneurialism (Grégoire, Noel, Déry & Béchar, 2006), the declaration of the hypothesis took on a posture and a signal, considering the perspective that is expected to derive from a logical and possibly applicable sense (Gil, 2002). Based on the above, the following research hypothesis was established:

- **Hypothesis 1: The characteristics of the entrepreneur positively influence the performance of the enterprise.**

## 2.2 Characteristics of the entrepreneur and the proxies of management control

As the world becomes less predictable, control becomes more complex (Otley, 1994), so that management control figures as support for change management in this dynamic and unpredictable environment (Lima, Espejo, Pereira & Frezatti, 2011). Although authors such as Johnson and Kaplan (1987) have questioned the relevance of management control, others have indicated the evolution of its models (Lima et al., 2011), so that the management control system, also considering external information, broadens the support for decision making (Mia, Chenhall, 1994; Chenhall, 2003). Management information is as important for micro and small businesses as it is for large companies (Santos, Dorow & Beuren, 2016).

Considering that entrepreneurs do not only establish but also manage a business, with profit and growth as the main objective (Carland, Hoy, Boulton & Carland, 1984), the way they make decisions is what sets them apart from managers. These decisions can be classified as critical and non-critical, that is, strategic and tactical decisions (Hartman, 1954), as managers act objectively while the entrepreneur processes more subjective measures that are strongly linked to their perception (Fillion, 2000).

In the environment of the SME's, however, the entrepreneur and the manager are frequently the same person, whose decision making involves less formal elements, evidencing greater complexity, but also greater agility (Lobontiu & Lobontiu, 2014). Therefore, the characteristics of both are not exclusive and still necessary for the opposite group (Fillion, 2000). In short, entrepreneurs need to adopt more objective administrative practices, aimed at efficiency and effectiveness.

On the other hand, the absence of management accounting artifacts, which traditionally act as precedents of organizational discourse, generates, in organizations, the need for informational proxies that can management accounting information (Frezatti, Carter & Barroso, 2014), called management control proxies. In this sense, it follows that the existence of informal tools that assist the management processes (Daciê, 2016) cooperates with the idea of "Accounting without Accounting" Frezatti, Carter, and Barroso (2014) present.

Thus, the management and control initiative is substantially determined by the characteristics of the entrepreneur (Roper, 1998), and strategic management practices are in line with the entrepreneur (Carland et al., 1984). Based on a systematic review, Daciê et al. (2017) showed that the characteristics of the entrepreneurial orientation positively influence the use of management control proxies.

There are few studies that address the use of management control proxies in SME's, especially in agribusiness and connected to entrepreneurial characteristics, as is the proposal of this research. Therefore, the second research hypothesis was outlined:

- **Hypothesis 2: the characteristics of the entrepreneur influence the use of management control proxies positively.**

### 2.3 Proxies of managerial control and performance

The classical literature on managerial control sought to understand the relationship of management control systems, mostly with the assessment of the subordinates' performance. For example, Hopwood (1972) investigated the impact of the evaluation style on management performance, while Otley (1978) measured this impact not only on management performance but also on organizational performance. Govindarajan (1984), in turn, analyzed the role of environmental uncertainty in the performance assessment style.

In another dimension of performance, Reid and Smith (2002) found that the quality of management accounting information in small companies is directly related with their performance. Kallunki, Laitinen, and Silvola (2011) identified that formal controls mediate the effect of the enterprise's resource planning system and non-financial performance.

At the same time, management control practices, associated with the differentiation strategy, result in a superior performance (Junqueira, Dutra, Zanquetto Filho & Gonzaga, 2016). Lima et al. (2011) agree that the achievement of a better performance is related to systematized management processes, in which the maximization of return is one of the main objectives of the business (Garg, Joubert & Pellissier, 2004).

As announced in Leite (2016), other studies addressed the positive relationship between management control and performance, such as Mizumoto et al. (2010) and Raifur (2013). The implementation of management controls has shown to be able to influence the objective and subjective performance in small and medium-sized agricultural family businesses, according to Peake and Marshall (2017). This inflow was also verified by Maziriri and Mapuranga (2017), while Macinati and Anessi-Pessina (2014) verified a weak positive relationship between management accounting and financial performance.

Based on the above and considering that the search to understand organizational performance, connecting management accounting to constructs from other spheres of knowledge, is a developmental trend in this field of studies (Oyadomari, Frezatti, Mendonça Neto, Cardoso & Bido, 2011), the third hypothesis emerged:

- **Hypothesis 3: The use of management control proxies influences the performance positively.**

Thus, the management control proxies can act as interlocutors between the characteristics of the entrepreneur and organizational performance, in view of the support offered for decision-making (Oyadomari *et al.*, 2011). Based on the studies presented earlier (Rauch et al., 2009; Spillecke & Bretell, 2013; Daciê, 2016; Leite, 2016) and supporting the general objective of this research, we formulated hypothesis 4:

- **Hypothesis 4: The management control *proxies* act as positive mediators in the relationship between characteristics of the entrepreneur and organizational performance.**

Concerning the four hypotheses raised, it is considered that, although their relationships are neither logical nor simplistic, the proposal of the research is precisely to verify them, by means of a model not yet used in previous research.

## 2.4 Fish farming

Fish farming is a form of agribusiness, based on the breeding of fish and other aquatic organisms for trade and, according to the Brazilian Ministry of Agriculture, Livestock and Supplies, these activities belong to aquaculture, which is the breeding of fish in fresh water (Eggers et al., 2016). This zootechnical activity is aimed at the rational cultivation of fish, exercising particular control over the growth, reproduction, and feeding of these animals (Galli & Torloni, 1999).

According to Galli and Torloni (1999), the history of fish farming in Brazil begins with Rodolfo Von Ihering, in 1912, who believed that the potential of fish farming would be comparable in the future even with the productivity of chicken farming. Fish farming in Brazil can be developed predominantly in two ways: (1) in farms built for the creation of a single species, usually using artificial feeding aimed at high production, or (2) in farms with several species together and using feeding that is considered not entirely artificial, aiming at efficiency in the combination of different species (Furtado, 1995; Eggers et al., 2016). Thus, in Brazil, fish farming is a comprehensive activity, found both in micro and small enterprises and in family farming or large rural producers.

## 3. Methodological Procedures

Epistemologically, the research is based on the positivist theoretical perspective, according to Crotty's categorization (1998). The study was developed through an empirical investigation, characterized as applied and descriptive research (Cooper & Schindler, 2016). The approach to the problem contemplates the use of the method whose nature of the data is quantitative.

The research was developed by means of a survey (Martins & Theóphilo, 2016), in a cross-sectional dimension of time (Hair Jr. et al., 2009). The hypotheses raised in the course of the theoretical framework aim to test the relationship between the constructs, finally meeting the general objective of the research, as indicated in the conceptual model (Figure 1).

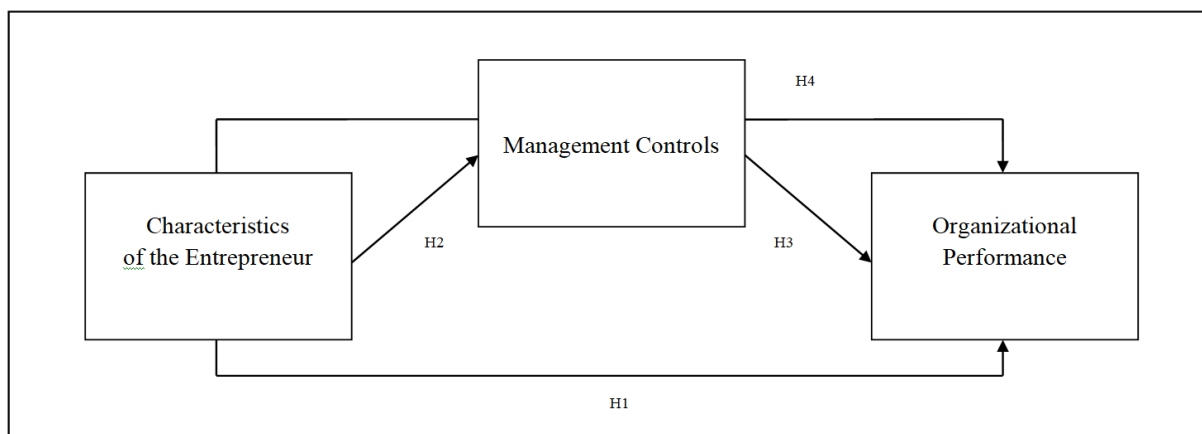


Figure 1. Research design

Source: the authors (2019).

The second-order theoretical constructs were: characteristics of the entrepreneur, management control proxies and financial and non-financial organizational performance. The construct “characteristics of the entrepreneur” includes ten explanatory variables, distributed in three first-order constructs (accomplishment, planning and power). This model is widely used by the Brazilian Support Service for Micro and Small Companies (Sebrae) to develop entrepreneurs through its program in partnership with the United Nations Conference on Trade and Development (Unctad) and the United Nations Development Program (UNDP), called Empretec, deriving from the study by McClelland (1987).

The construct management controls was captured by means of informational proxies, based on the study by Frezatti, Carter, and Barroso (2014), due to the absence of more robust management control systems in micro and small companies. Therefore, this second-order construct was constituted based on four first-order constructs (business plan; financial controls; marketing factors; and personnel control) and 12 indicators. The model was adapted with support from Leite (2016) and similarly employed by Daciê et al. (2017). It is noted that the four first-order constructs match some controls announced in the models by Merchant & Van Der Stede (2003) and Malmi & Brown (2008).

The construct “performance” was measured by self-assessment and subjectively (Govindarajan, 1984), considering that micro and small companies have limitations regarding the use of objective measures (Leite, 2016). Regarding the types of performance, financial and non-financial performance were used (Venkatraman & Ramanujam, 1986; Brush & Vanderwerf, 1992), through four indicators: sales growth; profit growth; increase in the number of employees; and increase in customer satisfaction.

In cases where there is a limitation of the data source on the organizational performance, where the only possibility is the owner and/or manager’s self-report, growth and turnover are the dimensions they know best (Chandler & Hanks, 1993). Regarding the growth measures, Wiklund (1999) considered them more suitable to portray the performance of small businesses, with sales growth being the best measure of growth, and employment growth an important measure, while the growth in asset investments seems to be problematic.

It should also be considered that the explanatory variables corresponding to the construction characteristics of the entrepreneur were captured in relation to the attitudes of the rural producer throughout life and through other businesses. This is due to the understanding that, because they are competencies intrinsic to the individual, they are independent of specific actions that can be performed at that moment. On the other hand, the constructs *Proxies* of Management Control and Performance are related to fish farming activities, as indicated at the beginning of each section of the questionnaire.

Data collection took place through a questionnaire, applied between October and November 2018. The instrument (structure shown in Figure 2) initially contains 11 questions to characterize fish farmers and their fish farms. The questions corresponding to the explanatory variables totaled 26, which used a five-point *Likert* scale for the answers. In order to evaluate whether the questionnaire fulfilled its objective, a pre-test was performed with two rural producers.

Part	Specific Objectives	Second-order constructs	First-order constructs	Explanatory Variables	Questions/ Codes	References
1	-	-	-	-	11	-
2	I) Identify the fish farmers' predominant entrepreneurial characteristics	Entrepreneur characteristics	Accomplishment	Search for opportunities and initiative	CE1 a CE5	McClelland (1987); Lenzi (2008); Schmidt and Dreher (2008); Schmidt and Bohnenberger (2009); Vilas Boas (2015).
				Persistence		
				Commitment		
				Quality and efficiency requirement		
				Taking calculated risks		
			Planning	Search for information	CE6 a CE8	
				Goal setting		
				Planning and systematic monitoring		
			Power	Independence and self-confidence	CE9 a CE10	
				Persuasion and networking		
3	II) Characterize management control proxies used as management control tools by the fish farmers;	Management Control Proxies	Planning (business plan)	Accomplishment of business plan	MCP1 to MCP3	
				Accomplishment of action plan		
				Use of business plan		
			Financial controls	Knowledge of cash flow	MCP4 to MCP6	
				Use of cash flow		
				Recording of production spending		
				Market research		
			Marketing factors	Contact with suppliers	MCP7 to MCP9	
				Environmental analysis		
				Action control		
			Personnel control	Recruitment and selection	MCP10 to MCP12	
				Training		
4	III) Identify the fish farmers' performance in the course of the activities	-	Performance	Sales growth	ID1	Chandler and Hanks (1993); Wiklund (1999); Haber and Reichel (2005); Brackburn and Hart (2013); Vilas Boas (2015) Leite (2016); Daciê et al. (2017).
				Profit growth	ID2	
				Increase in the number of staff	ID3	
				Increase in client satisfaction	ID4	

**Figure 2.** Structuring of the data collection instrument

Source: the authors (2019).

The population was determined in a non-probabilistic manner and by convenience (Cooper & Schindler, 2016), corresponding to 98 fish farmers, assisted by a technical support program in the state of Mato Grosso do Sul. This program supports rural producers from various agricultural production chains, whose method includes technical support related to the activity and management support to rural businesses.

The partnership between the researchers and the institution led to the application of the questionnaire and the achievement of a 70.4% response rate. The final sample resulted in 69 fish farms, including small producers and family fish farmers, distributed in twelve cities of that state. The questionnaires were applied presentially.

As for the representativeness of the sample, we adopted the analysis of statistical power, indicated by Cohen (1988) as “the probability of producing statistically significant results”. For the calculation, the software G\*Power 3.1.9 was used, employing the following parameters: effect size = 0.15; Type I error = 0.05; test power = 0.80, and highest number of predictors = 2 (latent performance variables receives two arrows in the path model), resulting in the need for 68 samples.

According to Ringle, Silva and Bido (2014), the number of predictors defines the minimum sample required in Structural Equation Modeling (SEM), with adjustments by partial least squares (PLS), used in this study.

Besides support from the analysis of statistical power, Hair Jr. et al. (2009) point out that the smallest sample size for factor analysis, a technique that in the confirmatory category is the first step of SEM, should be 50 observations. Hair Jr. et al. (2016) report that the sample size may be equal to or greater than ten times the largest number of predictors of a latent variable of the model, but they recommend that the model and data characteristics be considered.

The data were analyzed using multivariate analysis, with the structural equations modeling (SEM) technique, indicated to verify the consistency of the data *a priori* with the established constructs (Mingoti, 2005), and when the intention is to verify simultaneous relationships between different constructs (Hair Jr. et al., 2016). The software SmartPLS® (version 3.2.8) was used for this purpose. The use of SEM, with adjustments using *partial least squares*, is less sensitive to considerations about sample size and relieves the need for data normality, being more suitable for small samples in the analysis of SEM (Hair Jr. et al., 2009; Kallunli, Laitinen & Silvola, 2011).

In addition, this research focused on the mediation of constructs. According to Hair Jr. et al. (2016), the use of SEM permits the investigation of mediation and moderation, where moderation is indicated for cases in which the relationship between the exogenous and endogenous variables of the model is inconstant and depends on a third variable. Mediation is the analysis that verifies the influence of a third variable on the linear relationship between two constructs. This work verifies the influence of the variable “proxies of management control” in the linear relationship between “characteristics of the entrepreneur” and “performance”, thus, the mediation was verified. Next, the results are analyzed and discussed.

#### 4. Analysis and Discussion of Results

The data surveyed in the first part of the questionnaire, aiming to characterize fish farms and fish farmers, show that there is a predominance of male producers, that 56.5% are over 45 years old, and that the predominant education level is high school. Of the total sample, 26.1% claimed to have already been responsible for opening two other businesses and 26.1% for four or more businesses, which suggests a certain persistence of the producers in undertaking and diversifying their activities.

As for the fish farming activity, 94.2% have small production units (between 1 and 3 ha of water line) and 5.8% medium-sized (from 3.1 ha to 20 ha of water slide), none of which are large. This categorization follows Law 1.653, of January 10, 1996, which defines and regulates fish farming in the state of Mato Grosso do Sul. Regarding the production system, 81.2% use the semi-intensive system, signaling commercial production with the search for greater productivity.

In contrast, the mode and median of the management control *proxies* were mostly between 1 and 3, and the mean above 3 in only two variables (of the total of 12), indicating low presence in the sample. In the construct “performance” (with 4 variables), one variable generated a mean value superior to 3, and the frequent mode and median were equal to one, indicating that the performance of these enterprises has been low. Next, the multivariate statistical analyses will be carried out.

Before starting the SEM process, the necessary data checks were undertaken, such as the verification that there were no missing data and the normality test of the data, using the software Minitab®, attesting the non-normality of the data. The degrees of freedom were not analyzed because they are not significant in PLS (SEM, using partial least squares) as they are in SEM by maximum likelihood (Hair Jr. et al., 2009).

After estimating the model, with a standard analysis configuration in *SmartPLS*®, the analyses are arranged in two stages: first, the measurement model was examined, in which the reliability, variance extracted and discriminant validity are evaluated. The second stage is the analysis of the structural model, with the verification of the determination coefficient ( $R^2$ ), the predictive relevance ( $Q^2$ ), the effect size ( $f^2$ ) and the size and significance of the path coefficients, in accordance with Nascimento and Macedo (2016).

In the analysis of the measurement model (Model 1), Cronbach’s alpha of the accomplishment construct was below the recommended limit ( $<0.7$ ), but within the acceptable limits for exploratory research (between 0.6 and 0.7). Hair Jr. et al. (2016) mention that PLS-SEM is characterized as exploratory research, mainly used to develop theories.

As Cronbach’s alpha and the composite reliability aim to verify if the sample is free from bias and if the responses are reliable on the whole, the model coefficients show this confidence. As for convergent validity, the average variance extracted (AVE) of the accomplishment (0.435) and performance (0.483) constructs were below the recommended (0.5). These coefficients are shown in Table 1 below.

Table 1  
Reliability indicators and AVE

Latent Variables	Cronbach's Alpha	Composite reliability	Average Variance Extracted (AVE)
<b>Accomplishment</b>	<b>0.661</b>	0.786	<b>0.435</b>
<b>Planning</b>	0.743	0.855	0.664
<b>Power</b>	0.716	0.876	0.779
<b>Planning (Business Plan)</b>	0.912	0.945	0.851
<b>Financial Controls</b>	0.864	0.917	0.786
<b>Marketing Factors</b>	0.872	0.922	0.798
<b>Personnel Control</b>	0.974	0.983	0.950
<b>Performance</b>	0.762	0.783	<b>0.483</b>

Source: survey data (2019).

Also concerning the convergent validity, the factor loading of the CE2 variable (0.390) did not meet the minimum limit ( $> 0.5$ ) to be considered significant (Ringle, Silva & Bido, 2014). Through these factors, also associated with the AVE coefficient of the accomplishment construct, it was decided to exclude this variable, as suggested by Ringle, Silva, and Bido (2014). The model was again estimated (Model 2) and, with the exclusion of CE2, the AVE coefficient of the accomplishment construct was 0.520; the *Cronbach's alpha* of the construct was 0.683; and the AVE coefficient of the performance construct was also high (0.491).

In Model 2, the discriminant validity by *Fornell Larcker* (1981) was demonstrated in the horizontal model. Based on the cross loadings criterion, the variable CE5 presented a higher factor loading in another construct (planning) than in the construct it corresponds to (accomplishment). All other variables present higher loadings in their respective constructs (horizontal analysis), in line with Chin (1998, apud Hair Jr. et al., 2009) and Ringle, Silva, and Bido (2014). In Table 2, the discriminant validity by cross loadings is shown.

Table 2

**Discriminant validity by cross loadings – Chin (1998)**

Explanatory Variables	Accomplishment	Planning	Power	Planning (Business Plan)	Financial Controls	Marketing Factors	Personnel Control	Performance
CE1	<b>0.733</b>	0.475	0.483	0.441	0.345	0.267	0.265	0.262
CE3	<b>0.806</b>	0.432	0.459	0.268	0.313	0.246	0.033	0.036
CE4	<b>0.750</b>	0.263	0.460	0.281	0.397	0.205	0.055	-0.022
CE5	<b>0.573</b>	0.663	0.477	0.344	0.389	0.376	0.059	-0.068
CE6	0.624	<b>0.832</b>	0.540	0.463	0.430	0.522	0.111	-0.109
CE7	0.566	<b>0.887</b>	0.509	0.510	0.499	0.564	0.233	0.016
CE8	0.384	<b>0.716</b>	0.527	0.522	0.396	0.261	0.229	0.067
CE9	0.601	0.529	<b>0.880</b>	0.419	0.467	0.190	0.092	0.109
CE10	0.562	0.604	<b>0.885</b>	0.458	0.482	0.383	0.140	-0.032
PCG1	0.383	0.520	0.437	<b>0.933</b>	0.468	0.184	0.204	-0.066
PCG2	0.504	0.553	0.491	<b>0.884</b>	0.563	0.261	0.356	0.128
PCG3	0.404	0.602	0.443	<b>0.950</b>	0.502	0.241	0.260	-0.017
PCG4	0.548	0.574	0.587	0.572	<b>0.914</b>	0.259	0.373	0.376
PCG5	0.367	0.462	0.478	0.536	<b>0.890</b>	-0.040	0.266	0.212
PCG6	0.404	0.389	0.339	0.353	<b>0.855</b>	0.138	0.305	0.263
PCG7	0.421	0.553	0.363	0.226	0.122	<b>0.836</b>	0.193	-0.011
PCG8	0.297	0.485	0.279	0.200	0.156	<b>0.908</b>	0.320	0.048
PCG9	0.330	0.480	0.239	0.246	0.109	<b>0.933</b>	0.229	0.001
PCG10	0.154	0.243	0.142	0.268	0.360	0.282	<b>0.991</b>	0.560
PCG11	0.126	0.205	0.104	0.281	0.289	0.253	<b>0.964</b>	0.582
PCG12	0.146	0.225	0.137	0.327	0.395	0.283	<b>0.969</b>	0.555
ID1	-0.011	-0.138	0.028	-0.060	0.261	-0.250	0.026	<b>0.578</b>
ID2	0.069	0.026	0.112	0.091	0.350	-0.116	0.188	<b>0.710</b>
ID3	0.077	-0.002	0.023	0.029	0.249	0.090	0.696	<b>0.873</b>
ID4	0.011	-0.050	-0.061	-0.113	0.102	0.070	0.172	<b>0.603</b>

Source: survey data (2019).



In the analysis of the structural model, the coefficients of  $Q^2$  and  $f^2$  were obtained in the *Blindfolding* module in SmartPLS® (Ringle, Silva & Bido, 2014), using the omission distance of 7 points. The results showed that the  $Q^2$  of all constructs  $> 0$  (Hair Jr. et al., 2016), with a medium-high effect ( $f^2$ ) of the constructs in the model (Ringle, Silva & Bido, 2014).

The  $R^2$  coefficients appoint large effects of the structural model in all constructs, except in the “performance” construct, for which the effect is average, that is, 20% of the performance variation is triggered by characteristics of the entrepreneur and by the management control proxies. The characteristics of the entrepreneur do not foresee explanatory power ( $R^2$ ), as it is the exogenous construct and precedes the other VLs in the structural model.

To analyze the size and significance of the path coefficients between the constructs, the complete model (Figure 3) is shown with the factor loadings of the measurement model and with the path coefficients of the structural model. Using the *bootstrapping* technique, it was found that all relationships between latent variables were significant, with  $p$ -values  $< 0.05$ , that is, the constructs used in the model affect one another, as previously expected and established by the hypotheses, regardless of the signal of this effect.

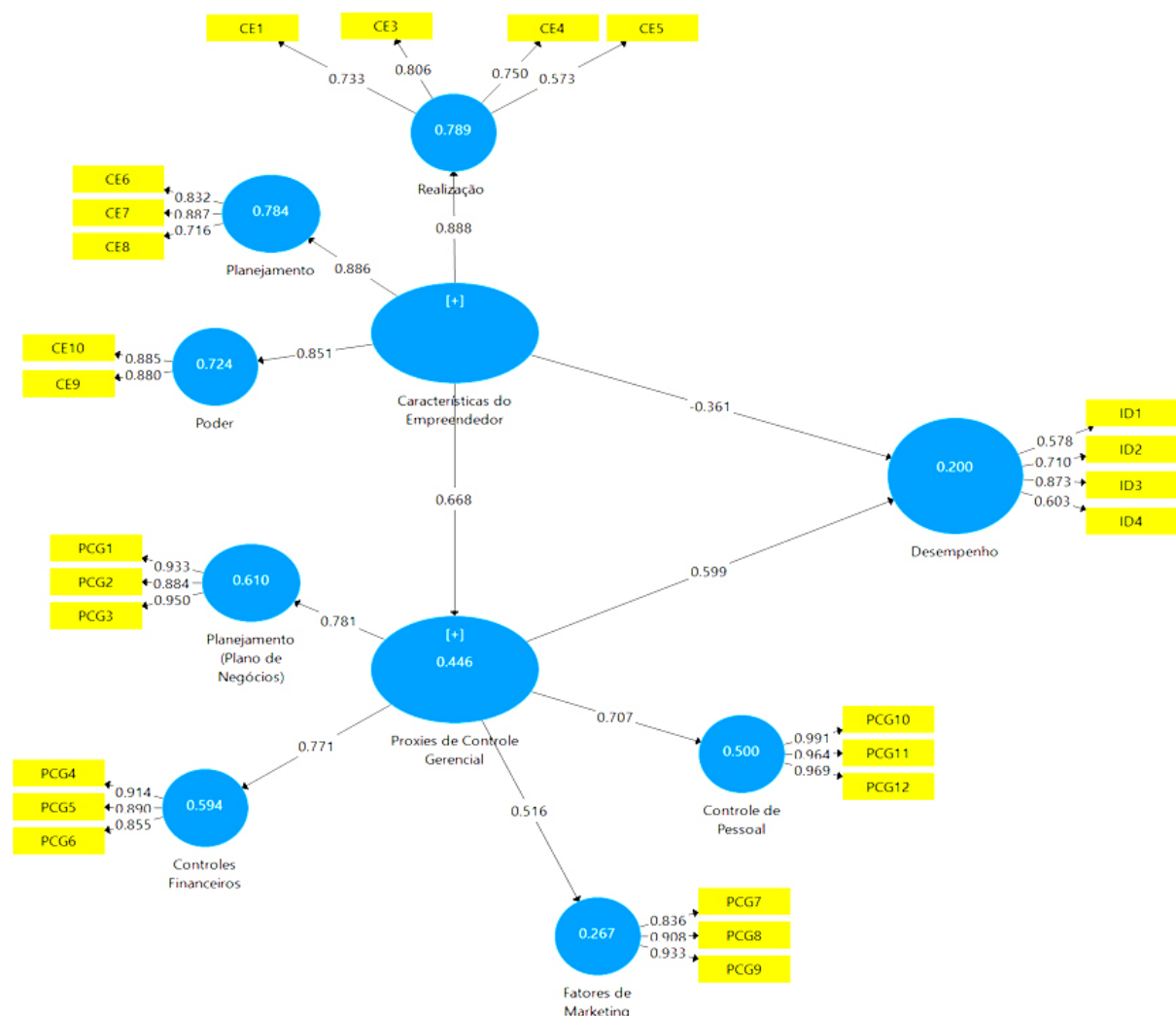


Figure 3. Model with path coefficients

Source: survey data (2019).

As the AVE indicator of the performance construct remained below the minimum limit of 0.5; the variable CE5, in the discriminant validity, presents a stronger relationship with the planning construct; and the indicator ID1 is not significant at 0.05, the model was modified, despite considering that the scope of the study is to verify the mediating effect of the management control *proxies*. The model development strategy supports this action. SEM is not only applied to test a model empirically, but also offers ideas on its respecification (Hair Jr. et al., 2009).

Theoretically, this respecification rests on the heterogeneity of the results presented in the literature, concerning entrepreneur characteristics and performance (Chandler & Jansen, 1992; Herron & Robson Jr., 1993; Carland & Carland, 1996; Lizote & Verdinelli, 2014), and on the discussion around objective *versus* subjective, financial *versus* non-financial performance measures (Venkatraman & Ramanujam, 1986; Murphy, Trailer & Hill, 1996; Richard et al., 2009; Brito & Brito, 2012).

The alternative model (Model 3) did not only exclude the variable ID1, but also allocated the variable CE5 from the accomplishment construct to the planning construct (indicated in the cross loading criterion), in order to verify if this change would produce a better fit. The exclusion of CE2, already performed in the analysis of measurement model 1, was also maintained. The reliability and convergent validity results are presented in Table 3.

Table 3

**Reliability indicators and AVE after the respecification of the model**

Latent Variables	Cronbach's Alpha	Composite reliability	Average Variance Extracted (AVE)
<b>Accomplishment</b>	0.752	0.858	0.669
<b>Planning</b>	0.807	0.875	0.639
<b>Power</b>	0.716	0.876	0.779
<b>Planning (Business Plan)</b>	0.912	0.945	0.851
<b>Financial Controls</b>	0.864	0.917	0.786
<b>Marketing Factors</b>	0.872	0.922	0.798
<b>Personnel Control</b>	0.974	0.983	0.950
<b>Performance</b>	<b>0.640</b>	0.766	0.531

Source: survey data (2019).

After the exclusion of the variable ID1, the performance construct led to a reduction from 0.762 to 0.640 in the *Cronbach's alpha* coefficient, still acceptable for exploratory research. The coefficient of 0.766 for the composite reliability of the “performance” construct reinforces that these indicators are reliable. Based on all AVE coefficients and factor loadings > 0.5, the convergent validity was certified. The discriminant validity of the respecified model was expressed by the two criteria. In addition, the discriminant validity was certified by the HTMT criterion proposed by Henseler et al. (2015 apud Hair Jr. et al., 2016), for which the confidence interval should not include 1 in the combination of the construct, a fact evidenced by *bootstrapping*, as presented in Table 4.

Table 4

**Bootstrapping after the respecification of the model**

Relationships between Latent Variables	Original Sample	Sample Average	Standard Deviation	T-statistics	P-values
Entrepreneur characteristics -> Accomplishment	0.772	0.768	0.074	10.381	0.000
Entrepreneur characteristics -> Planning	0.879	0.884	0.028	31.012	0.000
Entrepreneur characteristics -> Power	0.853	0.853	0.033	25.890	0.000
Entrepreneur Characteristics -> Management Control Proxies	0.665	0.668	0.057	11.627	0.000
Entrepreneur Characteristics -> Performance	-0.364	-0.390	0.130	2.797	0.005
Management Control Proxies -> Planning (Business Plan)	0.779	0.778	0.063	12.447	0.000
Management Control Proxies -> Financial Controls	0.769	0.775	0.055	14.003	0.000
Management Control Proxies -> Marketing Factors	0.517	0.511	0.147	3.512	0.000
Management Control Proxies -> Personnel Control	0.710	0.699	0.103	6.890	0.000
Management Control Proxies -> Performance	0.621	0.669	0.136	4.571	0.000

Source: survey data (2019).

The significance of the relationships, analyzing using the *t*-test in the Structural and Measurement model, were significant at 5% with a *p*-value < 0.05. Still comparing models 2 and 3, in the analysis of the structural model, the results (Table 5) point to a reduction in relation to model 2, in the R<sup>2</sup> in the constructs “accomplishment”, “planning”, “management control proxies”, “planning”(business plan) and “financial controls”. Except for accomplishment, the changes in the other constructs were very small. The R<sup>2</sup> of the constructs “power”, “marketing factors”, “personnel control” and performance” increased, that is, the structural model now represents 21.7% of the performance variation.

Table 5

**Determination coefficients, predictive relevance and effect size after the respecification**

Latent Variables	R <sup>2</sup>	Q <sup>2</sup>	f <sup>2</sup>
Entrepreneur characteristics	-	-	0.329
Accomplishment	0.596	0.368	0.332
Planning	0.773	0.454	0.394
Power	0.727	0.540	0.308
Management Control Proxies	0.443	0.160	0.294
Planning (Business Plan)	0.607	0.479	0.610
Financial Controls	0.592	0.432	0.512
Marketing Factors	0.268	0.187	0.531
Personnel Control	0.504	0.446	0.760
Performance	0.217	0.079	0.159

Source: survey data (2019).

Table 6 shows the direct, indirect and total effects of the respecified model. For the direct and indirect relationships, the variation was inexpressive, so that the total effect of entrepreneur characteristics on performance corresponds to 4.9% (direct -36.4% and indirect 41.3%), a variation of 1% in relation to model 2. The direct effect of entrepreneur characteristics on the use of management control proxies was 66.5%. On the other hand, the effect of management control proxies on performance was 62.1%.

Table 6

**Direct, indirect and total effects of the respecified model**

Relationships between Latent Variables	Direct Effects	Indirect Effects	Total Effects
Entrepreneur characteristics -> Accomplishment	0.772	0.000	0.772
Entrepreneur characteristics -> Planning	0.879	0.000	0.879
Entrepreneur characteristics -> Power	0.853	0.000	0.853
Entrepreneur Characteristics -> Management Control Proxies	0.665	0.000	0.665
Entrepreneur Characteristics -> Planning (Business Plan)	0.000	0.519	0.519
Entrepreneur Characteristics -> Financial Controls	0.000	0.512	0.512
Entrepreneur Characteristics -> Marketing Factors	0.000	0.344	0.344
Entrepreneur Characteristics -> Personnel Control	0.000	0.472	0.472
Entrepreneur Characteristics -> Performance	-0.364	0.413	0.049
Management Control Proxies -> Planning (Business Plan)	0.779	0.000	0.779
Management Control Proxies -> Financial Controls	0.769	0.000	0.769
Management Control Proxies -> Marketing Factors	0.517	0.000	0.517
Management Control Proxies -> Personnel Control	0.710	0.000	0.710
Management Control Proxies -> Performance	0.621	0.000	0.621

Source: survey data (2019).

Some considerations deriving from these effects will be taken up later. As the respecified model met the adjustment problems indicated earlier, it was used in the subsequent analysis in order to achieve the overall objective of the research.

#### 4.1 Mediation Analysis of Management Control Proxies

To verify the mediation, Hair Jr. et al. (2016) point out that a series of analyses are necessary. The first step is to verify whether the indirect effect between the independent variable (*IV*) and the dependent variable (*DV*) is significant through another construct (mediator variable - *MV*). Another step is to evaluate the direct effect: if it is not significant through a significant indirect effect, it indicates that the mediation is indirect. If the direct effect is significant as well as the indirect effect, one can distinguish between complementary mediation (significant direct and indirect effect with the same direction) or competitive (significant direct and indirect effect with opposite directions).

Thus, the authors explain, based on Zhao, Lynch and Chen (2010), that a non-mediation is postulated when, in the model in which all constructs are present, the direct effect between the latent exogenous and endogenous variable is significant, but the indirect effect is not, or when neither the direct nor the indirect effect are significant. In the model of this research, both the direct ( $t = 2.797$ ) and the indirect effect ( $t = 4.288$ ) are significant.

Proceeding with the analyses, Hair Jr. et al. (2009) describe a series of four steps to conduct a mediation analysis. The steps will be described, using the constructs of this research (Figure 4) and, then, the analyses are discussed.

Check:

- 1<sup>st</sup> a) If entrepreneur characteristics are related to performance (significant correlation);  
b) If entrepreneur characteristics are related to management control proxies (significant correlation);  
c) If management control proxies are related to performance (significant correlation);
- 2<sup>nd</sup> If the relationship between entrepreneur characteristics and performance remains significant and unchanged when the construct of proxies is included in the model, then the **mediation is not sustained**;
- 3<sup>rd</sup> If the relationship between entrepreneur characteristics and performance remains significance, but its effect decreases when the construct of proxies is included in the model, then the **mediation is partial**;
- 4<sup>th</sup> If the effect between entrepreneur characteristics and performance is small, so that it is not significantly different from zero, then the **mediation is complete**.

Figure 4. Mediation analysis stages

Source: the authors (2019).

For the mediation analyses, as displayed in Figure 4, the verification tests were applied. To perform the proposed test, the data need to be run in pairs of constructs, as the second stage of the analysis suggests observing the significance of the relationship between the two constructs when the supposed “mediator” construct is inserted in the model. Figure 5 shows the results of this round using the *bootstrapping* technique, which performed 1000 resamplings of the initial sample. The coefficients of the test figures are the results of the *t*-test in order to verify the significance of the relationships (using the reference value of  $t = 2,000$ , from 60 to 120 degrees of freedom, according to distribution table *t*).

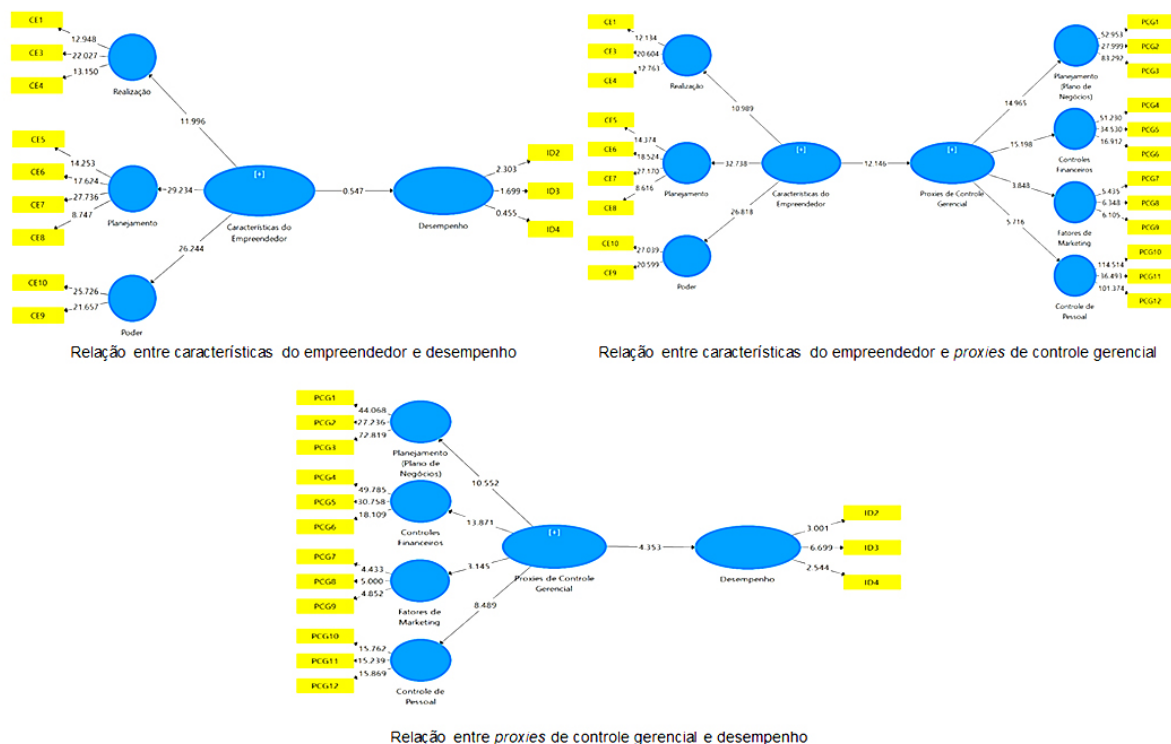


Figure 5. Test in alternative models without mediation.

Source: survey data (2019).

The illustration indicates that the direct relationship between entrepreneur characteristics and performance showed not to be significantly correlated ( $t=0.547$ ). In the analysis of the other two relationships (entrepreneur characteristics X management control proxies; management control proxies X performance), both were significant at 5%. The path coefficient signaled the influence of proxies on the performance in 40.9% without the presence of entrepreneurial characteristics.

Based on the four steps presented by Hair Jr. et al. (2009), it is observed that: the relationship between *IV* and *DV* changes when *MV* is present, becoming significant. If it remained without a direct correlation, but with an indirect correlation, the mediation would be complete as indicated in the fourth step of Figure 4. Hair Jr. et al. (2016) mention that the classification of indirect mediation by Zhao, Lynch and Chen (2010) is similar to the concept of complete mediation by Baron and Kenny (1986). Complementary mediation and concurrent mediation coincide with partial mediation, also according to Baron and Kenny (1986).

The path coefficients between the constructs in the complete model demonstrate that the direct effect of *IV* on *DV* is negative (- 0.364) and that the indirect effect is positive (0.413), indicating concurrent mediation. Based on these results, it can be concluded that the management control proxies construct acts as a partial and concurrent mediator in the relationship between characteristics of the entrepreneur and performance, as its presence in the relationship not only generates direct significance between them but also produces a greater and positive effect, albeit indirectly (Table 6).

Therefore, in order to discuss the results of the study, the hypotheses raised are verified, exposed in Figure 6 below.

	Hypotheses	Result
<b>H1</b>	The characteristics of the entrepreneur influence the performance positively.	Rejected
<b>H2</b>	The characteristics of the entrepreneur influence the use of management control proxies positively.	Not Rejected
<b>H3</b>	The use of management control proxies influences the performance positively.	Not Rejected
<b>H4</b>	The management control proxies act as positive mediators in the relationship between characteristics of the entrepreneur and organizational performance.	Not Rejected

**Figure 6.** Results of research hypotheses

Source: the authors (2019).

When investigating the relationship between accomplishment, planning, power and performance, Lizote and Verdinelli (2014) found a significant relationship with performance of only six of the ten characteristics addressed in Empretec. Among these, “search for opportunities and initiative” and “demand for quality and efficiency” were negatively related to performance. Thus, the direct negative relationship between entrepreneur characteristics and the performance of the enterprises, with the rejection of H1, corroborates some results found in Lizote and Verdinelli (2014).

On the other hand, it goes against other studies such as Fontenelle & Hoeltgebaum (2006); Man, Lau & Snape (2008); Veit & Gonçalves Filho (2008); Eravia, Handayani & Julina (2015); Lizote and Verdinelli (2015); Daciê et al. (2017). This rejection of H1 is related to a significant presence in the sample of entrepreneurial characteristics and low performance (identified by the central trend measures), evidencing that other factors influence this relationship, as weighted by Rauch et al. (2009) and Spillecke and Brettell (2013).

As appointed by Herron and Robson Jr. (1993), some studies have obtained significant associations between the two constructs, but not in others, also alerting about the consideration of the entrepreneur characteristics, more than any other factor, on the success of an enterprise. These differences may be related to the research samples and to the questioning of whether in fact there is a sublime personality that relates to performance (Gartner, 1989; Kerr, Kerr & Xu, 2018).

Regarding H2, H3 and H4, the results are in line with Leite (2016) and Daciê et al. (2017), where they identified what characteristics of the entrepreneur positively influence the use of management control proxies. Similarly, these proxies generate a positive influence on performance, and management controls enhance the effect of entrepreneurial characteristics on performance.

Although these entrepreneur characteristics (accomplishment, planning, and power) did not have a direct positive relationship with performance, they demonstrated a positive influence through the use of management controls, indicating its contribution to organizational performance (Bomfim & Torkomian, 2017).

The fact that management controls explain 62.1% of the performance reinforces the conception that these are important for micro and small companies (Santos, Dorow & Beuren, 2016), indicating the need to be applied with greater commitment and evidencing that entrepreneurs also need to act objectively (Fillion, 2000). The relationship between the entrepreneur characteristics and the management control proxies agree with the mention in Roper (1998) that control and management are substantially related with these characteristics.

## 5. Final Considerations

The relevance of the management controls for organizations and their role in their performance are represented by a homogeneous area in the literature. The relationship between entrepreneurial characteristics and performance also present heterogeneous results in research that investigated it though, and the literature on entrepreneurialism is multifaceted. This arouses the question whether these characteristics are truly valuable to the enterprises.

The objective of the empirical contribution is to show the role of entrepreneurial characteristics (not addressed thus far by the technical support) and their relationship with the other constructs proposed, in order to support the development for fish farming in the state of Mato Grosso do Sul, where the production still meets many obstacles. The negative direct influence of entrepreneur characteristics on the performance of the business arouses questions though.

This research confirmed that the use of management control proxies is another determining factor in the development of fish farming, just like it is for companies from other economic sectors. This situation is due to the fact that these proxies directly and positively influence the performance of these organizations in 62.1%, in the presence of entrepreneurial characteristics, and also act as mediators in this relationship.

The respecification of the model, through the model development strategy: excluded the persistence variable, allocated the variable taking calculated risks to the latent variable planning and excluded the performance indicator sales growth. For the sake of future research, this new model could be applied in other samples, as recommended by Hair Jr. et al. (2009), arousing a reflection on the entrepreneurial characteristics model used in Empretec: should it be reconsidered?

Given the relationship between the constructs of the model, these variables should be addressed with greater effort in other small fish farms, as is the case of the research sample, and it is also interesting to include other variables that can explain this performance. In this study, the qualitative aspects of these interactions were not explored. Future studies could investigate the reasons why these entrepreneurial characteristics of the fish farmers negatively influence the performance of the fish farming activity.

The study came with some limitations, such as the size of the sample and its non-probabilistic and convenience-based characteristic, which makes generalizations impossible. Another limitation is due to the fact that the construct **entrepreneur characteristics** was obtained through a pre-existing model, Empretec, so no hypotheses and analyses on the subconstructs accomplishment, planning, and power were formulated. In time, a simplified research report was provided to the technical support company.

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# Guidelines for Authors

## 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.

The submission of articles should be done electronically, through the [www.repec.org.br](http://www.repec.org.br) website. At the end of the submission an electronic message will be sent by e-mail, confirming receipt of the article.

## 2. Content and Formatting of Papers

At the moment of submission, the articles should contain:

- The **title** in the language of origin of the article (Portuguese or English) without identifying the author(s);
- 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 Figures<sup>1</sup>

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:

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<sup>1</sup> Most of these guidelines were adapted from the Manual for Submissions of the *Revista de Administração Contemporânea* – RAC, available at [www.anpad.org.br](http://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.

### 3.2 Figures

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>.