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Academia Brasileira de Ciências Contábeis (Abracicon)
SAS, Qd. 5, Bl. J, 4º andar, Ed. CFC, CEP: 70070-920, Brasília-DF
E-mail: *repec@cfc.org.br*

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Editor's Word

Dear reader, we are delivering the third issue of 2021. First, I would like to inform and congratulate the articles published in this issue and thank all the authors who submitted their papers but unfortunately did not have them approved.

The invited editorial is by Professor Joshua Herbold. He is a Teaching Associate Professor at the University of Illinois at Urbana Champaign (UIUC) in the Department of Accounting. In this editorial, Prof. Josh talks about recent changes in the exam for public accountants here in the United States. Many changes occurred primarily because accountants became more involved with the technological field, while other items were removed and caused surprise (or not so much), such as IFRS. What the new exam will require directly impacts how universities prepare their students for the profession's future.

Returning the focus to articles approved by blind peer review, the first paper, from the Management Accounting area, was written by the authors João Teles, Rogério João Lunkes, and Alcindo Mendes, all from the Federal University of Santa Catarina, to analyze the effects of management controls (CG) on affective commitment through cognitive assessments and emotional reactions. The study provides evidence that employees perceive each type of management control differently, with cultural and personnel controls being perceived more positively than results and action controls.

The second paper was written by Lineker Costa Passos from the University of Ceará and Paulo Roberto Cavalcante from the Federal University of Paraíba. The study from the Financial Accounting field was intended to examine whether the ability of current cash flow and accrual components to predict future cash flows is affected in periods of political uncertainty. The authors concluded that political uncertainty negatively affects the predictive capacity of reported earnings components; however, such an effect was shown to be conclusive only for the current cash flow component.

The third paper is from the Audit field and was written by Natália Zanotti Silote, Etiene Freitas Rezende, and Vagner Antônio Marques, all affiliated to the Federal University of Espírito Santo, and Viviane da Costa Freitas from the Federal University of Paraíba. This paper aimed to analyze the association between Internal Control Weaknesses (ICWs), auditor's opinion, and the republishing of Financial Statements (DF) of companies listed in Brazil.

The fourth paper was written by Antonio Rodrigues Albuquerque Filho, from the Centro Universitário Estácio do Ceará, Editinete André da Rocha Garcia and Alessandra Carvalho de Vasconcelos, both from the Federal University of Ceará, and Afonso Carneiro Lima from Unifor. The study's objective was to analyze the moderating effect of innovation on the relationship between internationalization and financial performance. The main result shows that the degree of internationalization alone does not ensure high financial performance in Brazilian companies, while it negatively influences the return on assets (ROA) in European companies.

The fifth paper was written by Marília Basi and Paschoal Tadeu Russo, both from Fipecafi, José Carlos Oyadomari from Mackenzie and Maria Thereza Pompa Antunes from Unicsul. In this paper, the objective was to understand the existing associations between the different intensities of typifications of organizational culture (CO), levels of partnership exercised by the controllership are (NPC), and the breadth of organizational performance appraisal systems (ASADO). The results reveal that organizations with stronger organizational cultures are directly associated with more participatory controllership areas (higher levels of Controllership partnership), which use more comprehensive performance appraisal systems. Additionally, the results show no direct association between organizational culture and the breadth of performance appraisal systems.

Finally, the last article is from the corporate field and was written by Silvia Amélia Mendonça Flores from the Federal University of Pampa and Igor Bernardi Sonza from the Federal University of Santa Maria. This study aims to analyze the explanatory factors of related-parties transactions (RPTs) in parent/subsidiaries and affiliate companies with a pyramid structure in Brazil. Regarding the results, the explanatory factors of RPTs for parent companies/subsidiaries are deviation of rights, leverage, the presence of foreign shareholders, and independent auditors. In addition, the effects of return on assets (ROA), tangibility, and auditing by the Big Four were verified for affiliates.

Finally, I would like to provide opportunities and inform you that REPeC is not a publication only linked to the field of education, but to several fields, as shown in its objectives: Financial, Management, Public, Auditing, and Taxes, among others.

Without further ado, I thank all the researchers who submitted their papers to REPeC, in addition to the referees, always very cooperative. Congratulations to those who had their articles approved, as the demand is considerably high and the road to the final publication is very arduous.

Thank you very much to the readers, and I hope you will enjoy this new issue.

Academic greetings.

Gerlando Lima, Ph.D.
Editor in Chief

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CPA Evolution: Avoiding Professional Extinction

Joshua Herbold
https://orcid.org/0000-0002-5857-5064

The accounting profession is changing. In and of itself, that shouldn't surprise anyone. My first accounting class was in the early 1990s, and we learned how to: write a journal entry into a general or specialized journal, post that entry to a ledger, foot the totals for each account in the ledger, transfer the totals to a trial balance, and use the trial balance to compile basic financial statements, all by hand (and in pencil—too many potential mistakes to use pen!). Today, nearly all that knowledge is either obsolete or close to it. Certainly, these are still important steps in the accounting process! But we no longer need to do all of this manually. Today, we have multiple tools that can automatically record most of the information that we collect, and accounting and analytics software that help us interpret and report the results of an organization's efforts. Technology has enabled accountants to relegate the repetitive, mundane tasks to software and computers, which has freed up our time for much more interesting and engaging work.

Of course, advances in technology have also led to major changes in the world in which we, as accountants, function. These changes have been so fundamental that they're being referred to as the fourth industrial revolution. Following closely on the heels of the third industrial revolution—which encompassed the digitization of much of the information that we use—this may be the first time in recorded history that the same people are experiencing multiple industrial revolutions. The point is that "change" has become the new normal. The world is now in a constant state of change. The goal of a well-designed accounting system is to record and report on what happened in an organization over a period of time, so when the world in which that organization operates changes, the accounting system—and thus the profession—needs to change as well.

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Within the accounting profession, new technologies are changing the work that entry-level accountants are being asked to do. Many time-consuming but uncomplicated tasks, like reconciliations, are being automated or outsourced. Newly licensed CPAs are increasingly expected to be able to do more complex tasks that involve critical thinking, problem solving, and analytical skills. New technologies like automation (whether through robotic process automation, known as RPA, or automation that is built into accounting and enterprise software systems) are being used in place of having a new accountant follow a step-by-step procedure for hours or days on end. The knowledge and skills that employers expect from new accountants is rapidly evolving, and if employers can't find accountants with these skills, they'll go elsewhere to find new employees. This is exactly the trend that the American Institute of CPAs (AICPA) has observed. In its latest AICPA Trends Report[1], they note that hiring of accounting majors by U.S. public accounting firms has decreased (11% in the latest report, 30% total decline over the last two biennial reports). At the same time, hiring of non-accounting majors by those same firms increased over 55%. Nearly one-third of all hires by U.S. public accounting firms are now non-accounting majors.

In response to these trends and changes, the AICPA partnered with the National Association of State Boards of Accountancy (NASBA, a national group comprised of accounting regulators from all U.S. states and jurisdictions) in a project now known as CPA Evolution[2]. The CPA Evolution project will culminate in a new structure for the CPA exam, currently scheduled to debut in January 2024. This new structure shares some features with the current CPA exam model: four sections, each taken individually, with a total of no more than 16 hours of testing. But the content in those four sections is going to change dramatically. Currently the four sections of the CPA exam are Auditing and Attestation, Financial Accounting and Reporting, Business Environments and Concepts, and Regulation. The new CPA exam structure, which has been approved by both AICPA and NASBA, is a "core + discipline" model. Three sections of the new CPA exam will cover core accounting, audit, and tax concepts, and a fourth section will dive deeper into various specific disciplines within the accounting profession.

According to the AICPA and NASBA, this model will ensure that all newly licensed CPAs have a strong understanding of the "basics" of the profession. The AICPA is still working on the details regarding the content to be covered in each section of the exam, but the general expectation is that most of the foundational concepts in accounting, audit, and tax that are on the current CPA exam will be tested in one of the three "core" sections of the new CPA exam. Technology underlies nearly all the work that CPAs do, so questions about relevant technology (for example, spreadsheets, databases, basic data analytics, RPA, and/or blockchain, to name just a few) will be woven into the core exam sections where appropriate.

The "core + discipline" model is also flexible, because new disciplines can be added (and old disciplines "phased out") when significant changes to the profession emerge. When the new exam is released in 2024, three disciplines will be offered: Business Analysis and Reporting, Information Systems and Controls, and Tax Compliance and Planning. (Each of these sections is discussed in more detail below.) Examinees will choose one of these disciplines in which to demonstrate deeper knowledge. (The AICPA has been asked whether examinees can signal knowledge in more than one area by taking additional discipline sections after passing one of the disciplines; they have stated that this will not be allowed. According to AICPA and NASBA, the purpose of the CPA exam is to demonstrate that a candidate has the minimum knowledge and skills necessary to be licensed as a new CPA, not to demonstrate that a candidate is an expert in multiple areas.) After passing the three core sections of the exam and one of the discipline sections, examinees will have "passed" the entire exam.

1 The AICPA Trends Report is published every two years. As of the writing of this editorial, the latest report is from 2019: https://www.aicpa.org/interestareas/accountingeducation/newsandpublications/aicpa-trends-report.html.

2 https://evolutionofcpa.org/

Assuming that a candidate meets the other licensure requirements in their state (typically including education, experience, and ethics requirements), a candidate who passes the new CPA exam can earn their CPA license. One issue that has been very important to AICPA and NASBA throughout the CPA Evolution project is that all candidates will earn the same CPA designation, with no differentiation between candidates who take different discipline sections of the exam. For example, a candidate who passes the "Tax Compliance and Planning" section of the new CPA exam will not be referred to as a "CPA-Tax"; they will simply be a CPA. The designation/license is the same for all candidates who pass the exam, and the rights, obligations, and privileges will remain the same for all CPAs. Furthermore, candidates are not limited to practicing in the discipline in which they tested. For example, a candidate who passes the "Tax Compliance and Planning" discipline can still work in audit if that is where their career path leads. Of course, the AICPA's professional standards note that CPAs should not take on engagements for which they don't have or can't obtain the required knowledge. The bigger point, though, is that the discipline that a candidate chooses does not limit their future career path.

The specific content for each of the sections of the new CPA exam is still being developed, but a draft of the potential content for each area can be found in the "CPA Exam Practice Analysis Survey Background" document released by AICPA[3]. The vision is for the three disciplines to include the following general topics (see the background document for more details):

- **Business Analysis and Reporting (referred to as BAR):**
  - **Financial statement analysis,** including analysis of current period and historical accounting and other data, prospective/forward-looking analytics, COSO[5] Enterprise Risk Management Framework
  - **Technical accounting and reporting topics,** including more advanced/complex financial accounting topics like revenue recognition, lease accounting (for lessors; lessee accounting is in the core), consolidations (including foreign currency translation/remeasurement), business combinations, SEC reporting requirements, emerging reporting frameworks, and employee benefit plans
  - **State and local government accounting,** including the comprehensive annual financial report (CAFR), government-wide financial statements and reconciliations, and typical transactions for governmental entities
- **Information Systems and Controls (referred to as ISC):**
  - **System and organization controls (SOC) engagements,** including SOC 1 and SOC 2 engagements
  - **Governance, processes, risks, and controls,** including COSO Internal Control Integrated Framework, AICPA 2017 Trust Services Criteria, business processes and controls, information systems and infrastructure, information technology change management, business continuity, and incident response planning
  - **Information, system security, confidentiality, and privacy,** including information security concepts and frameworks, information system controls, network and other security, data governance frameworks and standards, confidentiality/privacy regulations and controls

3 Retrieved on 10 September 2021 from https://assets.ctfassets.net/rb9cdnjh59cm/54u8x0bxJHFZ7Ckx27Kz0F/92d3c7c32a367ee9d3444d4ebf013423/draftcorediscipline surveybackground.pdf

- **Tax Compliance and Planning (referred to as TCP):**
  - **Individual tax/financial planning,** including tax planning considerations (gross income, adjusted gross income, taxable income, computation of tax, estimated taxes, and tax credits), passive activity and at-risk loss limitations, gift taxation compliance and planning, and personal financial planning for individuals (which includes, among many other items, tax liability management, estate/gift/wealth transfer planning, and investment and retirement planning)
  - **Entity tax compliance,** including regulations and calculations for C-corporations, S-corporations, and partnerships, as well as for trusts and tax exempt organizations
  - **Entity tax planning,** including the tax treatment for the formation/liquidation of business entities, and tax planning for C-corporations, S-corporations, and partnerships
  - **Property transactions,** including nontaxable dispositions, amount/character of gains and losses, and related party transactions

In a survey of accounting students, nearly 90% replied that they either already knew which discipline they would choose or would feel comfortable in choosing a discipline. When asked to rank the discipline that they were most likely to choose, about 50% of students said they would choose Business Analysis and Reporting, 25% would choose Information Systems and Controls, and 25% would choose Tax Compliance and Planning.[4] While there is certainly some concern among today's students about the transition to the new exam (and AICPA and NASBA report that they are developing a plan for those candidates who start but do not finish the CPA exam prior to the launch of the new version in January 2024), most students seem comfortable with the structure and material for the evolved exam.

The changes to the CPA exam are indeed significant, but they are necessary for our profession to keep pace with the world in which we operate. During my career, I've seen the exam change multiple times: from a paper-based exam to a computer-based exam, from twice-yearly testing (where candidates took all four sections over a two-day period) to continuous testing, from questions that were all multiple choice or essay to questions that simulate tasks and issues in practice, etc. Thus, it makes sense that this project is referred to as an evolution, and not a *revolution*. When put in context, it seems only natural that the exam would have to change as the profession changes. The knowledge and skills that helped a CPA succeed twenty years ago will not be as useful for today's new CPAs. Fortunately, we work in a profession that recognizes the need for change and has been proactive and careful about implementing the necessary changes, while retaining the core knowledge that sets our profession apart. For a profession with one foot rooted in tradition and the other stepping deliberately into the future, it seems apt to celebrate these changes by paraphrasing a 600-year old proclamation: The CPA exam is dead. Long live the CPA exam!

4 Results of the survey are reported at https://evolutionofcpa.org/.

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Interactive effects of management controls, cognitive appraisals, and emotional responses on affective commitment

João Teles
https://orcid.org/0000-0003-1140-0037

Alcindo Cipriano Argolo Mendes
https://orcid.org/0000-0002-1999-7117

Rogério João Lunkes
https://orcid.org/0000-0003-4232-5746

Abstract

Objective: This study's objective was to analyze the effects of management controls (MC) on affective commitment through cognitive appraisals and emotional responses. Management controls are represented in this study by four types of control: result, action, personnel, and cultural controls.

Method: This quasi-experiment was conducted among 252 undergraduate students from the management field. Four scenarios simulating the adoption of management controls were presented. A quantitative approach was adopted, and structural equation modeling with Partial Least Squares (PLS-SEM) was used for data analysis.

Results: The study provides evidence that employees perceive each type of management control differently; cultural and personnel controls are more positively perceived than result and action controls. Additionally, when the individuals positively perceived and assessed controls, the impact on affective commitment was significantly greater. On the other hand, affective commitment was significantly decreased when the individuals assessed and perceived that controls represented a threat.

Contribution: This study contributes to the literature by showing that individuals respond differently to the adoption of result, action, personnel, and cultural controls. It brings up a discussion that, even though management controls are important to influence behavior, there is a need to advance understanding of the effect of each type of control.

Keywords: Management controls; Cognitive Appraisals; Emotional Responses; Affective Commitment.

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1. Introduction

Management controls (MCs) are important to influence employees' behavior (Cugueró-Escofet & Rosanas, 2013; Goebel & Weißenberger, 2017). Studies published in the last two decades have shown that MCs can align individual objectives to organizational objectives (Otley, 1999; Merchant & Van der Stede, 2007; Chenhall & Moers, 2015). Hence, organizations need to direct the behavior of employees to ensure their commitment (Goebel & Weißenberger, 2017) to attain organizational goals.

Despite the vast literature on the subject, little is known about the psychological effects the various types of management control cause on employees. Traditionally, MCs are thought to influence behavior; however, MCs can be classified into different types, and employees' responses may vary.

On the one hand, responses may be positive, such as workers being satisfied and engaged with work (Kenis, 1979; Basnet, 2018), improving cooperation and teamwork (Karia & Assari, 2006; Christ, Sedatole, Towry & Thomas, 2008). These positive effects impact employees' perceived trust (Walton, 1985; Christ et al., 2008) and affective commitment (Goebel & Weißenberger, 2017), which improve work performance (Christ, Summers & Wood, 2012; Christ, Emett, Tayler & Wood, 2016). However, the adoption of management controls may also negatively impact employees, to the extent that these are perceived as a threat or something that will restrict their work autonomy (Christ et al., 2008), generating negative emotional responses, such as frustration, stress, and tension (Basch & Fisher, 1998). Therefore, it is likely that negative responses interfere with the organization's performance.

Few studies address the effects of employees' emotional and cognitive responses to management controls. Goebel and Weißenberger (2017) indicate that psychological factors may indirectly affect the relationship between management controls and employee performance. Hence, studies found it difficult to explain how employees behave when interacting with the various types of management controls, such as result, action, personnel, and cultural controls (Merchant & Van der Stede, 2007). This study is intended to fill in a gap concerning the different effects of result, action, personnel, and cultural controls on employees' affective commitment. More specifically, it is intended to identify the effect of each control on people's cognitive appraisals and emotional responses, and consequently on affective commitment.

Thus, this study analyzes the behavior of employees based on the literature addressing emotions from the perspective of the Affective Events Theory (AET). Weiss and Cropanzano (1996) propose that work-related events cause emotional responses in individuals, influencing their attitudes later. Weiss and Cropanzano (1996, p. 12) consider that "the consequences of affective experience are both attitudinal and behavioral." From this theoretical perspective, positive affect at work influences organizational spontaneity (George & Brief, 1992), organizational citizenship behavior (Ilies, Scott, & Judge, 2006; Spence, Ferris, Brown & Heller, 2011), and lower absenteeism rates (George, 1989), whereas negative affect is associated with counterproductive behaviors such as aggression and sabotage (Ashkanasy & Humphrey, 2011).

Therefore, the assessments made by individuals regarding the different types of management controls are particularly relevant because they determine how employees respond and whether they will commit to the organizational objectives. From the perspective adopted in this study, an employee's behavior results from an internal process (*intra corpus)* composed of cognitive, emotional, and attitudinal aspects. Consequently, the various types of management controls have an emotional impact on employees depending on individual interpretations of organizational situations. Therefore, one should consider that each employee responds differently to result, action, personnel, and cultural controls and present different emotional and attitudinal responses. Hence, **this study's objective was to analyze the effects of different types of management controls on the employees' affective commitment using cognitive assessments and emotional responses.**

A quasi-experiment was conducted in this study. First, students were presented with scenarios simulating each type of management control. Next, their cognitive appraisals and emotional responses that determined their levels of affective commitment were collected. Hence, this study contributes to behavioral research in management accounting, presenting the relationships between management variables and emotional aspects. More specifically, it shows that cultural and personnel controls are more positively perceived (challenge) than result and action controls. Therefore, this study presents evidence that employees are affected differently and perceive types of controls differently.

Therefore, this study advances knowledge regarding emotions and decisions made within the working environment (Birnberg & Ganguly, 2012) by analyzing the effect of management controls on employees' responses. This knowledge can improve the efficiency of management control systems and consequently direct employees' commitment toward attaining organizational goals. It also shows that managers should be prudent when adopting certain types of control, such as action and result controls, to avoid adverse effects for the organization.

2. Literature review and hypotheses development

2.1 Affective Events Theory (AET)

The study of affect in the workplace emerged in the USA in the 1930s, presenting a diversity of ideas and methods, seeking to understand the workers' feelings (Fisher & Hanna, 1931; Kornhauser & Sharp, 1932; Hersey, 1932; Hoppock, 1935; Roethlisberger & Dickson, 1939). Diversity from the 1930s was replaced by a line of research that predominantly focused on job satisfaction, using empirical observations to identify its antecedents (Weiss & Cropanzano, 1996). At the time, instruments were developed to measure work attitudes, which conferred reliability and validity to studies (Brief & Weiss, 2002).

The Affective Events Theory (AET) proposed by Weiss and Cropanzano (1996), highlights the role of emotions at the workplace and considers that certain events cause emotional responses, influencing the individuals' attitudes and behaviors within the organization. These events are called 'affective events'. According to EAT, affect is a variable that mediates the relationship between organizational and affective factors (Ashkanasy, Härtel & Daus, 2002).

Affective events are assessed in a cognitive process that involves an event's importance and relevance for one's wellbeing. The initial appraisal is followed by a more specific assessment that focuses on dimensions such as coping potential and the event's consequences. These assessments result in emotions such as joy (positive) or anger (negative). Regarding how affect influences attitudes and behavior, Weiss and Cropanzano (1996) argue that attitudes comprise both an affective and a cognitive judgment element.

Cognitive appraisal refers to perceptions regarding the relevance of an event for one's wellbeing, determining the intensity and quality of feelings, action tendencies, physiological responses, and behavior (Roseman, Spindel & Jose, 1990; Lazarus, 1991a; Clore & Ortony, 2000; Frijda, 2004). Employee appraisals of organizational change are crucial as these define how employees react to change (Fugate, Harrison & Kinicki, 2011).

A challenge cognitive appraisal (facilitation of objectives) leads to pleasant emotional states (Weiss & Cropanzano, 1996), while a threat cognitive appraisal indicates potential loss in the future and lack of trust in managers; thus, it represents the employees' concern with the future. Cognitive appraisals enable managers to be proactive and heed the employees' concerns, mitigating undesirable responses such as losing valuable employees (Biggane, 2016).

Emotions may be understood as internal states involving interactions between a subject and an object, such as feelings, wellbeing, or a given motor pattern (Frijda, 2004). Emotional responses generally initiate with an appraisal regarding an event (Plutchik, 1994). These responses can be understood from two independent dimensions that represent valences: positive affect and negative affect. Positive affect reflects the extent to which an individual feels enthusiastic, active, or alert, whereas negative affect concerns the extent to which an individual experiences anger, contempt, disgust, fear, or nervousness (Watson, Clark & Tellegen, 1984).

The research model proposed in this study is based on AET (Weiss & Cropanzano, 1996), in which "emotional reactions" are an important variable to understand how events at the workplace affect work results (affective commitment). Because this study focuses on the adoption of management controls, which represent specific events in the workplace, emotional responses were operationalized as emotional states (positive affect and negative affect). Additionally, cognitive appraisals are also included because, as noted by Weiss and Cropanzano (1996, p. 37), the experience of affect is intrinsically linked to the appraisal of an event. Therefore, we assumed that people are constantly assessing interactions with the environment and how these affect their wellbeing. Thus, such assessments are essential to understand the effect of MCs on individuals and work as a filter between a stimulus and responses that result from it (Lazarus, 1991b).

2.2 Management control and cognitive assessment

Management control comprises all the ways and systems managers use to ensure that their employees' behaviors and decisions align with organizational objectives and strategies. Merchant and Van der Stede (2007) propose four types of MCs that emphasize social and behavioral dimensions. These are explained in detail here because they constitute the theoretical basis adopted to operationalize this study. From this theoretical perspective, there are the following types of controls: (i) result controls, (ii) action controls, (iii) personnel controls, and (iv) cultural controls.

Result controls focus on changing employees' behaviors and emphasizing their motivation by providing incentives or implementing punishment systems (Herath, 2007). The emphasis of result controls is on efficiency, conformity, and achieving objectives, working on the behavioral aspects of operations (Hopwood, 1972). When adopting result controls, employees are expected to feel professionally empowered and control their actions, promoting meritocracy and rewarding good results. These controls are usually adopted to influence the behavior of employees in situations in which results can be controlled (Merchant & Van der Stede, 2007).

Action controls are intended to motivate employees to become involved with their work (Long, 2018) and can be characterized as direct behavioral controls because they act entirely on individuals by supervising, directing, or restricting their actions. The role of action controls is to ensure that everyone knows what actions are expected and benefit the organization. Organizations adopt action controls and monitor the implementation of standards to ensure their employees use the methods appropriate to conclude tasks (Van Maanen & Schein, 1977).

Personnel controls are intended to promote positive interpersonal relationships (Long, 2018) and are adopted to promote the employees' skills and competencies, as well as socialization to ensure employees are adapted and aligned with the organization's objectives (Van Maanen & Schein, 1977). Cultural controls can be represented by an organization's beliefs and culture and are expressed on the organization's mission, vision, and values, enabling employees to mutually monitor each other (Merchant & Van der Stede, 2007). Codes of ethics are an example of how these controls are formalized.

Personnel and cultural controls can promote individual autonomy and establish a working environment based on an understanding of the importance of organizational objectives. In addition, mutual understanding is an important factor influencing an employee's commitment, reinforcing a sense of organizational purpose (Hernandez, 2008). Therefore, personnel and cultural controls promote "high commitment as a result internalized values" (Ouchi, 1979, p. 841).

An organization's adoption of a given type of management control (i.e., result, action, personnel, or cultural) can be understood as an event that encourages individuals to assign meaning, leading them to question the relevance of the event itself (Liu & Perrewé, 2005). Hence, the adoption of MCs may positively influence employees' behaviors when individual interests are aligned to those of the organization, or negatively, when the organization's objectives clash with individual interests, causing emotional reactions that lead to undesirable behaviors.

The adoption of an MC may cause employees to doubt their future, leading them to experience fear and anxiety (Sutton & Kahn, 1987). When, however, employees perceive a management control to be primarily a challenge, they perceive a higher level of congruence between objectives and believe that changes are more likely to succeed, which influences their overall assessment of the change proposed (Liu & Perrewé, 2002). When employees positively perceive the adoption of MCs, they have a greater sense of perceived control (Cobb, Wooten & Folger, 1995). In this case, change brings hope, and employees become emotionally excited, which raises their expectations about future success (Dutton, Ashford, O'neill, Hayes & Wierba 1997; Huy, 2002).

In events such as when adopting an MC, employees' attitudes tend to be based on their emotional state, which presents various positive or negative affect resulting from individual appraisals. Hence, adopting a (result, action, personnel, or cultural) MC will have a different effect on cognitive appraisals. For example, an individual may positively perceive the adoption of a given type of control as a challenge or perceive it negatively and consider it a threat. Nevertheless, more than that, it is argued that each type of MC cause different levels of cognitive appraisals (challenge or threat), and therefore, the first hypotheses are proposed here:

H1(a-b-c-d): Perceptions regarding the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control are positively related to challenging cognitive appraisals.

H2(a-b-c-d): Perceptions regarding the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control are negatively related to threat cognitive appraisals.

2.3 Cognitive appraisals and emotional reactions

An individual's cognitive appraisal regarding a given event is based on the event's relevance for his/her wellbeing and is intrinsically linked to this individual's objective and values (Frijda, 1993). Perceived harm or benefits depend on one's commitment to his/her own objectives, which are frustrated or facilitated by the environment (Lazarus, 1991a). Therefore, an initial appraisal involves judging the relevance and congruence of an objective, whether this event is related to some personnel desire or concern. Ortoni, Clore, and Collins (1990) argue that there are relatively independent categories or families of emotions based on common appraisal processes such as the final product of a cognitive appraisal process.

Additionally, the authors argue that an objective's relevance is essential for one's emotional responses, such as the adoption of an MC, and the intensity of emotions is directly correlated to the importance or convenience of an objective. It means that the employees' emotional responses directly depend on their cognitive appraisals of MCs. The reason is that people have a large variety of objectives that affect their emotional responses (Weiss & Cropanzano, 1996). Emotion theorists agree that specific emotional states exist and are triggered by the action of cognitive appraisals (Plutchik, 1994).

These emotional states result from a two-stage appraisal process that involves a perception of whether an event represents a challenge or a threat (Frijda, 1986; Lazarus, 1991a). Perceiving an event as a challenge leads to positive emotional responses, whereas perceiving it as a threat leads to negative emotional responses. Thus, whether an event is considered a challenge or a threat is related to an individual's hedonic tone (pleasure/satisfaction) (Weiss & Cropanzano, 1996).

Trivellas, Reklitis, and Platis (2013) report evidence from a hospital setting that a positive cognitive appraisal is related to positive affect that may result in the intention to remain in the job. Regarding negative cognitive appraisals, Fugate, Harrison, and Kinicki (2011) empirically confirmed the relationship between negative appraisals and negative affect on the adoption of MCs. Considering that challenge cognitive appraisals of MCs (result, action, personnel, cultural) generate positive affect, and that threat cognitive appraisal leads to negative affect, the following hypotheses are proposed:

H3(a-b-c-d): If the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control is perceived as a challenge, a challenge cognitive appraisal will increase positive affect.

H4(a-b-c-d): If the adoption of an MC a) result control, b) action control, c) personnel control, or d) cultural control is perceived as a threat, a threat cognitive appraisal will increase negative affect.

2.4 Emotional reactions and affective commitment

Emotions make people ready to respond to particular stimuli with specific actions. This conception allows us to infer that emotions increase readiness to perform several different actions, depending on the stimulus conditions (Roseman, Wiest & Swartz, 1994). Therefore, emotional responses to a threat or challenge may influence affective commitment. Affective commitment is the degree to which an employee feels emotionally connected, identified with, and involved with an organization (Meyer & Allen, 1997).

Russell and Carroll (1999) report that positive and negative affect are independent states instead of bipolar opposites. High or low levels of negative affect may accompany positive affect, while some level of positive affect may accompany a negative affect. Such independence suggests that positive affect may compensate for the harmful effects of low job satisfaction indicators, thus, broadening and developing the individuals' thought-action repertoires (Fredrickson, 1998).

Even though Lazarus (1991b) notes that positive emotional responses do not present clear individual action tendencies, we argue that these responses influence individual actions to the extent that they promote people's strengths (Fredrickson, 1998). Joy, for instance, promotes individual creativity, broadens mentality, and strengthens social ties. Happy and proud employees are more resilient to overcome problems (Fredrickson, 1998). A new situation may encourage interest and exploration and increase the likelihood of obtaining new knowledge and competencies. Hence, positive emotional responses positively influence employee retention and commitment with organizations (Ashkanasy & Daus, 2002).

A central proposition in the Affective Events Theory is that the employees' attitudes are influenced by events at work. More specifically, AET states that affective responses mediate the relationship between events and attitudes at work. The wellbeing maintenance argument holds that positive emotions promote a desire to maintain and prolong the current state (Weiss & Cropanzano, 1996). Thus, the employees' attitudes and behaviors reflect their personnel perceptions and expectations, reciprocating the treatment they receive from the organization.

MCs that lead to challenging cognitive appraisals and positive affect promote affective commitment. Empirical evidence shows that when leaders adopt ethical behavior, they increase their employees' affective commitment because they are proud of working in the organization, share the same concern for the future and share the same values (Matela, 2016). Neubert, Carlson, Kacmar, Roberts, and Chonko (2009) argue that ethical leadership should promote a moral atmosphere in the organization that encourages professional satisfaction and affective commitment. Goebel and Weißenberger (2017) reinforce this understanding, confirming the hypotheses that personnel and cultural controls positively influence commitment. With this evidence in mind, it is conjectured that positive affect increases affective commitment, whereas negative affect decreases it. Hence, the following hypotheses are proposed:

H5(a-b-c-d): Positive affect that results from an MC a) result control, b) action control, c) personnel controls, or d) cultural controls increase affective commitment.

H6(a-b-c-d): Negative affect that results from an MC a) result control, b) action control, c) personnel controls, or d) cultural controls decrease affective commitment.

This study's theoretical model is represented in Figure 1, in which the type of control will cause a cognitive appraisal, represented by H1 and H2. According to the Affective Event Theory, cognitive appraisals can be challenging and/or threatening to some extent. An employee's cognitive appraisal will determine whether s/he will present more positive (positive affect) or negative (negative affect) emotional responses, expressed in H3 and H4. In addition, these responses will determine the employees' affective commitment toward the tasks established in management controls (H5 and H6).

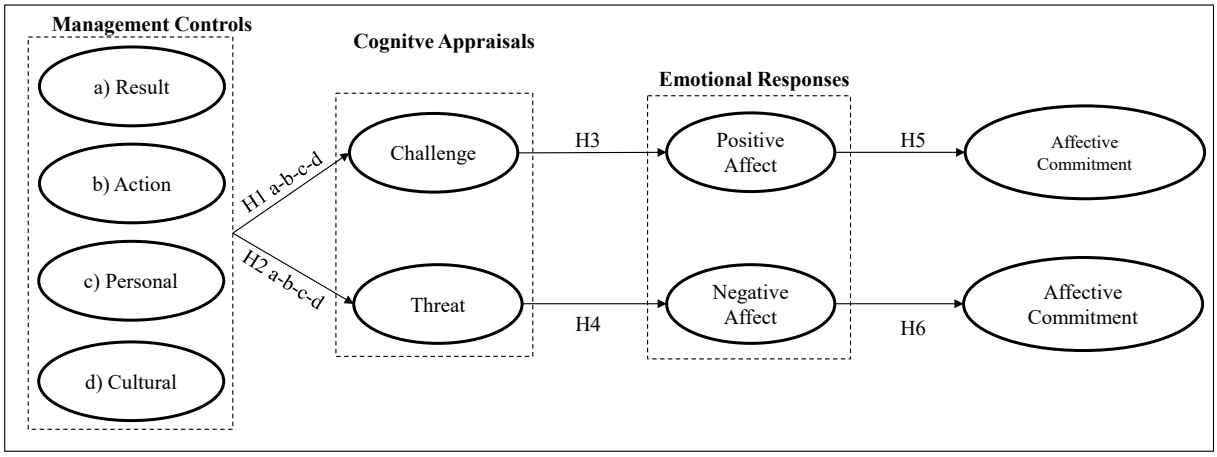

Figure 1. Theoretical Model

3. Methodological procedures

3.1 Experimental design

The study design involves applying experimental tests to analyze individual effects by simulating events (*pitches*). These pitches are intended to manipulate the adoption of result, action, personnel, and cultural controls for the participants to identify the effects of management control on affective commitment.

Since this is a "within-subject" study without a control group, the participants were not randomly assigned to the experimental conditions. According to Charness, Gneezy, and Khun (2012), a within-subject experimental design does not depend on random assignment to improve its internal validity. Additionally, these are more aligned with theoretical positions where an individual responds to a stimulus. In this sense, this study is classified as a quasi-experiment (Shadish, Cook & Campbell, 2002)

The pitches were developed according to Kleine and Weißenberger (2014), Goebel and Weißenberger (2017), and Long (2018), as shown in Figure 2.

Constructs	Constructs	Study's instrument	References
Management Control (MC)	Result controls (RC)	Scenario 1	Kleine and Weißenberger (2014); Goebel and Weißenberger (2017)
	Action Controls (AC)	Scenario 2	
	Controls (PC)	Scenario 3	
	Cultural Controls (CC)	Scenario 4	
Cognitive Appraisal	Threat (THRE)	Cognitive assessment scale	Gomes, Faria and Gonçalves (2013)
	Challenge (CHA)		
Emotional Responses	Positive Affect (PA)	PANAS-VRP	Galinha, Pereira and Esteves (2014)
	Negative Affect (NA)		
Affective commitment	Affective Commitment (AFC)	Affective Commitment to Change Scale	Herscovitch and Meyer (2002)

Figure 2. Constructs and operationalization of the study's objectives

Pitches were short videos sent by email containing communications from the board of directors concerning the adoption of management controls: result, action, personnel, and cultural controls. Four videos were developed; each represented one type of control. After watching each of the videos, the participants answered a five-part questionnaire to identify their perceptions regarding controls, challenge and threat cognitive appraisals, positive and negative emotional responses, and affective commitment. Figure 2 presents the constructs used in the study and the operationalization of each.

Four scenarios simulated the presentation of MCs (results, action, personnel, and culture). Scenario 1 addresses result controls and involve communication regarding the adoption of performance goals. Employees who achieved individual results would receive a bonus, and those with the best results would be promoted, while those not able to achieve any goals would have to justify. Scenario 2 (action control) involves communication concerning access to the company's computers. Employees would have to use a personnel password, with their access to the Internet restricted according to each manager's needs. Managers would have access to the activities performed on each computer and monitor the use of WhatsApp during working hours. Scenario 3 concerned personnel control and involved communication regarding training provided every two Saturdays to promote interactions and broaden the employees' capabilities. Finally, scenario 4 (cultural control) involves communicating a code of ethics based on safety, people, excellence, focus on results, and sustainability. Employees should act according to the guidelines provided in this code of ethics. The items, scales, and videos used in the study are available at: https://drive.google.com/drive/folders/1zBkzxlrHQinAbunmJD4624Njual3DtqD

After each video was presented, a questionnaire containing the following parts was applied:

- **Part 1 (MC):** Management control was divided into four types (result, action, personnel, and cultural). Each type of control was composed of 5 questions based on Goebel and Weißenberger (2017). Each question was rated on a 7-point Likert scale (1: totally disagree to 7: totally agree).
- **Part 2 (Cognitive appraisal**): Cognitive appraisal was divided into threat and challenge. The respondents rated the items on a 7-point Likert scale (1: not at all to 7: very much) to depict their personnel perceptions (disturbing, threatening, negative, stimulating, exciting, and challenging) regarding the situation presented (result, action, personnel, and cultural controls) (Gomes, Faria & Gonçalves, 2013).
- **Part 3 (Emotional Responses):** The emotional responses were classified into positive affect and negative affect. This construct is measured on a 10-item scale in which 1 means Very slightly or Not at all and 5 means extremely. The objective is to measure the participants' feelings toward the control presented (e.g., interested, nervous, enthusiastic, afraid, inspired, alert, jittery, guilty, determined, or distressed). The Positive and Negative Affect Schedule (PANAS) measures are widely used in the literature (Galinha et al., 2014).
- **Part 4 (Affective Commitment):** Affective commitment can be conceived as a psychological state characterized by an individual's emotional attachment to an organization. (Meyer & Allen, 1997). A 5-point Likert scale (1: not at all to 5:extremely) was used to measure the individuals' affective commitment to changes (Herscovitch & Meyer, 2002).
- **Part 5 (Control variables)**: the last part addressed data concerning sex, age, undergraduate program, academic year, marital status, and professional experience.

3.2 Experimental validity protocol

First, pretests were applied to six professors to adjust the instrument used in the quasi-experiment: four professors were from the Management Accounting field, one from Organizational Psychology, and one from Information Technology. Pretests were also conducted with three students and four professionals in the market. Next, the videos simulating each scenario and the questionnaire were adjusted to improve understanding.

To ensure that respondents understood the management controls, they were asked whether the questions were clear and easily understood. Finally, the protocol suggested by Kim (2009) was used to validate the instrument (Figure 3).

Stage		Objectives	Technique used
1	Content validity	To verify how comprehensively the items represent the construct	Expert panel
2	Pretest	To communicate to the respondents what the instrument is intended to convey and to analyze the operationalization of the elements involved using a preliminary test	Personal approach (interview + questionnaire)
	Pilot test	To determine whether the instrument effectively measures the study's objective. Using a preliminary test in a convenient sample similar to the target population enables the researchers to anticipate the study's results	Preliminary test using a convenient sample
	Manipulation validity	To verify causal relationships between the independent variables showing that the treatment of manipulations is related to "direct" measures of the projected constructs	Manipulation checks
3	Reliability	To show the consistency of the items and correlation between the measures of the same construct. Without this stage, data are unreliable and do not allow researchers to state whether non-significant correlations are due to low reliability or poor correlations between the constructs	Internal consistency; item reliability
	Construct validity	To determine whether the items measure the concept under analysis through correspondence between an observable construct and its supposed measure	Convergent and discriminant validity

Figure 3. Experimental validity protocol

3.3 Data collection

Data were collected among students attending the Accounting and Administration programs of a Higher Education Institution (HEI). Undergraduate students were chosen for the experimental setting because this model does not foresee changes in the dependent variable due to differences in the participants' profiles. Additionally, in general, students present homogeneous characteristics, which decreases the estimation error effect of the independent variable on the dependent variable, contributing to a greater exploratory power of the results and greater statistical validity (Aguiar, 2017).

The instrument was applied in classrooms previously prepared with audiovisual equipment, tested by the researcher and assistant to ensure the videos were clearly understood. Before presenting the scenarios, the participants were instructed to imagine themselves as an employee recently hired by a company. After the students were asked whether they had any doubts, some aspects were reinforced before the videos were presented: "You are about to take part in an experimental study addressing the effects of management controls systems on individuals. Try the best you can to put yourself in the place of an employee facing the situation presented here. There are no right or wrong answers. The objective is to identify your perception and feelings toward the situation presented."

After presenting each management control, the participants completed the instrument specifically designed for this study. After all the participants completed the first questionnaire, the researcher answered questions and clarified doubts, after which the other three simulations were presented. The sessions lasted 40 minutes on average and were held from November 7th to 9th 2018. A total of 252 answers were considered in the analysis. Table 1 presents the participants' profiles.

Table 1
Profile of the study's participants

Gender	N	%	Marital Status	N	%
Female	141	56.00	Single	216	85.70
Male	111	44.00	Married	36	14.30
Total	252	100.00	Total	252	100.00
Academic year	**N**	**%**	**Descriptive Statistics**	**Age**	**Experience (years)**
1st year	63	25.00	Minimum	17	0
2nd year	94	37.30	Maximum	45	28
3rd year	86	34.13	Mean	23.7	4.0
4th year	9	3.57	Median	22.0	2.3
Total	252	100.00	Standard deviation	5.497	4.449

To minimize potential fatigue and maturation effects, the order in which the scenarios were presented to each group was randomized. Thus, all the scenarios were presented in all the orders possible (e.g., Exp. 1 – result control was the first to be presented to group 1 and the last to be presented to group 2. It was the third scenario presented to group 3 and the second to group 4), as shown in Figure 4.

Group	Participants	Order in which the scenarios were presented
Group 1	90	Scenario 1; Scenario 2; Scenario 3; Scenario 4
Group 2	62	Scenario 2; Scenario 3; Scenario 4; Scenario 1
Group 3	66	Scenario 3; Scenario 4; Scenario 1; Scenario 2
Group 4	34	Scenario 4; Scenario 1; Scenario 2; Scenario 3

Figure 4. Order in which the scenarios were presented to the groups

Next, non-parametric tests were applied to verify whether there were any differences between the four groups, which showed that the way data were collected, did not influence the analysis because they were independent samples (Field, 2009). Finally, the Mann-Whitney U test was used because it is indicated for categorical and ordinal variables, which is the case here (Fávero, Silva, Belfiore & Chan, 2009).

Because it involves research with human subjects, the study project was submitted to and approved by the Institutional Review Board and followed guidelines concerning: (i) absolute confidentiality of data; (ii) no risk is presented to the participants as they are asked about their opinions regarding a hypothetical situation; (iii) the participants were free to withdraw from the study at any time; and (iv) estimated time of participation was 35 minutes.

3.4. Data analysis

Exploratory multivariate analysis, Partial Least Squares Structural Equation Modeling (PLS-SEM), a variance-based structural equation modeling technique, was adopted to analyze the models (Hair Jr., Hult, Ringle & Sarstedt, 2016). Among the advantages of using PLS-SEM, the following stand out: (i) it is considered the second generation of multivariate analysis and has been increasingly proposed to overcome limitations of the traditional techniques of statistical analysis, due to its advanced characteristics (Fornell, 1985); (ii) it is flexible to test psychological models (with latent variables), and enables using multiple predictors and criterion variables, model measurement errors for observed variables and test mediation and moderation relationships in a single model (Fornell, 1985; Hair Jr. et al., 2016); (iii) simultaneous estimation of multiple dependent and inter-related relationships between variables and the use of measures of latent constructs (Nitzl, 2016); (iv) it is becoming increasingly popular in mainstream management accounting journals (Nitzl, 2016); (v) it is preferred in research fields with broad theoretical foundations (Henseler, Ringle, & Sinkovics, 2009), which is a generalized characteristic of current research of management control systems (Malmi & Brown, 2008); (vi) does not assume normal data distribution (Henseler et al., 2009; Hair Jr. et al., 2016).

As proposed by Hair Jr. et al. (2016), the analyses were performed in two stages to evaluate the results. First, the measurement model was analyzed to ensure the model's internal reliability using the following procedures: (i) model's composite reliability; (ii) item indicator reliability); (iii) average variance extracted (AVE), which shows the extent to which each construct's measures are convergent; (iv) discriminant validity with the indication of the differences represented for each construct in the model (Hair Jr. et al., 2016).

Next, the structural model was analyzed with the following procedures: (i) construct collinearity problems; (ii) path coefficients - β); (iii) Levels of significance (p-value); and (iv) coefficients of determination (r^2) for the explained variances of the endogenous constructs (Henseler et al., 2009).

4. Results and discussions

To analyze the results, the model was assessed based on the events created for each type of control individually. This way, we verify the individual effect of the result, action, personnel, and cultural controls on affective commitment. First, as indicated by Hair *Jr. et al.* (2016), the reliability of the theoretical model was analyzed for the four types of control.

4.1 Internal reliability

Good internal reliability, with satisfactory CR, AVE, and VD were found for the experimental scenarios for the four types of management controls, as shown in Table 2. For the analysis of discriminant validity, the Fornell-Larcker criterion was used and presented results above 0.8, ruling out multicollinearity problems.

Table 2
Theoretical model's internal reliability

CONSTRUCTS	Alpha	CR	AVE	VD
Result control	0.82	0.87	0.57	Yes
Challenge	0.79	0.88	0.70	Yes
Threat	0.82	0.89	0.73	Yes
Positive Affect	0.87	0.91	0.67	Yes
Negative Affect	0.86	0.90	0.65	Yes
Affective Commitment	0.83	0.91	0.63	Yes
Action control	0.81	0.87	0.57	Yes
Challenge	0.77	0.87	0.69	Yes
Threat	0.87	0.93	0.82	Yes
Positive Affect	0.89	0.92	0.69	Yes
Negative Affect	0.86	0.90	0.64	Yes
Affective Commitment	0.89	0.92	0.65	Yes
Personnel Control	0.87	0.90	0.65	Yes
Challenge	0.81	0.88	0.72	Yes
Threat	0.88	0.92	0.80	Yes
Positive Affect	0.94	0.95	0.80	Yes
Negative Affect	0.82	0.88	0.59	Yes
Affective Commitment	0.89	0.91	0.64	Yes
Cultural Control	0.83	0.88	0.61	Yes
Challenge	0.79	0.87	0.70	Yes
Threat	0.91	0.95	0.85	Yes
Positive Affect	0.92	0.94	0.75	Yes
Negative Affect	0.87	0.90	0.66	Yes
Affective Commitment	0.82	0.87	0.54	Yes

After confirming the model's reliability, the significance of relations was verified by performing Complete Bootstrapping. As suggested by Hair Jr. et al. (2016), a total of 5,000 interactions were used without changing the sign for a two-tailed test.

4.2 Structural model

In this stage, the results are presented to analyze all the controls within MCs and compare the management controls in each stage of the model. Additionally, a structural model is presented to show the effects of four controls together considering the study's participants answered to four simulations, as shown in Figure 5.

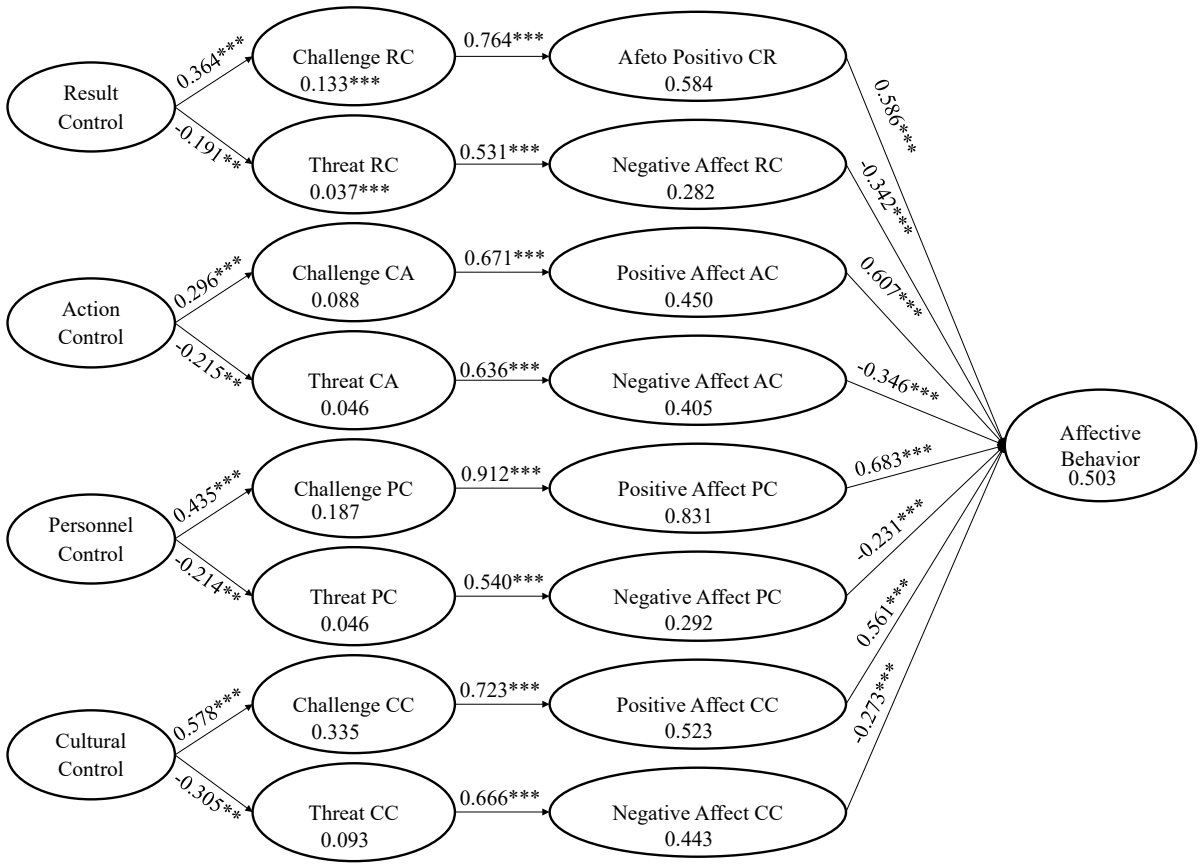

Figure 5. Structural model for MC

Regarding positive cognitive appraisals (challenge), the cultural and personnel controls were perceived with greater intensity than the result and action controls. On the other hand, action control resulted in a lower effect on positive cognitive appraisals, that is, lower motivation and enthusiasm. The results are in line with the literature addressing management controls (Hutzschenreuter, 2009; Goebel & Weißenberger, 2017), which predict more positive effects for cultural and personnel controls than result and action controls. Therefore, we infer that organizations can attain higher and more intense positive cognitive results by adopting these two types of controls. The secondary hypotheses for cognitive appraisal are presented in Table 3.

Table 3

Hypotheses for cognitive appraisal of management controls

Hypothesis	Direction	Relationship	Result	Coefficient	r2
H1a	(+)	RC→CHA	Failed to reject	0.364***	0.133
H1b	(+)	AC→CHA	Failed to reject	0.296***	0.088
H1c	(+)	PC→CHA	Failed to reject	0.435***	0.190
H1d	(+)	CC→CHA	Failed to reject	0.578***	0.335
H2a	(-)	RC→THRE	Failed to reject	-0.191**	0.037
H2b	(-)	AC→THRE	Failed to reject	-0.215**	0.046
H2c	(-)	PC→THRE	Failed to reject	-0.214**	0.046
H2d	(-)	CC→THRE	Failed to reject	-0.305**	0.093

*** Significance at 1% ** Significance at 5%

On the other hand, threat appraisals indicate a negative relationship with a given MC; that is, management controls decreased the sense of threat from the management control scenarios. In this sense, cultural control presents the most intense effect in this relationship. Even though all the relationships were significant, the scenarios were more strongly perceived as positive than negative.

Regarding emotional responses, an increase in positive affect is expected among the participants who assessed the management controls positively (challenge). The results for the four controls are aligned. Conversely, the level of negative affect is expected to increase among individuals who considered the adoption of management controls to be a threat. This relationship stood out for the personnel and action controls, though all the controls presented similar levels of intensity.

Table 4
Hypotheses concerning emotional responses

Hypothesis	Control	Direction	Relationship	Result	Coefficient	r2
H3a	RC	(+)	CHA→PA	Failed to reject	0.764***	0.583
H3b	AC	(+)	CHA→PA	Failed to reject	0.670***	0.449
H3c	PC	(+)	CHA→PA	Failed to reject	0.762***	0.581
H3d	CC	(+)	CHA→PA	Failed to reject	0.723***	0.522
H4a	RC	(+)	THRE→NA	Failed to reject	0.532***	0.283
H4b	AC	(+)	THRE→NA	Failed to reject	0.640***	0.409
H4c	PC	(+)	THRE→NA	Failed to reject	0.545***	0.297
H4d	CC	(+)	THRE→NA	Failed to reject	0.666***	0.444

*** Significance at 1% ** Significance at 5%

In general, MCs cause emotional impacts on individuals, showing it is relevant in investigating individual effects of management controls. These results corroborate the findings reported by Trivellas, Reklitis, and Platis (2013) that positive cognitive appraisals are related to positive affect. These results are also in line with Fugate, Harrison, and Kinicki (2011), who report a relationship between threat cognitive appraisals of MCs and negative affect. The results are presented in Table 4.

By examining the pathways that cause effects on the employees' affective commitment, an increase in the affective commitment is expected among individuals who reported positive affect. This relationship was more intense for personnel control and confirmed the results of the antecedent constructs in the model. Therefore, individuals felt a more intense positive impact when the organization proposed integrating employees, offering training to develop skills, and promoting a favorable interpersonal climate. These findings partially corroborate the results presented by Goebel and Weißenberger (2017) when they report that personnel and cultural controls positively influence commitment. The remaining controls also indicate a positive, however, less intense impact, as shown in Table 5.

Table 5

Hypotheses regarding effects on affective commitment

Hypothesis	Control	Direction	Relationship	Results	Coefficient	r2
H5a	CR	(+)	PA→AFC	Failed to reject	0.586***	0.502
H5b	CA	(+)	PA→AFC	Failed to reject	0.607***	0.490
H5c	CP	(+)	PA→AFC	Failed to reject	0.683***	0.560
H5d	CC	(+)	PA→AFC	Failed to reject	0.561***	0.380
H6a	CR	(-)	NA→AFC	Failed to reject	-0.342***	0.502
H6b	CA	(-)	NA→AFC	Failed to reject	-0.346***	0.490
H6c	CP	(-)	NA→AFC	Failed to reject	-0.231***	0.560
H6d	CC	(-)	NA→AFC	Failed to reject	-0.273***	0.380

*** Significance at 1% ** Significance at 5%

Finally, decreased commitment was expected among the individuals who perceived the adoption of MC to be a threat and experienced negative affect. This relationship was more intense for the result and action controls; i.e., when these controls are negatively perceived, they may restrict affective commitment. Note that the effects on affective commitment were always positive when the individuals' perceptions were positive. On the other hand, those who perceived the controls to be a threat and experienced negative affect revealed decreased affective commitment, though less intensively than the positive affect.

In addition to the hypotheses tests, structural models were developed using the participants' demographic variables to separate the sample. This procedure was used to verify potential influences and individual differences that could indicate alternative paths and refine the results. In general, the analyses separated according to control variables (i.e., gender, age, marital status, and professional experience) confirmed the relationships and directions expected in the hypotheses, not indicating differences based on the participants' demographic characteristics.

This study broadens understanding of the cognitive, affective, and behavioral (attitudes) complexity involved in employees' experiences regarding the adoption of MCs. It also provides elements to unveil the role of emotions at the workplace and their underlying psychological processes. These findings provide important information for theory and practice concerning the design of MCs in organizations, as it contributes to the development of management control theories that consider the psychological factors of individuals involved in the adoption of MCs.

In practical terms, these findings show how managers can implement and manage the adoption of MCs, considering the different psychological paths when implementing different types of management controls. Furthermore, the results enable identifying how employees make cognitive appraisals and are emotionally affected by them. Hence, it is important to assess the risks and benefits of the design and use of MCs.

This study's results also suggest that organizations benefit from controls that are positively perceived and assessed. Therefore, managers need to frame changes positively and communicate the benefits of changes for the organization and individuals affected. In addition, involving employees in the adoption of controls will make them feel more informed and allow them to control the impact of changes, decreasing negative appraisals and any potentially harmful results to the organization.

5. Conclusions

This study's objective was to analyze the effects of management controls on employees' affective commitment through cognitive appraisals and emotional responses. This study was conducted by applying four scenarios among 252 undergraduate students from the management field.

The results show that (result, action, personnel, and cultural) controls positively impacted the employees' emotional process, leading to positive behaviors in organizations. Additionally, these impacts did not present the same intensity, showing that management controls should be designed to focus on the individuals' behavioral factors, which facilitate aligning individual and organizational objectives.

The joint analysis of management controls provides evidence that these are important elements to promote the desired behaviors among employees. Organizations tend to benefit from directing the focus of controls to indirect controls (personnel and cultural), which indicate more intense positive cognitive, emotional, and attitudinal results. Hence, MCs should be considered an important organizational aspect that affects the employees' behaviors and commitment to tasks. In this sense, MCs direct individual attitudes represented in this study as affective commitment.

Despite the careful implementation of procedures, some limitations need to be acknowledged. The first refers to the individuals' cognitive appraisals. As suggested by social psychology, even though a sample represents a set of individual opinions, we need to acknowledge that a group influences individual opinion, and that effect could not be captured in this study.

Another limitation refers to the methodological option of using students to model corporate scenarios. Even though it enables greater control of the experimental setting, it decreases the quasi-experiment external reliability, and therefore, there is a higher risk when generalizing results to the real world. Shadish et al. (2002) note that external validity involves knowing whether a causal relationship found in a study holds for people in the real world.

Equation modeling is subject to limitations concerning the variance-based analysis. Hence, procedures were conducted to validate and ensure the reliability of the items and constructs under study. Pretests were applied with volunteers and experts, and a pilot test was applied to a convenient sample. In this sense, this study's results indicate the path for future field studies rather than definitive conclusions.

We suggest conducting empirical studies within organizations to compare and expand this study's results. The results and discussions raised here indicate that each type of control elicits a different response from individuals. Therefore, understanding that an MC influences behavior without having more profound knowledge about this influence may explain the inconsistent results reported by studies based on Contingency Theory.

Regarding the development of this line of research, this is the first diagnostic study analyzing the relationships and how emotional and psychological factors can be considered in studies addressing MCs. Hence, the fact that management controls cause a variation in emotional components and affective commitment, which can determine the performance of employees and organizations, seems to be consistent. The role of management controls in the individuals' behaviors is essential to promote congruence and the attainment of personal and organizational objectives. They seem to help organizations promote positive feelings in employees (Goebel & Weiβenberger, 2017).

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The predictive ability of earnings and political uncertainty: evidence from Latin American Countries

Lineker Costa Passos
https://orcid.org/0000-0002-1317-9631

Paulo Roberto Nóbrega Cavalcante
https://orcid.org/0000.0002.1702.0433

Abstract

Objective: To verify whether the ability of cash flow and current accruals to predict future cash flow is affected by political uncertainty.

Method: Years of national elections were considered a *proxy* for political uncertainty. Sys-GMM estimated the equation of cash flow forecast for one period ahead to capture the predictive ability of earnings components according to periods of political uncertainty.

Sample: 386 firms (4,127 observations-year) listed in the stock exchanges in Argentina, Brazil, Chile, and Mexico.

Results: The predictive ability of current cash flow was negatively influenced by political uncertainty, while the predictive ability of accruals was not. The conclusion is that political uncertainty negatively affects the predictive ability of disclosed earnings components, though this effect was conclusive only for current cash flow.

Contributions: Presenting the context of capital markets in emerging countries is this study's primary contribution. Furthermore, additional knowledge related to the hypothesis concerning political uncertainty is provided, shedding light on its impact on the supply and availability of helpful information concerning the capital markets of emerging countries. Finally, the findings are also relevant for agents forecasting the firms' future cash flows.

Keywords: Political uncertainty; Predictive ability of earnings; Accruals; Cash flows.

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1. Introduction

Many studies (Ashton & Trinh, 2018; Ball & Brown, 1968; Beaver, 1968; Beaver, Mcnichols & Wang, 2018) report the relevance of accounting information for agents operating in the capital market, considering that the organizations' future cash flows guide the decisions of agents operating in that market.

According to Wolk, Dodd, and Tearney (2004), one of the main reasons explaining such relevance refers to the predictive value of accounting information. In this sense, Barth, Cram, and Nelson (2001) argue that a company's ability to generate cash flows affects the value of its securities. For this reason, the Financial Accounting Standards Board (Fasb) indicates that the primary objective of accounting is to provide information that helps investors, lenders, and other users to assess future cash flows.

In this context, empirical evidence (Dechow, Kothari & Watts, 1998; Jordan, Waldron & Clark, 2007; Kim & Kross, 2005) has confirmed that earnings disclosed by the firms' accounting systems – considered an optimal informational sign to guide decisions concerning the allocation of resources in the capital market (Lev, 1989) – are effective predictors of future cash flows.

In turn, other studies (Barth, Cram & Nelson, 2001; Boina & Macedo, 2018; Lev, Li & Sougiannis, 2010) report an increase in the predictive power of models for forecasting future cash flows when considering the components of reported earnings separately, i.e., accrual and cash flow. There is also evidence indicating that cash flow has greater predictive ability than accruals, as suggested by Sloan (1996).

One factor that possibly explains this asymmetry between the predictive ability of current cash flow and accruals is the managers' discretionary power in recognizing accruals. Barth, Beaver, Hand, and Landsman (1999) argue that the accruals component carries a greater degree of subjectivity than cash flow because it is subject to the managers' discretionary power. Discretionary accruals are likely to contain unusual items, which are not likely to be repeated in the future, directly impacting the ability of accruals to predict future cash flows. Although less susceptible than accruals, cash flow may also be subject to managers' discretion intending to generate current cash flows to reach a specific target, though unsustainable in the future (Roychowdhury, 2006), which also impacts this component's ability to predict future cash flows.

In these situations, reported earnings deviate from their primary function of reflecting the expected underlying economic reality, characterizing what is known in the literature as earnings of poor quality information (Dechow, Ge & Schrand, 2010). Therefore, the ability of current earnings to predict future cash flows also depends on the quality of its components' information.

It is worth noting that the managers' discretion level may reflect the effect of events other than those directly linked to the business, more strongly affecting the quality of the earnings components, therefore, the predictive ability of cash flow and current accruals, if these events increase uncertainty about the firms' future performance. In this context, Leal, Girão, Lucena, and Martins (2017) present evidence from the Brazilian capital market that extreme earnings affect the predictive ability of the disclosed earnings components. The authors explain that in extreme situations, both earnings and cash flows are less persistent and, as a result, show greater volatility, concluding that both earnings (and their components) and cash flows have a lower predictive ability in extreme situations.

Another attribute that is possibly capable of increasing uncertainty associated with the firms' future performance refers to political uncertainty (Brogaard & Detzel, 2015). Chen, Hope, Li, and Wang (2018) define political uncertainty as changes that are likely to occur in governments and government policies. It has been characterized by its ability to increase uncertainty about future cash flows (Dai & Ngo, 2020) because it may increase volatility (Boutchkova, Doshi, Durnev & Molchanov, 2012; Brogaard & Detzel, 2015); greater cash flow volatility reduces its ability to predict a firm's future performance (Minton, Schrand & Walther, 2002).

In this context, political uncertainty can negatively affect cash flow predictive ability, considering it can increase this component's volatility. Such an effect can also be expected for the accruals component since the volatility of cash flows also contributes to the accruals' lower predictive ability (Dechow & Dichev, 2002). Furthermore, according to Dechow and Dichev (2002), the greater volatility in periods of political uncertainty, the greater the chance of errors when estimating accruals, which reduces this component's ability to predict future cash flows.

Additionally, after examining the effect of political uncertainty on earnings management practice in a sample of 18 countries, Yung and Root (2019) report evidence that managers make accounting choices to manipulate both accruals and cash flow following periods of considerable political uncertainty, which also decreases the predictive power of both the components of reported earnings.

In these terms, both the cash flow's increased volatility and greater likelihood of the earnings components to be manipulated, associated with political uncertainty, can decrease the ability of cash flow and accruals to predict future cash flows; both current components are affected by political uncertainty, thus are unlikely to recur in the future.

No studies addressing this topic were found. In this regard, Chen, Chen, Wang, and Zheng (2018) highlight that there is little empirical evidence on the impacts of political uncertainty on the provision and availability of relevant information for investors in capital markets. Nevertheless, the authors emphasize the importance of this subject, given that the availability of relevant information is critical for the efficient allocation of resources and investors' investment decisions.

Examining this issue is relevant in the context of emerging markets because, as noted by Diamonte, Liew, and Steven (1998), the negative influence of political uncertainty more significantly affects emerging capital markets than developed ones. Note that the institutional environment of Latin American countries is generally characterized by poor enforcement and investor protection mechanisms (Brown, Preiato & Tarca, 2014; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1998; Moura, Altuwaijri & Gupta, 2020). In such a configuration, managers may have more incentives to discretionarily report earnings components in periods of political uncertainty, which would reflect in the reported earnings components' lower predictive ability.

In this context, we seek to collect evidence to answer the following question: **to what extent does political uncertainty affect the ability of reported earnings components – accruals and cash flows – to predict future cash flows?**

This investigation is relevant because it captures an effect that is hardly documented in the international context. In other words, the influence of political uncertainty on the predictive ability of earnings components is disclosed in the context of emerging markets, thus, filling in a relevant research gap. In addition, this study innovates by considering the object of study in specific countries in Latin America, differing from the study by Yung and Root (2019). Another differential is that this study considers the adverse effects of political uncertainty, keeping in mind that it reflects the quality of accounting aggregates, i.e., the predictive ability of the reported earnings components, an aspect not addressed in that study.

This study contributes to the literature on the hypothesis concerning political uncertainty, an issue addressed in other studies (Brogaard & Detzel, 2015; Dai & Ngo, 2020). Note that this study also contributes to research on the quality of accounting information, specifically by presenting evidence that complements Chen, Chen et al. (2018), Leal et al. (2017), and Yung and Root (2019) on the negative impact of an event exogenous to firms with the potential to impact the quality of accounting information disclosed by managers.

Furthermore, this study is relevant for investors, analysts, and other market players forecasting firms' future cash flows, providing evidence regarding the importance of considering the effects accruing from political uncertainty in the context of such predictions, as evidence suggests a significant adverse impact of political uncertainty on the ability of current cash flow to predict future cash flows.

2. Theoretical Framework and Hypothesis Development

Since the seminal works of Ball and Brown (1968) and Beaver (1968), research (Ashton & Trinh, 2018; Beaver et al., 2018) has presented evidence that accounting information is relevant for capital market agents. The main argument lies in the predictive value of accounting information or its ability to predict future cash flows (Wolk et al., 2004).

In line with the predictive value of accounting information, researchers (Barth et al., 2001; Boina & Macedo, 2018; Lev et al., 2010) present evidence that the components of reported earnings – current cash flows and accruals – have marginal ability to predict future cash flows. Such evidence indicates an increase in the predictive power of models for forecasting future cash flows when both cash flows and accruals are included.

Despite increased predictive power, it is worth noting that both cash flow and accruals are subject to the managers' discretion, more likely so for the accruals component (Barth et al., 1999). The managers' discretion may result in reported earnings containing unusual items that are unlikely to recur in the future, impacting these components' ability to reflect expected underlying economic performance. Under this hypothesis, earnings are characterized as having poor informational quality (Dechow et al., 2010) and fail to play their role in efficiently predicting future cash flows.

In addition to the effect arising from the managers' discretionary power, other attributes with the potential to affect the predictive capability of the reported earnings' components, i.e., cash flows and accruals, refer to events that increase uncertainty associated with the firms' future performance.

In this sense, Leal et al. (2017) examined the ability of reported earnings to predict future earnings in extreme earnings situations in the Brazilian capital market. According to the authors, extreme profits were measured by dividing the variable profit into deciles, in which deciles 1, 2, and 9 are considered extreme. Evidence shows that the cash flows' predictive power in deciles 1 and 2 is lower than that of accruals. However, this situation is reversed on decile 9, in which the cash flows' predictive power exceeds that of accruals. These findings suggest that, in situations of extreme negative values (decile 1), accruals have greater predictive power than cash flows, whereas, in situations of extreme positive values (decile 9), accruals are less predictive than cash flows.

The authors conclude that extreme earnings and cash flow situations negatively affect the predictive value of both earnings and cash flow, though more so for the cash flows' predictive value. Furthermore, there is evidence that accruals are the component that decreases the earnings' predictive capability.

Research on the impact of extreme performance situations on the predictive ability of reported earnings may suffer from issues related to endogeneity, considering that such performance can be endogenously determined by the use of the earnings components; e.g., the managers' discretionary power over accruals can be used to generate extreme performances, if there are incentives for such a practice.

Political uncertainty is an event with the potential to marginally influence a firm's future performance and is less likely to be determined by a firm's attributes, mitigating potential endogeneity problems.

Political uncertainty is considered relevant because it adversely impacts economic activity and financial outcomes. Studies report adverse effects of political uncertainty on the prices of assets (Gao & Qui, 2014; Pastor & Veronesi, 2012) and corporate decisions (An, Chen, Luo & Zhang, 2016; Julio & Yook, 2012), which are characterized as the Political Uncertainty Hypothesis (Julio & Yook, 2012). Therefore, it is likely that, given the possibility of adverse shocks on assets' future value – future cash flows, market agents would discount the current price to reflect such adverse shock.

Dai and Ngo (2020) state that potential changes in political leadership and/or government policies increase uncertainty about firms' future cash flows. Evidence reported by Boutchkova et al. (2012) and Brogaard and Detzel (2015) confirms this statement, indicating greater volatility of future cash flows in periods of political uncertainty. According to Minton et al. (2002), greater volatility is negatively associated with the firms' future performance; greater volatility of operating cash flow reduces its ability to predict future performance. Furthermore, greater volatility implies less persistence of the cash flow component and, therefore, a lower ability to predict future cash flows.

In this sense, political uncertainty could negatively affect the predictive capacity of the cash flow component, as it would increase its volatility, decreasing its temporal persistence.

Such an effect can also be expected for the accruals component. In the event of more significant political uncertainty, it is likely that intentional errors, or otherwise, occur more frequently in the estimation of accruals, considering that uncertainty introduces volatility into the firms' environment, and such volatility affects the quality of accruals' estimation, therefore, also affecting the accruals' predictive ability, as suggested by Dechow and Dichev (2002).

Among the attributes that would also contribute to the accruals' lower predictive ability, Dechow and Dichev (2002) highlight the volatility of cash flows. They argue that the greater volatility of this earnings component reflects high uncertainty and that this attribute decreases the accruals' ability to predict future cash flows.

Furthermore, accruals are likely more susceptible to managers' discretion than cash flow (Barth et al., 1999) as managers can estimate discretionary accruals containing unusual items that are unlikely to recur in the future, reducing their ability to predict future cash flows.

In this sense, Yung and Root (2019) addressed a sample of 18 countries between 2001 and 2014 and present evidence of greater use of discretionary accruals in times of political uncertainty. Discretionary accruals were estimated according to the models of Jones (1991), Dechow and Dichev (2002), Dechow, Sloan and Sweeney (1995), and Dechow and Dichev (2002) and later modified by McNichols (2002), while political uncertainty was measured considering the political uncertainty index provided by Baker, Bloom, and Davis (2016). Thus, evidence suggests strong use of discretionary accruals when there is high political uncertainty.

Note that the cash flow component is also subject to managers' discretion (Roychowdhury, 2006) as managers can generate unsustainable cash flows to reach a specific target (Roychowdhury, 2006), negatively affecting its ability to predict future cash flows. Yung and Root (2019) performed additional tests and reported evidence that cash flows are manipulated after periods of considerable political uncertainty.

Based on Yung and Root (2019), in the hypothesis concerning managers' discretionary choices regarding cash flow and accruals when in the face of considerable political uncertainty, these components are expected to be less effective in predicting futures cash flows in times of political uncertainty.

Considering the context of increased discretionary power of managers in periods of political uncertainty, note that the institutional environment of Latin American countries may provide incentives towards it. The literature characterizes this environment as exhibiting poor enforcement and investor protection mechanisms (Brown et al., 2014; La Porta et al., 1998; Moura et al., 2020), also considering that these characteristics are associated with managers' opportunistic practices (Leuz, Nanda & Wysocki, 2003). In this context, one might expect more significant incentives for managers' discretionary practices in times of political uncertainty, impacting the earnings' predictive ability.

It is worth noting that there is no consensus in the literature regarding a direct and efficient proxy for political uncertainty. However, Julio and Yook (2012) note that national elections are an attribute that provides an interesting configuration for researchers. According to the authors, national elections are relevant for corporate decisions, as they may affect the regulation of industries, monetary and marketing policies, taxation, and, in more extreme cases, the potential expropriation or nationalization of private firms.

Chen, Hope et al. (2018) argue that national elections reflect high political uncertainty because they can disrupt the established economic and political balance, significantly affecting resources allocation decisions. Furthermore, national elections are exogenously defined to any individual firm (Julio & Yook, 2012), which may alleviate potential endogeneity problems in research.

Given the previous discussion, political uncertainty has the potential to impact the predictive ability of earnings components according to the following: (i) increased cash flow volatility in times of considerable political uncertainty, possibly impacting the ability of both current cash flow and accruals in predicting future cash flows; and (ii) the managers' discretionary power in manipulating current cash flow and accruals in times of increased political uncertainty, affecting the predictive capability of both the earnings components. Thus, the following hypothesis is proposed:

> **H1: Political uncertainty negatively affects the ability of reported earnings components – current *accruals* and cash flow – to predict future cash flows.**

3. Methodological Procedures

The study's population include firms listed on the stock exchanges of six emerging Latin American countries: Argentina, Brazil, Chile, Colombia, Peru, and Mexico (Buenos Aires Stock Exchange, Brazil, Bolsa, Balcão – B3, Santiago Stock Exchange, Colombia Stock Exchange, Lima Stock Exchange, and Mexican Stock Exchange, respectively), based on the classification proposed by the International Monetary Fund [IMF] (2018). Moreira (2018) notes the economic relevance of these countries in the Latin American context, considering that they represent the highest Gross Domestic Products (GDP) in 2016, according to the World Bank (2018).

The sample comprised firms listed in Argentina, Brazil, Chile, and Mexico. The firms listed in Colombia were excluded as less than 100 companies were listed in its capital market (World Federation of Exchanges, 2018). According to the criteria proposed by Paulo Martins and Girão (2014), there was considerable missing data regarding the firms. The firms listed in Peru were also excluded because this market was not very representative compared to the others in the sample; e.g., data from the World Federation of Exchanges (2018) show that, until 2006, the Peruvian capital market exhibited an average capitalization of only 42% of the Argentine market capitalization. The Peruvian market has the lowest level of capitalization among the countries in the sample, which may reflect significantly different incentives between markets, considering that non-economic factors may be more relevant than economic factors in small markets (Alexakis & Petrakis, 1991). Furthermore, observations were also excluded due to missing data or because they belonged to firms in the financial sector, considering disclosure practices in this sector differ from the practice of firms in other sectors (Pincus, Rajgopal & Venkatachalam, 2007). Thus, the final sample consisted of 386 firms (4,127 observations-year), as detailed in Table 1:

Table 1
Sample composition per country

	Total sample	Argentina	Brazil	Chile	Mexico
Firms	386	43	221	34	88
Observations-year	4,127	469	2,507	408	743

Source: Study's data

The investigation included events observed between 1998 and 2018. This time frame took into account the objective of capturing potential effects of different electoral periods on the firms located in the countries in the sample.

Data were collected from: a) the Thomson Reuters® database, which is used to access accounting information; b) the Data and Database of Political Institutions from The World Bank; these bases are used to collect information related to variations in the countries' GDP and national electoral periods, respectively; c) the IFRS platform (ifrs.org), which is used to capture the periods in which practices converged to the IFRS standard in each country in the sample.

According to Monfared and Pavlov (2019), data winsorization was performed considering the 5th and 95th percentiles to mitigate the effects of outliers. Note that additional tests were performed considering the winsorization of data in the 1st and 99th percentiles and considering data without any winsorization process. However, the estimates were sensitive to these choices and were not consistent for the parameters and tests. This finding is possibly explained by the high dispersion of the study's main variables and outliers in these variables. These problems were more strongly mitigated only when considering the 5th and 95th percentiles in the winsorization process.

According to Chen, Hope et al. (2018), and Julio and Yook (2012), political uncertainty was measured considering the periods of national elections. For that, a dichotomous variable (*ELE*) was used for national elections, in which 1 refers to the occurrence of elections and 0, otherwise, as suggested by Julio and Yook (2012).

To examine the hypothesis that political uncertainty negatively affects the ability of reported earnings to predict future cash flows. The equation used was operating cash flow forecast for one period ahead (Barth, Clinch & Israeli, 2016; Hope, Thomas & Vyas, 2016), according to the model below:

$$FC_{i,t+1,k} = \beta_0 + \beta_1 FC_{i,t,k} + \beta_2 ACC_{i,t,k} + \beta_3 ELE_{t,k} + \beta_4 FC_{i,t,k} * ELE_{t,k} + \beta_5 ACC_{i,t,k} * ELE_{t,k} + \sum_{n=6}^{N} \beta_n \, CONTROLS + \varepsilon_{it} \quad (1)$$

Where $FC_{i,t+1,k}$ is the operating cash flow of period *t+1* for firm *i* in country *k*, scaled by the total assets in *t-1* of firm *i*; $FC_{i,t,k}$ is the operating cash flow of period *t* for firm *i* and in country *k*, scaled by the total assets in *t-1* of firm *i*; $ACC_{i,t,k}$ refers to accruals in period *t* for firm *i* and country *k*; $ELE_{t,k}$ is a dummy variable that represents the year of national elections in country *k*, in which 1 refers to the year of elections, and 0 otherwise ; $ELE_{t,k} * FC_{i,t,k}$ represents interaction with $FC_{i,t,k}$ in national election years; $ELE_{t,k} * ACC_{i,t,k}$ represents interaction with $ACC_{i,t,k}$ in national election years; CONTROLS refers to the matrix of control variables, namely, the firm's size (TAM) and growth (CRESC), dummy representing the IFRS period, the annual variation of the Gross Domestic Product (GDP) and dummies for countries, years, and sectors considered in the sample; ε_t is the error term that captures the residuals of the regression.

The period's accruals were measured using the Working Capital Requirement (WCR) variation as a proxy, as proposed by Dechow, Hutton, Kim, and Sloan (2012), expressed in equation (2):

$$ACC_t = [(\Delta AC_t - \Delta AF_t) - (\Delta PC_t - \Delta PF_t)]/AT_{t-1} \quad (2)$$

Where *ACCt* is the accruals in the period scaled by the total assets of t-1; *(ΔAC - ΔAF)* represents increases in Operating Current Assets in the period; *(ΔPC - ΔPF)* represents increases in Current Operating Liabilities in the period; and AT_{t-1} corresponds to Total Assets in period *t-1*.

In turn, operating cash flow was measured by the difference between Earnings Before Interest and Taxes on Income (EBIT), scaled by total assets of *t-1*, and the period's accruals estimated according to equation (2), following Passos and Coelho (2019).

Note that the indirect calculation of the accruals and cash flow variables is due to a lack of a Cash Flow Statement throughout the period addressed here, which prevents the use of the cash flow approach to obtain the measurements directly.

Firm size (*TAM*) was measured by the natural log of the firm's total assets, while the firm's growth (CRESC) was measured by the percentage variation in net revenue between *t* and *t-1*. Both measures represent control for the effects accruing from the firms' characteristics, as reported in previous research (Choi, Han, Jung & Kang, 2015; Farshadfar, Ng & Brimble, 2008). A positive and negative association is expected between TAM and CRESC and future cash flows, respectively, considering that larger and slower-growing firms exhibit more stable operating characteristics and contribute to their greater ability to predict future cash flows than smaller and high-growth firms.

A binary variable representing the period after convergence to the IFRS standard was included in the model (1), considering the different periods of convergence for each country in the sample, to control for potential effects arising from the change in the accounting standards, as reported by Machado, Silva Filho and Callado (2014) and Boina and Macedo (2018). The following convergence periods were considered on the IFRS platform (ifrs.org): Argentina – beginning in 2012, Brazil – beginning in 2010, Chile – beginning in 2009, and Mexico – beginning in 2012.

Dummies were also included to control for potential temporal effects from the firms' different sectors and different countries in the sample, as well as a variable representing the variation in national GDP to control for the potential effects of economic shocks.

The β_4 and β_5 coefficients of regression (1) are expected to be negative and significant, assuming a negative impact of greater political uncertainty on the ability of the earnings components to predict future cash flows.

The model was specified as multiple linear regression and estimated with the System Generalized Method of Moments (Sys-GMM), based on the estimation of dynamic models (Barros, Castro, Silveira & Bergmann, 2020). This method is more consistent than others in case of endogeneity problems or serial autocorrelation (Barros et al., 2020).

Regression (1) was estimated with variance correction for finite samples to correct potential heteroscedasticity of residuals, as Windmeijer (2005) noted. The existence of multicollinearity between the independent variables was verified with correlation analysis, as well as residual autocorrelation problems according to Arellano and Bond (1991). The tests showed that both problems were absent (not reported). Finally, the Hansen test was applied and was not significant, indicating that the instruments used to estimate the model (1) are valid, confirming that the estimation by Sys-GMM is consistent.

Note that the residuals were not normally distributed. However, this is not a critical condition, and according to Greene (2012), it can be relaxed, considering the property of estimators with normal asymptotic distribution as the sample size increases.

4. Results

Table 2 presents the description of the study's variables, showing that, on average, the firms in the sample present positive accruals and future and current cash flows. However, these attributes present high variability, evidenced by the relationship between their standard deviations and means. Additionally, electoral years represent approximately 21% of the period considered.

Table 2
Description of the variables

Variable	Mean	Median	Standard deviation	Minimum	Maximum
$FC_{i,t+1}$	0.061	0.066	0.111	-0.203	0.265
$FC_{i,t}$	0.060	0.065	0.113	-0.204	0.267
$ACC_{i,t}$	0.010	0.002	0.081	-0.145	0.207
ELE	0.209	0	0.407	0	1
TAM	21.905	21.890	2.061	18.160	25.583
CRESC	0.130	0.104	0.216	-0.238	0.673
IFRS	0.531	1	0.499	0	1
VPIB	2.291	2.804	3.253	-10.894	10.125

Note: Definitions of the variables: $FC_{i,t+1,k}$ is the operating cash flow of period *t+1* for firm *i* in country *k*, scaled by the total assets in *t-1* of firm *i*; $FC_{i,t,k}$ is the operating cash flow of period *t* for firm *i* and in country *k*, scaled by the total assets in *t-1* of firm *i*; $ACC_{i,t,k}$ refers to accruals in period *t* for firm *i* and in country *k*; $ELE_{t,k}$ is a dummy variable that represents the year of national elections in country *k*, in which 1 refers to the year of elections, and 0 otherwise; *TAM* represents the firm's size, measured by the natural log of the total asset; *CRESC* represents the firm's growth, measured by the percentage variation of net revenue between *t* and *t*-1; *IFRS* is a dummy representing the adoption of the IFRS standard in each of the countries in the sample; *VPIB* corresponds to the annual variation of the Gross Domestic Product (GDP). N=4,127 observations/year.

Source: study's data.

Table 2 also shows firms with 13% growth in net revenues, with this variable presenting a high variability. Additionally, approximately 52% of the period refers to when the IFRS standard was adopted, when the firms' accounting information was disclosed in the countries included in the sample, and the countries in general present positive variation in GDP, again, with high variability. Finally, we highlight that *TAM* was the variable with the highest level of homogeneity among all the quantitative variables presented in Table 2.

Table 3 presents the correlation coefficients of the variables object of this study. The tests are separated according to the measure representing political uncertainty (*ELE*). Pearson's correlation coefficients were found significant at 1% in both tests, indicating a positive association between future cash flows and reported earnings components (current cash flows and accruals). On the other hand, the magnitude of the correlation coefficients between these variables increases when the years of national elections are considered, with a seemingly greater effect recorded for the accruals component, presenting evidence that suggests a beneficial effect of periods of considerable political uncertainty on the predictive ability of both earnings components.

Table 3
Correlations according to the periods of national elections

	ELE = 0			*ELE* = 1		
	$FC_{i,t+1}$	$FC_{i,t}$	$ACC_{i,t}$	$FC_{i,t+1}$	$FC_{i,t}$	$ACC_{i,t}$
$FC_{i,t+1}$	1			1		
$FC_{i,t}$	0.325***	1		0.348***	1	
$ACC_{i,t}$	0.054***	-0.562***	1	0.111***	-0.567***	1

Note: Definitions of the variables: is the operating cash flow of period *t+1* for firm *i* in country *k*, scaled by the total assets in *t-1* of firm *i*; is the operating cash flow of period *t* for firm *i* and in country *k*, scaled by the total assets at *t-1* of firm *i*; $ACC_{i,t,k}$ refers to accruals in period *t* for firm *i* and in country *k*.
*** Significance at 1% level.

Source: Study's data.

Together, these findings provide evidence that the association between future cash flows and reported earnings components changes according to political uncertainty. The direction of this effect seems to be an increase in the predictive ability of these components in periods of political uncertainty, however.

Table 4 deepens the analysis by presenting the results from testing the influence of political uncertainty on the predictive ability of the current cash flow and accruals. In the regression estimation, the variables current operating cash flow ($FC_{i,t}$), accruals ($ACC_{i,t}$), size (*TAM*), and growth (*CRESC*) were identified as endogenous. Thus, from the second lag on, these variables were used as instruments. The variable representing the period of political uncertainty (*ELE*) and the interaction between these periods with current cash flow and accruals were treated as exogenous, as well as the variables representing variation in GDP (*VPIB*), the IFRS standard (*IFRS*), and the dummies for years (*D_ANO*), sectors (*D_SETOR*) and countries (*D_PAÍSES*).

Table 4

Predictive ability of profit components and political uncertainty

	Dependent variable: FC_{t+1}		
Variables	**Coefficients**	**Standard Error**	**P-*value***
FC_t	0.783	0.090	0.000
ACC_t	0.787	0.236	0.001
ELE_t	0.017	0.009	0.064
$ELE_t * FC_t$	-0.199	0.103	0.053
$ELE_t * ACC_t$	-0.140	0.232	0.547
TAM	0.013	0.007	0.065
CRESC	-0.085	0.043	0.050
IFRS	0.010	0.009	0.271
VPIB	-0.001	0.001	0.521
Intercept	-0.332	0.141	0.018
Dummies for years		Yes	
Dummies for sectors		Yes	
Dummies for countries		Yes	
Observations-year		4.127	
Number of instruments		108	
Number of firms		386	
Wald Statistic		3.599.48***	
AR(1)		-5.69***	
AR(2)		1.11	
Hansen test		74.31	

Notes: Model: $FC_{i,t+1,k} = \beta_0 + \beta_1 FC_{i,t,k} + \beta_2 ACC_{i,t,k} + \beta_3 ELE_{t,k} + \beta_4 FC_{i,t,k} * ELE_{t,k} + \beta_5 ACC_{i,t,k} * ELE_{t,k} + \sum_{n=6}^{N} \beta_n \, CONTROLS + \varepsilon_{it}$. Definitions of the variables: $FC_{i,t+1,k}$ is the operating cash flow of period *t+1* for firm *i* in country *k*, scaled by the total assets in *t-1* of firm *i*; $FC_{i,t,k}$ is the operating cash flow of period *t* for firm *i* and in country *k*, scaled by the total assets in *t-1* of firm *i*; $ACC_{i,t,k}$ refers to accruals in period *t* for firm *i* and in country *k*; $ELE_{t,k}$ is a dummy variable that represents the year of national elections in country *k*, in which 1 refers to the year of elections, and 0 otherwise; $ELE_{t,k} * FC_{i,t,k}$ represents interaction with $FC_{i,t,k}$ in years of national elections; $ELE_{t,k} * ACC_{i,t,k}$ represents interaction with $ACC_{i,t,k}$ in years of national election; CONTROLS refers to the matrix of control variables, namely, the firm's size (*TAM*) and growth (*CRESC*), dummy representing the IFRS period, the annual variation of the Gross Domestic Product (GDP) and dummies for countries, years, and sectors considered in the sample.
*** Significance at 1% level.

Source: Study's data.

Table 4 confirms the ability of both earnings components – $FC_{i,t}$ and $ACC_{i,t}$ – to predict future operating cash flows, as the coefficients are positive and significant in 0.1% of these variables, as reported by other studies (Barth et al., 2001; Boina & Macedo, 2018; Lev et al., 2010).

Regarding the impact of political uncertainty on the predictive ability of the components of disclosed earnings (current cash flows and accruals), there is a decrease in the predictive ability of current cash flow (FCi,t), as shown by the negative and significant coefficient (at the 6% level) of the *FC* ELE* variable. Note that, in the presence of national election periods, the predictive ability of the $FC_{i,t}$ decreases by approximately 25% [(*FC–ELE*FC)/FC* = (0.783-0.199)/0.783], when compared to its ability in non-election periods. This indicates a non-trivial impact of periods of political uncertainty on the predictive power of the current cash flow component.

This finding confirms the expected adverse effect, i.e., periods of more significant uncertainty negatively affect the predictive ability of cash flow, as Leal et al. (2017) report on the effects of events that lead to increased uncertainty associated with future cash flows.

On the other hand, *ACC*ELE* was not significant and presented a negative coefficient, not allowing for inferences regarding the adverse effect of political uncertainty on the predictive ability of the accruals component. The accruals component was expected to have a lower predictive ability in times of political uncertainty, which would be in line with evidence presented by Leal et al. (2017) in the context of increased uncertainty.

Note that *TAM* and *CRESC* variables proved to be significant in impacting future cash flows, as already indicated in previous studies (Choi et al., 2015; Farshadfar et al., 2008). On the other hand, *IFRS* and *VPIB* were not significant in affecting future cash flows, as their non-significant coefficients show (Table 4).

The results in Table 4 were tested to verify whether they were sensitive to the proxy used for political uncertainty and examine the findings' robustness. Hence, model (1) was estimated with configurations similar to those reported in Table 4. It replaces *ELE* and its interactions by the reported earnings components, adding a measure of the economic policy uncertainty index (*EPU*) for each country in the sample (except for Argentina, which did not present data for this measure), considering its interaction with those components. Baker et al. (2016) developed this measure, which is available in Economic Policy Uncertainty (2020). The results show a negative effect of economic and political uncertainty (*EPU*) on the predictive ability of both earnings components, suggesting that these findings are sensitive to the measure used for political uncertainty when the accruals component is considered. Even though this is relevant evidence, applying *EPU* to only three countries in the sample restricts comparisons with the results presented in Table 4.

Additionally, we tested whether the impact of political uncertainty on the ability of the current cash flow and accrual components to predict future cash flows would persist more than one period ahead. Thus, model (1) was estimated with configurations similar to those reported in Table 4, considering the cash flow of two periods ahead (t+2) as the dependent variable. The results showed, once again, a negative effect of political uncertainty (*ELE*) on the predictive ability of both of the earnings components.

Together, the robustness tests confirm the negative effect of political uncertainty on the predictive ability of current cash flow, as reported in Table 4, and provide evidence of an adverse effect of that event on the predictive ability of the accruals component.

Based on these findings, the hypothesis that political uncertainty negatively affects the ability of the disclosed earnings components - accruals and cash flow - to predict future cash flows is not rejected. This effect was conclusively captured only regarding current cash flow, though. Therefore, we can infer that the ability of the current cash flow component to predict future cash flows is negatively associated with periods of considerable political uncertainty, reflected in times of national election.

5. Conclusion

This study's objective was to investigate the interaction between periods of greater political uncertainty and the ability of reported earnings components to predict future cash flows in the context of Latin American capital markets. This interaction is expected, considering evidence that political uncertainty increases both uncertainties associated with the firms' future cash flows and the possibility of managers manipulating earnings components. That would reduce the ability of both earnings components – current cash flows and accruals – to predict future cash flows.

Periods of national elections – the year when national elections occur – were considered a proxy to represent periods of greater political uncertainty. The cash flow forecast equation of one period ahead served to capture the predictive ability of the earnings components according to periods of political uncertainty.

Evidence suggests that periods of political uncertainty differentiate the ability of earnings components to predict future cash flows, specifically contributing to lower the predictive ability of current cash flow during times of national elections. These findings were robust, both the alternative measure of political uncertainty and the alternative configuration of the forecast period for future cash flows.

On the other hand, the accruals component was not significant in negatively affecting the predictive ability of future cash flows in times of national elections. This does not align with the notion that an increase in uncertainty would be associated with this component's lower ability to predict future cash flows. However, this evidence seems to be sensitive to the proxy used for the political uncertainty event and the forecast period defined in the equation for forecasting future cash flows, considering that the predictive power of that component decreased in both test configurations.

Evidence shows that political uncertainty affects the predictive ability of the reported earnings components; however, this effect's direction differentiates according to the component and measure adopted to represent political uncertainty. Nevertheless, the conclusion is that current cash flow is negatively affected by national elections.

These results contribute to the international literature by providing evidence that adds to research addressing the hypothesis concerning political uncertainty, specifically regarding its adverse effects on the usefulness of the information provided by firms in the context of emerging markets. In this regard, this study complements the findings reported by Chen, Chen et al. (2018), and Yung and Root (2019) concerning the negative impact of political uncertainty on the quality of disclosed accounting information.

It is noteworthy that this negative impact proved to be persistent, even when considering specific countries in Latin America, which exhibit different characteristics from other countries considered in previous studies. Along these lines, this study's results confirm the relevance of political uncertainty in different capital markets, thus characterizing its pervasive nature. Also, considering political uncertainty in various markets, some authors argue that political uncertainty has a more significant impact on emerging than on developed markets (Diamonte, Liew & Steven, 1998). No tests in this sense took place, however, which is a suggestion for future research.

Furthermore, these findings complement evidence reported by Leal et al. (2017) for the context of emerging markets, which help to clarify the impact of events that increase uncertainty associated with future cash flows on the availability of helpful information to capital market agents.

Note that the evidence presented has direct practical implications for Latin American capital markets players, specifically regarding the adverse impact of political uncertainty on predicting future cash flows. In this aspect, evidence shows a need to consider election years as a relevant factor reducing the ability of current cash flow to predict future cash flows.

This study's objective was to capture the effect of political uncertainty considering periods of national elections only. Additionally, a political economy uncertainty index (*EPU*) was used, though with restrictions. Other measures, such as political risk and political crisis indexes, can be used as alternative proxies to capture that effect in future research. Considering the limitations previously mentioned, it represents an opportunity for future studies to examine whether events surrounding the effective change of governments or other factors related to elections would also affect the quality of accounting information.

Furthermore, the interactive effect of the impact of political uncertainty on the predictive ability of the earnings components and manipulation of these components on the part of managers was not tested, which is another suggestion for further research.

The effect of political uncertainty on the predictive ability of profit components is likely to be found in other emerging markets with a configuration similar to the countries sampled in this study, another possibility studies might consider in the future.

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Internal Control Weaknesses, financial restatements, and audit opinion: evidence from Brazilian market

Natalia Zanotti Silote
https://orcid.org/0000-0002-2500-8266

Etiene Freitas Rezende
https://orcid.org/0000-0002-4143-6877

Vagner Antônio Marques
https://orcid.org/0000-0001-7210-4552

Viviane da Costa Freitag
https://orcid.org/0000-0001-8989-1361

Abstract

Objective: To analyze associations between Internal Control Weaknesses (ICWs), audit opinion, and Financial Restatements (FR) of companies listed in *Brasil, Bolsa e Balcão B3*, composing the IBrX 100.
Method: This is a descriptive, archival, quantitative study. Data were obtained from Brazilian Security and Exchange Commission's (CVM) website in the 2010-2018 period. Analysis was performed using descriptive statistics, test for differences of average/medians/proportions, Chi-square test, and analysis of correlations.
Results: 23.27% of the observations presented at least one ICW; 35.58% of restatements were found on average, though only 2.73% were required by CVM. Additionally, 1.11% of the audit reports presented a qualified opinion. No association was found between ICW disclosure, reissue of statements, and type of audit opinion. However, an association was found between ICW disclosure and emphasis paragraphs, suggesting the latter can signal weaknesses arising from weaknesses, though did not result in the auditors issuing a modified opinion.
Contributions: This study provides an opportunity to discuss the role of regulators in investigating opinions issued by auditors and the underreporting of reissued financial statements.
Keywords: Internal Control Weaknesses; Financial Restatements; Audit opinion.

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1. Introduction

Given numerous frauds, regulatory authorities, the Government and companies, have adopted strict control measures (Wolfe & Hermanson, 2004). Ge and McVay (2005) note that Sarbanes-Oxley Act (SOX) was an example of such control measures that came into effect in the USA in 2002, which triggered many changes in accounting and auditing standards. In this sense, Hammersley, Myers, and Shakespeare (2008) highlighted SOX's paragraph 302, which requires executive and financial directors to perform quarterly assessments of the effectiveness of internal controls, while paragraph 404 requires an annual audit to assess the management of internal controls and their effectiveness.

In Brazil, the Brazilian Securities and Exchange Commission (CVM), following the same direction, through Instruction No. 480, from 2009, started requiring from Brazilian publicly held companies the disclosure of ICWs through Reference Forms (RF) (Lopes, Marques & Lousada, 2019). The objective is to ensure the disclosure of reliable FS, demanding that an independent auditor provide an opinion and a detailed report assessing the effectiveness of internal controls performed by the board (CVM Instruction 480, 2009).

Given these changes, researchers from the accounting and auditing fields have attempted to understand how the disclosure of such weaknesses affect the informational content of financial reports (Donelson, Ege & McInnis, 2017; Ji, Lu, Qu & Richardson, 2019) in the context of quality auditing (Hammersley, Myers & Zhou, 2012; Habib, 2013). For example, when analyzing companies that reissued their FS to correct distortions linked to underlying material deficiency, Rice and Weber (2012) verified that most companies reported control weaknesses only after restatements. This situation suggests that most of the companies do not report these material weaknesses timely. According to those authors, this issue is related to the auditors' ability to spot control weaknesses and incentives around decisions on whether to disclose these aspects or not.

Wolfe and Hermanson (2004) state that most frauds are committed by experiment, intelligent people with a high level of knowledge of the company's internal controls and vulnerabilities. In turn, Donelson et al. (2017) found strong evidence of an association between control weaknesses and frauds in the future. Hence, we emphasize the importance of identifying weaknesses to develop measures intended to mitigate them.

In the Brazilian context, Lopes, Marques, and Louzada (2019) verified that the types of ICWs reported in RF for the 2010-2015 period were: Training, Technological Failures (TFs), Failures in Subsidiaries (FSs), Specific Accounts (SAs) and Segregation of Duties. However, it is noteworthy that that study revealed that almost half of the observations reported an inexistence of ICWs.

The identification of ICWs on the part of auditors is linked to the risk that these weaknesses represent to the FS reliability because the presence of ICWs may indicate potential distortions or factors that affect the risk of relevant distortion. Consequently, auditors should assess internal controls to be reasonably safe to issue their opinion on FS, that is, to certify that these are free of relevant distortion, whether it is an honest mistake or fraud (NBC TA 315). In this sense, an auditor's attributions include verifying control weaknesses reported in the previous auditing. If no corrective action was taken, communication of this deficiency must be reiterated (NBC TA 265).

An independent auditor's objective is to confer greater reliability to FS (NBC TA 200). Upon obtaining an understanding of internal controls, auditors assess controls weaknesses and weaknesses to identify whether there is a risk of relevant distortion (NBC TA 265), which will guide auditing procedures, and consequently, the auditor's opinion.

Habib (2013) verified that a modified audit opinion depends on the companies' specific variables, such as size, profitability, the quality of internal controls, and ability to manage control weaknesses and/or weaknesses. Evidence suggests that auditors use orderly strategies to manage customer-related control risk, among which modified opinion (Elder, Zhang, Zhou & Zhou, 2009).

Lobo, Wang, Yu, and Zhao (2020) verified that ICWs present less precise financial reports. Meanwhile, ICWs may also signal potential error or fraud in the future, i.e., compromise the quality of FS (Guragai & Hutchison, 2019), as control weaknesses are also related to an opportunity to commit fraud (Adhikari, Guragai & Seetharaman, 2020; Donelson et al., 2017). Hence, one should consider that reissues of financial statements are often used to correct distortions linked to underlying material deficiency (Rice & Weber, 2012).

Considering the responsibility of auditors in the face of the need to identify and disclose ICWs, even though the disclosure of ICWs are mandatory since 2009 (Instrução CVM 480, 2009), as previously reported in international studies, such as Adhikari et al. (2020); Gao, Jia and Li (2020); Lobo et al. (2020); Bauer et al. (2019); Donelson et al. (2017); Lenard et al. (2016); Ge et al. (2007); and Ge and McVay (2005), and Brazilian studies: Teixeira and Cunha (2016a; 2016b); Silva et al. (2018); and Lopes, Marques, and Louzada (2019), there is a research gap in the Brazilian context, thus, it is an opportunity to analyze associations between ICWs, auditors' opinion, and the reissue of financial reports.

In this context, this study sought to answer the following question: **What is the association between internal control weaknesses, auditor opinion, and reissues of financial statements?**

Thus, this study's objective was to analyze associations between ICWs, audit opinion, and reissues of FS among companies composing *Índice Brasil 100* (IBrX 100). This descriptive, documentary and qualitative study analyzed data from 2010 to 2018, extracted from the Reference Forms available at CVM's website, auditors' reports, and FS. Data were analyzed using descriptive statistics, a test for differences between proportions, the Chi-square test for verifying associations, and Spearman's correlation analysis.

This study is intended to anticipate potential mistakes arising from ICWs and correct them. Not adopting measures to remedy previously reported weaknesses has various consequences, such as increases in auditing fees and a higher likelihood of receiving a modified audit opinion (Hammersley et al., 2012). This study is also expected to contribute to the dynamics of associated factors in the Brazilian context that affect audit opinion and the reissuing of financial statements.

Therefore, this study has potential implications for risk assessment on the part of investors, auditors, and managers. According to Adhikari et al. (2020) and Gao et al. (2020), changes in auditing standards may also change investors' perceptions regarding ICWs and how ICWs disclosure impacts financing options. Furthermore, this study also has the potential to evidence potential risks of underreporting and/or ICWs disclosure, modified opinions, and/or reissuing statements on the part of regulators/managers.

2. Literature Review

2.1 Internal Control Weaknesses: Origins and Empirical Evidence

Internal control is the process used to identify and mitigate business risks that threaten an entity's objectives and security, aiming to ensure the effectiveness and efficiency of its operations and the reliability of financial reports, according to law and applicable regulation (NBC TA 315). Internal Control Weaknesses arise when controls cannot timely prevent or detect and remedy distortions in Financial Statements. Significant internal control deficiency refers to a control deficiency or a combination of control weaknesses and likely presents relevant distortion (NBC TA 265).

The regulator's objective when demanding ICWs disclosure is to signal the possibility that problems resulting from such weaknesses may occur. Initially, the disclosure of ICWs became mandatory in the USA due to Sarbanes-Oxley Act (SOX) in 2002. In Brazil, disclosure was imposed on publicly traded companies after CVM Instruction No. 480 in 2009.

Implementing the SOX Act in the USA brought regulatory consequences for Brazil since CVM determined through Normative Instruction No. 480 the disclosure of Reference Forms and information about their content, listed in Annex 24, specifically item 5.3, (d), and (e). In addition, it demands the disclosure of ICWs presented in a detailed report, including directors' comments regarding the weaknesses identified and corrective measures adopted.

The study conducted by Ge and McVay (2005) examined the disclosure of material weaknesses after the SOX Act was implemented to identify the types of weaknesses and the firms' general characteristics. The authors analyzed 261 companies that disclosed at least one deficiency listed in the files sent to the Securities and Exchange Commission (SEC) between 2002 and 2004 and verified: weaknesses in revenue recognition policies; lack of segregation of duties; accounting policy weaknesses in the closing process; inadequate reconciliation of accounts; and specific weaknesses of subsidiaries. Regarding the company's characteristics, this disclosure is positively associated with business complexity and the fact that a large auditing firm audited the companies analyzed.

In turn, Hammersley et al. (2012) identified consequences of not correcting material weaknesses, such as increased auditing fees; increased likelihood of auditors being dismissed; increased likelihood of a modified audit opinion; operational continuity; and an increase in credit risk rating.

In the Brazilian context, Lopes et al. (2019) investigated ICWs disclosed by Brazilian companies in the last quarter of 2015 and identified the types of ICWs using the categories proposed by Ge and McVay (2005). They also showed that the companies declaring no relevant weaknesses comprised 49% of the sample. However, according to CVM, these situations should be rare. The types of ICWs reported were: Training, Technological Failures, Failures in Subsidiaries, Specific Accounts, and Segregation of Duties.

The disclosure of ICWs is linked to three conditions: the existence of ICWs; disclosure identified by auditors; and decisions whether disclosing weaknesses or not (Ashbaugh-Skaife, Collins & Kinney, 2007). For an ICWs disclosure to be meaningful for investors, companies should not report that their internal controls are effective when they are not. Rice and Weber (2012) investigated companies that reissued their financial statements to correct distortions concerning control weaknesses and associated this sample with ICWs reports previously issued, together with the original financial statements. The objective was to verify whether underlying weaknesses were reported in the distortion period, and the results suggest that most of the companies with material weaknesses did not timely report these weaknesses.

Wang (2013) argued that updates in financial statements result from internal control problems, considering this tool is the first barrier to ensuring these statements' quality. The author analyzed associations between reissuing financial statements and internal controls, verifying whether ICWs affect the corrections' level of severity. The findings indicate that different levels of ICWs may cause varying levels of severity in corrections and that ICWs at the company level are more severe and more likely to demand corrections when compared to account-specific material weaknesses.

When demanding the annual disclosure of ICWs (Instruction CVM 480, 2009), CVM understands that independent auditors must take a stand concerning the audited company's internal controls. This procedure signals the market of potential occurrences resulting from such weaknesses (NBC TA 315). This obligation initially originated in the USA after SOX Act was implemented (Hammersley, et al., 2008) and is linked to the potential risk ICWs represent to financial statements in terms of relevant distortions, resulting from errors or frauds (Adhikari, Guragai & Seetharaman, 2020; NBC TA 315; Donelson et al., 2017). Based on these arguments, we may infer a relationship between ICWs, reissuing of financial statements, and auditor opinion, which leads to this study's proposal.

2.2 Determinants of Audit Opinion and the Reissuing of Financial Restatements

Within the scope of the Federal Council of Accounting (CFC), the *Norma Brasileira de Contabilidade Técnica da Auditoria* [Brazilian Standard for Technical Audit Accounting] (NBC TA 700) presents the parameters to be adopted in audit opinion and audit reports. The standard provides for two types of audit reports called unmodified audit opinion and modified audit opinion. Blandón and Bosch (2013) verified that unmodified audit opinion (unqualified) is expressed by auditors when they conclude that a financial statement took into account all relevant aspects according to the applicable financial reporting framework.

Modified opinions are subdivided into three types: qualified, adverse, and disclaimer opinions. A qualified opinion is issued when auditors find evidence of relevant individual or combined misstatements. However, these are not pervasive. An adverse opinion is issued when auditors find evidence that financial statements contain material and pervasive misstatements. Finally, a disclaimer of opinion is issued when auditors find no sufficient evidence to support an opinion. Thus, they cannot express an opinion regarding a given financial statement (NBC TA 705).

According to Habib (2013), the literature on the determinants of audit opinion is far from conclusive. Chen, Cumming, Hou, and Lee (2013) note that auditors work as external mechanisms to decrease a company's tendency to manipulate results. MohammadRezaei, Mohd-Saleh, Jaffar, and Hassan (2016) verified that factors such as the audit market's competitiveness might influence an auditor's opinion. In turn, Moalla (2017) notes that factors that influence auditing risks encourage modified opinions, while Jiang, Rupley, and Wu (2010) evidenced a positive association between ICWs and audit opinion, though this association was significant only for more complex ICWs. Likewise, Munsif, Raghun, and Rama (2012) verified that the reporting of ICWs favors delays in issuing opinions. Despite the adverse effects arising from the disclosure of information that increases investors' risk perceptions regarding companies or increases litigation costs and may cause auditors to lose contracts, auditors may still not issue modified opinions. Instead, auditors can adopt other forms to warn the market of problems not material in the current year, but possibly in the future; e.g., the emphasis of matter paragraphs (Brazel et al., 2011; Ianniello & Galloppo, 2015). Hence, given this context, the following hypothesis is proposed:

H1: There is a positive and significant association between ICWs and modified opinion.

According to NBC TA 706, emphasis paragraphs expose a subject previously disclosed in financial statements that deserves attention because auditors consider it information essential for users' understanding. However, an initial emphasis may later be qualified in subsequent periods (Marques et al., 2018).

From the perspective of Rice and Weber (2012), Wang (2013), and Guragai and Hutchison (2019), ICWs may trigger the reissuing of financial statements. According to these authors, there is a significant relationship between the frequency, number, and type of a company's disclosed ICWs and the reissuing of its financial statements. However, auditors may report an unmodified opinion with one or more emphasis paragraphs (Damascena & Paulo, 2013; Santana, Silva, Dantas & Botelho, 2019). In this sense, Jiang, Rupley, and Wu (2010) verified that more complex ICWs are positively associated with modified opinion. Additionally, Marques, Louzada, Amaral, and Souza (2018) observed that emphasis paragraphs in auditing reports are a way to signal a relevant aspect without incurring a modified opinion. This perspective is coherent with Ianniello and Galloppo (2015), Kelton and Montague (2018), and Czerney, Schmidt, and Thomps (2019), which reported significant effects of the informational content of emphasis paragraphs. Therefore, the second hypothesis is proposed:

H2: There is a positive and significant association between ICWs and emphasis paragraphs.

In addition to auditor opinion and emphasis paragraphs, ICWs may be positively associated with errors and fraud, as they show a greater risk of these events occurring (Donelson, Ege & McInnis, 2017). In turn, these events would result in the reissuing of financial statements. In this context, Li, Park, and Wynn (2018) highlight a positive relationship between ICWs disclosure and the reissuing of financial statements. Cianci, Clor-Proell, and Kaplan (2019) collaborate, highlighting that a decrease in reissues depends, to some extent, on improving internal control systems. Hence, companies with a more significant number of ICWs would be more likely to reissue financial statements. Lawrence, Minutti, and Vyas (2018) and Guragai and Hutchison (2019) confirmed this hypothesis, analyzing a sample of companies listed on the SEC. Krishnan, Krishnan, and Liang (2020) verified that companies with better internal control structures tend to present higher quality financial statements. Given the previous evidence, we seek to assess the third hypothesis:

H3: There is a positive and significant association between ICWs and the reissuing of financial statements

3. Methodological Procedures

3.1. Study design, Sample and Data Collection

This is a descriptive, documentary, and quantitative study. Data were collected from Reference Forms, audit reports, and Financial Statements available on the Brazilian Securities Commission's (CVM) website between 2010 and 2018. Data concerned 96 companies (the theoretical portfolio used refers to the four months from January 7th to May 3rd, 2019) listed on the IBRX 100, *Brasil, Bolsa e Balcão B3.*

This sample was chosen because it represents the Brazilian capital market and, thus, is subject to higher political costs. Initially, the companies that reported ICWs in the period were identified. Then, these ICWs were categorized according to Ge and McVay (2005): specific accounting accounts; training of accounting professionals; end-of-period reporting/accounting policies; revenue recognition; segregation of duties; accounts reconciliation; failures in subsidiaries; senior management; and technology problems.

The audit reports were also analyzed by type: (i) Unqualified opinion; (ii) Qualified opinion; (iii) Adverse Opinion; and (iv) Disclaimer of Opinion. Later, reissued financial statements were analyzed and categorized into mandatory (when the regulator demands restatement) and spontaneous (when the company spontaneously restatement its financial report). Finally, the coding process was guided by the protocol suggested by Saldaña (2014), according to the categories proposed by Ge and McVay (2005).

Table 1 presents the number of observations with Internal Control Weaknesses with Qualified Opinions and reissued financial statements.

Table 1

Frequency and proportion of ICWs, Qualified Opinions, and Reissues from 2010 to 2018 of the companies in the IBRX 100

	fr.	Proporção	Erro padrão	Logit	
				[95% Interval.Conf.]	
Internal Control Weaknesses	185	23.27%	0.0149865	0.2045883	0.2634048
Qualified Opinion	9	1.13%	0.0037522	0.0058947	0.0216327
Reissued Statements	288	35.72%	0.0169949	0.3246065	0.3912385

Source: study's data.

Since the number of modified reports was small, we also identified and categorized audit reports containing emphasis paragraphs. It is useful categorizing emphasis paragraphs because auditors often use them to communicate that specific issues in the current year do not show materiality but may present in the future. A total of 410 (50.74%) observations containing emphasis paragraphs were found, and 504 reasons were distributed into seven categories: (1) Investment Evaluation; (2) Revenue Recognition; (3) Balance Adjustment; (4) Deferred Assets; (5) Affiliate, Associate, or Subsidiary under investigation; (6) Operational Continuity; and (7) Other reasons for issuing an emphasis paragraph.

3.2 Data Analysis Techniques

The following techniques were adopted to meet this study's objective: descriptive statistics; testing for differences between proportions; Chi-square test; and Analysis of Correlations. Descriptive statistics were relevant to present the characteristics of the sample, variables of interest, and groups included in the sample (Levels of Corporate Governance [GC], Type of Auditor, and Economic Segments). The test for difference between proportions was helpful in verify significant differences in the proportions according to the type of ICWs, auditor opinion, and reissues. According to Donelson et al. (2017), the type of ICW is essential to foresee fraud, while the issue of adverse opinion regarding internal controls indicates the possibility of omitted fraud. Additionally, it was helpful to assess significant differences in the proportions between GC levels, type of auditing firm, and economic segments. Finally, the Chi-square test and analysis of correlations were used to verify whether there were significant associations between ICWs, Auditor Opinion, and Reissues.

Testing for differences between proportions consists of evaluating the hypothesis that the difference in proportions between categorical (binary) variables is statically equal to zero. The decision rule consists in rejecting the null hypothesis [) = 0] in which Yes and No refer to the proportions of observations that present a given characteristic or not – as in the cases of verifying the proportion of companies that presented ICWs in the analyzed period and those that did not present ICWs, separated between the group that reissued FS and the group that did not. This analysis enables assessing, for instance, whether there are significant differences in the proportions of ICWs reported for the companies that reissued and did not reissue FS.

Additionally, the Chi-square test was used to verify whether the frequencies of the events of interest (ICWs, Type of Auditor Opinion, and Reissues) are associated with the groups in the sample (GC, type of auditor, economic segment, and combination between the events). The decision rule for the Chi-square test consists in verifying if p-value (x^2)>α (0.05), thus, the null hypothesis (cannot be rejected, i.e., there is no association between ICWs disclosure and the respective groups. Spearman's correlation was also used to assess the statistical significance of the relationships observed between the variables of interest. Table 2 presents the operationalization of the variables used in the study.

Table 2
Variables Operationalization

Variable	Description	Operationalization	Previous Studies
$DCIs_{it}$	Internal Control Weaknesses	Dummy variable takes the value 1 for i[th] ICW disclosed in year t, 0 for the remaining	Ashbaugh-Skaife et al. (2007); Doyle et al. (2007); Elder et al., (2009)
$TOpin_{it}$	Type of Auditor Opinion	Dummy variable takes the value 1 when the auditor opinion was modified, and 0 otherwise	Serra and Rodriguez (2013); Habib (2016), Marques et al. (2016)
$Repub_{it}$	Reissuing of Financial Statements	Dummy variable corresponding to 1 when the financial statement was reissued, and 0 otherwise	Hee (2011)
$NivGov_{it}$	Level of governance	Dummy variable corresponding to 1 for i[th] level of governance in year t, 0 for the remaining	DeFond and Lennox (2011); Scott and Gist (2013); Pei and Hamill (2013)
$TipoAud_{it}$	Type of Auditor	Dummy variable corresponding to 1 for i[th] auditing firm in year t, 0 for the remaining. Dummy variable corresponding to 1 for i[th] economic segment, 0 for the remaining	Blandon and Bosh (2013); Kryzanowski and Zhang (2013); Comprix e Huang (2015); Krauß et al., (2015)
$SegEcon_i$	Economic segment	Dummy variable takes the value 1 for i[th] ICW disclosed in year t, 0 for the remaining	Habib (2013); Serra and Rodriguez (2013); DeFond and Zhang (2014)

Source: developed by the authors

Variables ICWs, TOpin, NivGov, TipoAudi, and SegEcon were operationalized as binary dummies. The types of ICWs and level of governance, type of auditor, and economic segments were coded as multinomial categorical variables, while each type of ICWs, level of governance, type of auditor, and economic segment were coded as binary dummies.

4. Data Analysis and Results

4.1. Descriptive Statistics

First, we analyzed the frequencies and proportions of the observations per group composing the sample (Table 1). Panel A shows that 66.59% of the observations are concentrated in economic segments of Cyclic Consumption (CC), Financial (FIN), Public Utility (UP), and Basic Materials (MB). In turn, analysis of the frequency and proportion distribution by Level of Governance (Panel B) revealed that observations of the companies listed under New Market predominate and, together with companies classified as Level 1 of Governance (N1), representing 80.42%. Thus, the sample is primarily composed of companies listed in different levels of governance, mainly N1 and New Market (NM). Additionally, Panel C shows that 84.49% of the observations refer to companies audited by the Big4 firms. The frequencies and proportions found here reinforce the characteristics of companies with greater liquidity in the *Brasil, Bolsa e Balcão B3* as noted by Marques et al. (2018) and Lopes et al. (2019) regarding economic segment, governance, and type of auditor.

Table 3
Distribution of frequency and proportion of observations per Economic Segment, Type of Auditor, and Level of Governance in the 2010-2018 period

				Logit	
	N	Fri	Standard error	[95% CI]	
Panel A – Per Economic Segment					
Cycle Consumption	180	22.03%	0.0145	0.1932	0.2501
Financial	153	18.24%	0.0135	0.1573	0.2104
Public Utility	144	16.65%	0.0130	0.1424	0.1936
Basic Material	90	9.67%	0.0103	0.0782	0.1190
Non-Cyclic Consumption	81	7.83%	0.0094	0.0618	0.0989
Industrial Goods	72	7.96%	0.0095	0.0628	0.1002
Health	54	6.61%	0.0087	0.0509	0.0853
Oil, Gas, and Biofuels	45	5.51%	0.0080	0.0414	0.0730
Information Technology	27	3.30%	0.0063	0.0227	0.0478
Communications	18	2.20%	0.0051	0.0139	0.0347
	864	100%			
Panel B – Per Level of Governance					
NM	540	64.14%	0.0168	0.6078	0.6736
N1	153	16.28%	0.0129	0.1390	0.1898
N2	99	11.14%	0.0110	0.0915	0.1349
TRADITIONAL	72	8.45%	0.0097	0.0672	0.1056
	864	100%			
Panel C – Per Type of Auditor					
KPMG	236	28.89%	0.0159	0.2588	0.3210
EY	186	22.77%	0.0147	0.2002	0.2577
PWC	183	22.40%	0.0146	0.1967	0.2539
DTT	167	20.44%	0.0141	0.1781	0.2335
NBIG4	45	5.51%	0.0080	0.0414	0.0730
	817	100%			

Source: Study's data

Next, we analyzed the proportion of ICWs, modified opinions, and reinstatements in the companies listed in the IBRX100 from 2010 to 2018 (Figure 1). Note that 21% of the companies on average presented one or more ICWs and the proportion of ICWs disclosed from 2015 onwards increased significantly. The test for differences between proportions showed that the years 2015 [dif=0.16876 | z=3.5540***], 2016 [dif=0.19224 | z=4.1078***], 2017 [dif=0.11507 | z=2.5046***] and 2018 [dif=0.1469 | z=3.1685***] showed average proportions higher than in the preceding years. Figure 1 graphically presents this distribution of proportions over the years.

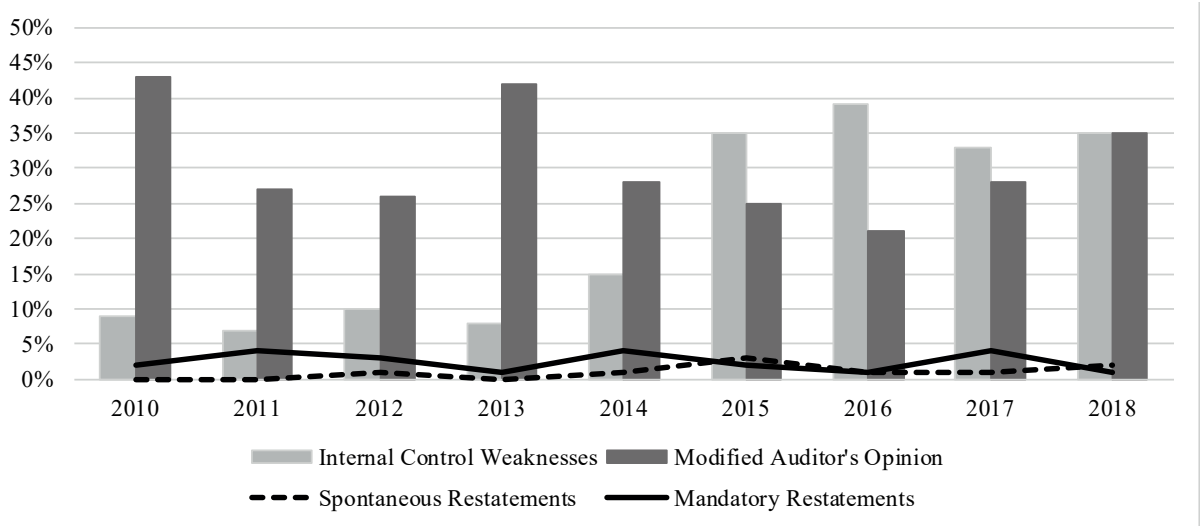

Figure 1. Proportion of ICWs, Reissues, and Modified Opinions Disclosed by the Companies in the IBRX100 in the 2010-2018 period

Source: study's data.

Additionally, 33% of the companies reissued financial statements. However, when we observed mandatory reissues, the average proportion was 3%. This finding is compatible with what Marques et al. (2018) report, in which general reissuing rates were around 25%. On the other hand, the rate of mandatory reissues in that study was 17%. Analysis of the modified opinions shows a low frequency, around 1%, without relevant variations over the period, in line with the results reported by Habib (2013).

Table 4 presents the distribution of frequency of the types of ICWs disclosed by companies in the IBRX100. A total of 368 ICWs were disclosed, while 612 companies declared no ICWs. The most frequent ICWs were Accounting Policy (PC) (126), followed by TFs (96) and Specific Accounts (70).

Table 4

Distribution of frequencies of types of ICWs Disclosed by the Companies listed in IBRX100 in the 2010-2018 period

	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Specific accounts	2	3	4	4	4	15	12	13	13	**70**
Training	0	0	0	0	0	0	1	0	1	**2**
Accounting Policy	7	6	9	5	9	24	29	20	17	**126**
Revenue Recognition	1	1	0	0	2	3	4	2	3	**16**
Segregation of Duties	0	0	0	0	0	2	3	1	1	**7**
Account Reconciliation	1	1	1	1	2	5	3	4	4	**22**
Failures in Subsidiaries	3	2	1	0	4	5	5	4	2	**26**
Senior Management	0	0	0	0	0	0	1	1	0	**2**
Technological Failures	2	3	3	2	6	14	23	19	24	**96**
Other ICWs	0	0	0	0	0	0	0	1	0	**1**
With ICWs	**16**	**16**	**18**	**12**	**27**	**68**	**81**	**65**	**65**	**368**
Without ICWs	**72**	**74**	**77**	**80**	**75**	**55**	**55**	**64**	**60**	**612**
Total	**88**	**90**	**95**	**92**	**102**	**123**	**136**	**129**	**125**	**980**

Source: study's data.

Ge and McVay (2005) highlighted the following weaknesses: Specific Accounts, Training and Accounting Policy, partially confirming what is found in this study, i.e., significant weaknesses were found in Accounting Policy, Technological Failures, and Specific Accounts. According to Ge and McVay (2005), the ICWs that concerned Accounting Policy result from inadequate recognition, measurement, and disclosure of financial statements. In addition, the authors include in Technological Failures problems concerning technological systems, access, maintenance, and safety of data. In turn, Specific Accounts comprise other types of less recurrent weaknesses not categorized in the remaining accounts. Additionally, a high number of companies declared the inexistence of ICWs (62.45%) – which, from the CVM's perspective, should be an exception to the rule. On the one hand, this result shows a need for an in-depth investigation to understand the justifications presented by the companies that declared no relevant ICWs. On the other hand, it sets a precedent to question the extent to which such companies were not involved in case of errors and/or fraud that could be mitigated by an appropriate internal control structure, and which would, therefore, imply a false statement about the adequacy of internal controls.

Chi-square was performed to obtain evidence of associations between ICWs, level of Corporate Governance (GC), type of auditor (Big4 and Not Big4), and economic segments, but no association was found between ICWs disclosure and level of GC [x^2=0.1369 | Pr=0.711]. Likewise, no association was found between the ICWs and the type of auditor [x^2=0.8139 | Pr=0.367]. This result was the same obtained by Doyle, Ge, and McVay (2007) but diverges from that reported by Rice and Weber (2012), in which Big4 clients are less likely to report ICWs. Additionally, an association was found between ICWs and the following economic segments: Cyclic Consumption (CC) [x^2 7.1553 | Pr=0.007], Financial (FIN) [x^2=29.2427 | Pr=0.000], Basic Material (MB) [x^2=4.3756 | Pr=0.036] and Health (SAU) [x^2=23.8749 | Pr=0.000]. Association between these sectors and ICWs disclosure is coherent with the statement of Ge and McVay (2007) that more complex sectors tend to report a higher number of ICWs. Specifically, Financial (FIN) and Health (SAU) are complex due to the segments' nature. In turn, the association between Cyclic Consumption, Basic Materials, and ICWs arises from complex production processes and vulnerability to business risk, which demands more efficient use of resources.

Subsequently, the Chi-square test was performed to assess associations between ICWs, reissued financial statements (H_1), modified opinion (H_2), and the reason for emphasis paragraphs (H_3). No association was found between ICWs and (i) reissued financial statements [x^2=0.4897 | Pr=0.484] and (ii) modified opinion [x^2=1.1564 | Pr=0.561]. On the one hand, the results refute hypotheses 1 and 2; however, reinforce the perspective of Srinivasan, Wahid, and Yu (2015), which show that companies based in countries where the rule of law is weak, as is the case of Brazil, there is a lower tendency to reissue financial statements – which may mean there were no relevant distortions, or these went undetected and were not disclosed. However, an association was found between ICWs and the reasons for issuing emphasis paragraphs [x^2=4.2736 | Pr=0.039], reinforcing hypothesis 3. A detailed analysis of emphases was performed because no association was found between ICWs and auditor opinion. The reason is that the literature shows that auditors often indicate potential reasons for modified opinions by using emphasis paragraphs (Brazel et al., 2011).

Analysis of the paragraphs showed 504 reasons categorized into eight groups, presented in Figure 2. Note that 55% of the reasons refer to Investment Evaluations; 10.32% to Revenue Recognition; and 6.75% refer to Balance Adjustments.

Analysis of association between the reasons of emphases and type of auditor showed that only balance adjustment is associated with Big4 firms. In turn, according to the Chi-square test, emphasis paragraphs accruing from Revenue Recognition (RR) are associated with N1, N2, and TRAD at 1% and 5% levels. Analysis of the paragraphs showed 504 reasons categorized into eight groups, presented in Figure 2. Note that 55% of the reasons refer to Investment Evaluations; 10.32% to Revenue Recognition; and 6.75% refer to Balance Adjustments.

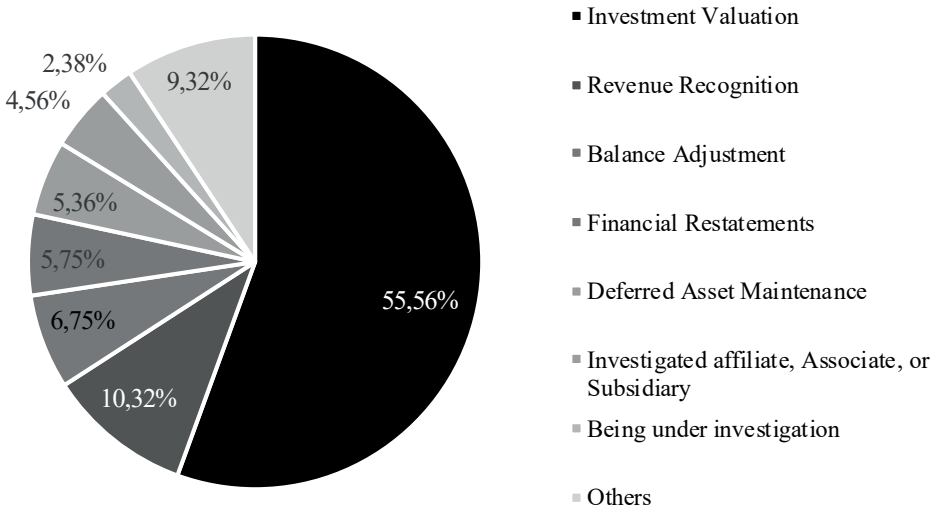

Figure 2. Proportions of Reasons for Emphasis Paragraphs in the Audit Reports of the companies in the IBRX100 in the 2010-2018 Period

Source: Study's data.

Even though Investment Valuation was the primary reason for issuing emphasis paragraphs for companies in the IBRX10, no significant association was found with sector characteristics. However, an association was found between emphasis paragraphs due to Balance Adjustment and the economic segments: Cyclic Consumption [x^2=3.0952 | Pr=0.079] and Non-Cyclic Consumption [x^2=2.8505 | Pr=0.091]. Likewise, a statistically significant association was found between emphasis due to Revenue Recognition and the economic segments: Industrial Goods [x^2=5.0300 | Pr=0.025], [x^2=7.1553 | Pr=0.007], Consumption [x^2=78.5787 | Pr=0.000], Non-Cyclic Consumption [x^2=3.6164 | Pr=0.057], Financial [x^2=11.9065 | Pr=0.001], Basic Material [x^2=6.4337 | Pr=0.011], Oil, Gas and Biofuels [x^2=3.0401 | Pr=0.081], Health [x^2=3.6887 | Pr=0.055] and Information Technology [x^2=36.7635| Pr=0.000]. Emphasis due to Reissuing of Statements are associated to the segments: CNC [x^2=3.1042 | Pr 0.078] and Public Utilities [x^2=6.8578 | Pr=0.009]. Emphases due to Deferred Maintenance are associated with the economic segments: Industrial Goods [x^2=3.7849 | Pr=0.052], Cyclic Consumption [x^2=6.6970 | Pr=0.010], Basic Material [x^2=3.2408 | Pr=0.072], and Public Utility [x^2=3.3720 | Pr=0.066]. According to the Chi-square test, the remaining reasons did not present significant association.

Association between some reasons for Emphasis Paragraphs with various economic segments reinforces a sector contagion effect. Additionally, Big4 firms tend to become specialists in specific economic segments, adopting similar practices for companies in the same segments.

Finally, to present more evidence regarding the hypotheses proposed, Table 5 presents the correlation matrix between ICWs and Economic Segments, Level of Corporate Governance, Type of Auditor, Reissue of Financial Statements, Modified Opinion, and Reasons for Emphasis Paragraphs. Note that the Financial economic segment (FIN) presented weak, however, significant and negative correlations with ICWs related to Specific Accounts, Accounting Policies, FSs, and TFs. Because it is a complex sector with potential risk for the financial system, a negative correlation suggests a lower risk of fraud and/or errors arising from ICWs, i.e., assuming these companies are not underreporting ICWs. In the opposite direction, SAU was positively and significantly correlated with PCs, RRs, FSs, and TFs. In summary, the tendency in this economic segment is that ICWs are more frequent to indicate a greater risk of fraud and/or errors.

Table 5

Correlation Matrix between ICWs and Economic Segments, GC Levels, Type of Auditor, Restatements, Modified Opinion, and Emphasis Paragraphs

		Internal Control Weaknesses						
		CE	TR	PC	RR	FS	GS	FT
Economic Segments	BI	-0.0294	-0.0151	0.0184	-0.0108	-0.0298	-0.0151	-0.0557
	COM	-0.0468	-0.00757	0.00406	-0.0216	-0.0277	-0.00757	-0.0299
	CC	0.0679	-0.0258	0.0628	-0.00803	0.00911	-0.0258	0.0263
	CNC	-0.00558	**0.0711***	-0.0650	-0.0141	0.0400	-0.0158	0.0303
	FIN	**-0.117*****	-0.0227	**-0.177*****	-0.0647	**-0.0830***	-0.0227	**-0.116*****
	MB	-0.0258	-0.0178	-0.0447	0.0623	0.00192	**0.141*****	**-0.0822***
	PGB	0.0329	-0.0113	-0.0178	-0.0322	-0.00860	-0.0113	0.0239
	SAU	0.0307	-0.0114	**0.153*****	**0.0902***	**0.184*****	-0.0114	**0.163*****
	TI	-0.00665	-0.00914	0.0178	0.0243	-0.0335	-0.00914	0.0410
	UP	**0.0742***	0.0418	**0.0929****	0.00304	-0.0122	-0.0234	0.0579
Level of GC	TRAD	-0.0172	**0.0731***	0.0245	**0.114****	-0.0316	-0.0154	-0.0458
	N1	-0.0150	0.0394	-0.00878	-0.00110	**0.0725***	**0.103****	-0.0615
	N2	**0.0911****	-0.0174	0.0479	-0.0497	-0.0411	-0.0174	**0.131*****
	NM	-0.0361	-0.0630	-0.0377	-0.0334	-0.0139	-0.0630	-0.00740
Type of Auditor	NBIG4	-0.0180	-0.0122	-0.00130	0.00388	-0.0447	-0.0122	-0.00668
	DTT	0.00422	0.0359	0.00589	0.0145	0.00993	-0.0257	-0.000379
	EY	0.0556	-0.0270	-0.0357	-0.0128	-0.0312	-0.0270	0.00368
	KPMG	-0.0395	0.0237	0.0147	0.0478	0.0555	**0.0791***	-0.0551
	PWC	-0.00427	-0.0266	0.0189	-0.0543	-0.0123	-0.0266	0.0639
Restatement		0.0180	-0.0373	-0.000642	0.0423	0.0543	-0.0373	-0.0189
Modified Opinion		-0.0509	0.00533	-0.0515	0.0152	0.0195	0.00533	0.00287
Reasons for Emphasis Paragraphs	DVA	-0.0189	-0.0031	-0.0264	-0.0087	**0.1041****	-0.0031	-0.0226
	RR	0.0084	-0.0131	**0.123*****	**0.0711***	0.0376	-0.0131	0.059
	REAPR	0.0135	-0.0095	0.03	**0.0701***	0.0036	-0.0095	-0.0282
	INVESTIG	0.0347	-0.0062	**0.1444*****	-0.0176	**0.0934****	**0.1998*****	0.0179
	CONT	0.0528	**0.1412*****	**0.1928*****	**0.0824***	**0.0951****	-0.0086	0.0518
	AVAINV	**-0.1352*****	-0.0355	**-0.1684*****	-0.0634	**-0.0702***	-0.0355	**-0.2046*****

Source: study's data.

Analysis of the correlations between ICWs with Levels of Governance, Type of Auditor and Reissue and Modified Opinion reinforces what was indicated by the Chi-square test. The relations were not significant in most cases. Hence, the disclosure of ICWs does not depend on these variables to occur. Asare and Wright (2019) highlight that auditors are expected to be judicious when assessing ICWs, implying disclosure is less frequent. However, Elder et al. (2009) report that auditors use ICWs to manage client risk. Therefore, it is important to understand why no significant correlations were found in this study. Nevertheless, Silva et al. (2018) report that the audit committee has the effect of mitigating the occurrence of ICWs. Additionally, emphasis paragraphs arising from events that indicate greater risk tend to be associated with the disclosure of ICWs. In general, hypotheses 1 and 2 were not confirmed; however, some emphasis paragraphs tended to be positively and significantly associated with the disclosure of ICWs, reinforcing hypothesis 3.

5. Final Considerations

This study's objective was to analyze associations between ICWs, auditor opinion, and the reissues of financial statements of 96 companies listed in *Brasil, Bolsa e Balcão B3*, which composed the IBrX100. This descriptive, documentary and quantitative study analyzed data using descriptive statistics, tests for differences of means, medians, and proportions, Chi-square test, and analysis of correlations.

The results showed that 84.49% of the observations refer to companies audited by Big4 firms, and in total, 368 ICWs were reported; accounting policy was the type most frequently reported, while 612 reported no ICWs. On average, 21% of the companies presented one or more ICWs, and a relevant increase was found from 2015 onwards in the proportion of disclosed ICWs. Regarding restatements, 33% on average reported this occurrence. However, the average proportion of mandatory reissues was 3%.

Nevertheless, no association was found between the disclosure of ICWs, reissued statements, and the type of auditor opinion.

On the other hand, the association between ICWs and the reasons why emphasis paragraphs were issued by the companies. The primary reason for emphasis paragraphs refers to Investment Valuation (55%), followed by Revenue Recognition (10.32%). There was no association between the issue of emphasis paragraphs due to Balance Adjustment, Revenue Recognition, and Economic segments.

The results show that even though ICWs signal potential problems in the quality of accounting information, ICWs were not associated with the restatements or with the type of auditor opinion in the context of the Brazilian companies listed in the IBrX100. On the other hand, no association between restatements and the type of auditor opinion may reveal the quality of FS, and disclosed ICWs do not significantly affect the quality of information reported. On the other hand, Brazel et al. (2011) noted that this might also suggest potential underreporting of ICWs, reissues, and/or inadequate auditor opinion.

Unlike previous literature, this study advances in the debate concerning the informational content of ICWs, showing that its components are associated with problems that indicate a greater or lesser quality of the information disclosed (restatements and emphasis paragraphs). Additionally, the results contribute to the debate on the role of ICWs disclosure and their association with reissues, auditor opinion, economic segment, governance level, and type of auditor. Specifically, it enables verifying which types of ICWs are more frequently reported and how they relate with the firms' specific characteristics. From the perspective of external users, the results may help map the firms' most frequently reported weaknesses. From the auditors' perspective, the results can contribute to sectors associated with the firms' specific ICWs. Finally, from the regulators' perspective, they can help develop more consistent monitoring actions to discourage omissions on the part of agents, especially members of governance committees, auditors, and managers.

Despite its contributions, this study presents limitations such as a restricted sample, which may have decreased associations between the type of auditor opinion and reissues. Additionally, we need to understand whether declarations of inexistent ICWs are associated with future problems (error/fraud) observed in the statements. Note that there is a large number of declarations of no ICWs, while this event should be an exception. Another relevant complementary analysis refers to the solution given to ICWs *ex-post*, i.e., whether the reports' content differs over time and which is the impact of restatements in the firms' main economic and financial indexes. These analyses can improve understanding of the phenomenon and mitigate misconduct by those responsible for Corporate Governance, auditors, and improve the quality of internal controls and promote regulators' enforcement. These complementary analyses can be addressed by future studies.

Refereces

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Moderator Effect of Innovation Ambidexterity on the Relationship between Internationalization and Performance in Brazilian and European Companies*

Antonio Rodrigues Albuquerque Filho
https://orcid.org/0000-0003-2108-3979

Editinete André da Rocha Garcia
https://orcid.org/0000-0002-5782-9579

Alessandra Carvalho de Vasconcelos
https://orcid.org/0000-0002-6480-5620

Afonso Carneiro Lima
https://orcid.org/0000-0001-8780-3671

Abstract

Objective: To analyze the moderating effect of innovation on the relationship between internationalization and financial performance.

Method: The sample comprises 1,840 observations listed in Brasil, Bolsa, Balcão (B3), and NYSE Euronext from 2014 to 2018. The hypotheses were tested using the generalized method of moments (GMM) for panel data.

Results: Estimates indicate that the degree of internationalization alone does not assure high financial performance in Brazilian companies, while in European companies, it influences the return on assets (ROA) negatively. Moreover, in both contexts, the individual moderating effect of the two innovation variables, exploration (R&D) and exploitation (Capex), could not be identified. However, a positive and significant effect of ambidextrous innovation activities in the relationship between internationalization and financial performance was verified. Evidence of the effect of internationalization on financial performance in both Brazilian and European companies is confirmed when enhanced by the simultaneous engagement of innovation activities.

Contributions: This study contributes to a recent investigative line, which verifies the effect of intervening variables in the internationalization-performance relationship. It contributes to analyzing this relationship in companies from emerging markets, and much needed research focus to better understand business opportunities in adverse institutional conditions and seize them.

Keywords: Internationalization; Financial performance; Innovation ambidexterity.

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1. Introduction

Internationalization is broadly defined as the geographical expansion of a company's operations from which benefits are obtained, i.e., economies of scale and scope and cost reduction. Internationalization occurs under different strategies and stages such as exports, partnerships, or acquisition of new resources/assets and, as they are supported or enhanced by investments in strategic intangible assets (Andrade & Galina, 2013; Muzychenko & Liesch, 2015). These same assets may also be engendered with internationalization and are decisive for achieving superior economic performance (Buckley & Casson, 1998; Tang, Tang, & Su, 2019), as they contribute to a positive relationship between internationalization and performance.

However, internationalization is also subject to various risks which affect business performance negatively and so, the literature reveals multiple results for this relationship: positive significant linear (Jain, Celo, & Kumar, 2019; Sun, Price, & Ding, 2019), negative (Chen & Tan, 2012; Lin, Liu, & Cheng, 2011), not significant (Hejazi & Santor, 2010), nonlinear significant ("U" curve) (Brida, Driha, Ramón-Rodriguez, Ramón-Rodriguez, & Such-Devesa, 2016; Miller, Lavie & Delios, 2016; Sun et al., 2019), inverted "U" curve (Chen & Hsu, 2010; Tang et al., 2019), and curvilinear in the form of a horizontal "S" (Contractor, Kundu, & Hsu, 2003; Lu & Beamish, 2004; Rugman & Oh, 2010). Such divergence from research results has led to analyses of the influence of internationalization on the performance of companies considering the moderating effect of specific aspects (Bausch & Krist, 2007; Li, 2007;), i.e., intangible resources and capabilities (Annavarjula, Beldona, & Sadrieh, 2006; Kotabe, Srinivasan, & Aulakh, 2002; Lu & Beamish, 2001; Thomas & Eden, 2004).

Specifically, innovation and innovation-related capabilities enable the development and maintenance of competitive advantages due to value creation and organizational adaptation, both essential in entering foreign markets (Baregheh, Rowley, & Sambrook, 2009; Gajewski & Tchorek, 2017; Lev, 2001). Furthermore, as a result of these capabilities, innovation is hypothesized to influence the internationalization process, supporting the idea that the greater the commitment to foreign markets, the greater the contribution of innovation to international performance (Albuquerque Filho, Freire, De Luca & Vasconcelos, 2020; Karrer & Fleck, 2015).

In the analysis of innovation activities in companies, two categories are usually considered: (i) exploration and (ii) exploitation (de Isogawa, Nishikawa Ohashi, 2015; March, 1991). Exploration refers to radical, revolutionary innovation which involves risk, experimentation, flexibility, discovery, systematically uncertain returns; it also implies new technological sources and new products and processes that often demand more planning time, besides the likely negative returns (Frezatti, Souza Bido, & Cruz, 2015). Exploitation, on the other hand, encompasses incremental innovation with incremental changes in products and processes; it involves the selection, implementation, execution, refinement, and expansion of skills, technologies, efficiency, and positive, rapid, and plausible returns (Kim, Kim, Sawng, & Lim, 2018).

Balancing exploitation and exploration activities generates a capability known as ambidexterity, the ability to match current skills, resources, and capabilities to new ones – a synergy that amplifies the effects of innovation on performance (Zhang et al., 2019, Cao, Gedajlovic, & Zhang, 2009; Gupta, Smith, & Shalley, 2006). Thus, it is assumed that ambidexterity, while a capability, may strongly influence firm survival and, consequently, the positive relationship between internationalization and financial performance (Lin et al., 2013; Pertusa-Ortega, Tarí, Pereira-Moliner, & López-Gamero, 2021).

Moreover, the relationship between internationalization and business performance is contingent to the economic environment of a company's home country. Companies headquartered in developed economies show a more robust effect regarding the "internationalization-performance" relationship than companies based in emerging economies (Kirca, Roth, Hult, & Cavusgil, 2012; Mathews, 2006). One of the main reasons for this is that companies based in developed economies may face more significant pressures for dividends derived from internationalization. Therefore, they are more likely to have access to abundant resources and institutions, which may effectively boost their international expansion (Kirca et al., 2012; Wan, 2005).

In predictable institutional settings, companies have more access to advanced technologies and experience adequate protection of intellectual property, both of which may help preserve competitive advantages based on differentiation (Jain et al., 2019; Mathews, 2006; Wan, 2005). Moreover, as these companies display higher levels of innovation, they should be able to attain better advantages from transferring and exploiting innovation-related assets and, thus, achieve higher performance in foreign markets when compared to companies based in emerging economies (Kirca et al., 2012; Ubeda-Garcia, Rienda, Zaragoza-Saez, & Andreu-Guerrero, 2021).

While internationalization strategies of emerging markets' companies may vary significantly from those based in developed countries (Gaur & Kumar 2010), there is evidence that international expansion can have a stronger impact on the performance of companies from developed countries (Kirca et al., 2012). This can be attributed to the fact that companies in developed countries have greater advantages of innovative capacity as a result of supply of infrastructure, financial resources, accumulation of capital and human resources, as well as stronger political, legal, and social institutions benefiting their international expansion; companies from emerging countries are generally known for displaying weaker institutions, intractable economic and political scenarios, and often small domestic markets for world class products, and arriving later at international markets (Andrade & Galina, 2013; Kirca et al., 2012).

Considering intangibles as sources of competitive advantage, and that innovation in developing countries occurs differently than in developed countries, the following research question was crafted: **what is the influence of innovation on the relationship between internationalization and corporate financial performance in Brazil (a major developing country), and in European countries?** Hence, this research aims to analyze the moderating effect of innovation on the relationship between internationalization and financial performance in Brazilian and European companies. For this purpose, it is considered innovation as innovation ambidexterity.

The study offers both theoretical and practical contributions: it adds to a recent investigative line, which verifies the effect of intervening variables in the internationalization-performance relationship (Andrade & Galina, 2013; Bausch & Krist, 2007; Jain et al., 2019); it contributes to innovation ambidexterity literature; it contributes to the analysis of this relationship in companies from emerging markets, a much and still needed research focus as a way of gaining a better understanding of business opportunities in adverse institutional conditions and how to seize them (Chang, 2007; Contractor, Kumar, & Kundu, 2007; Thomas, 2006); moreover, it answers the call from researchers, e.g., Andrade and Galina (2013), Luo and Tung (2007) and Mathews (2006), once it verifies distinct behavior between companies based in countries displaying different institutional settings. Finally, this research may subsidize managers by summarizing the effects of innovation on performance, which may reflect in the prioritization of international resources and strategies.

In suggesting a moderation of innovation ambidexterity effect on the relationship between internationalization and performance, this research may clarify and further contribute to a better understanding of the latter relationship, producing a more detailed account of it and potentially reducing such differences in results. Few firms are ambidextrous in their approaches to innovation once the process of attaining innovation ambidexterity is fraught with serious challenges (Dunlap et al., 2016). Moreover, a comparative study involving both developed economies and a large emerging economy (in this case) should also reveal if and how this relationship alters depending on the institutional settings, thus providing further understanding of the "whys" and "hows" of companies' innovation strategies in different international markets and how they affect the relationship.

2. Literature Review

2.1 Internationalization and financial performance

Internationalization is a geographical expansion of a company's operations into other countries motivated by business opportunities and further growth through access to new markets, resources, and strategic assets (Ipsmiller & Dikova, 2021). It suggests the existence of a positive relationship between internationalization and performance (Brida et al., 2016; Chen & Hsu, 2010; Chen & Tan, 2012; Gaur & Kumar, 2009; Hejazi & Santor, 2010; Jain et al., 2019; Lin et al., 2011; Miller et al., 2016; Sun et al., 2019; Tang et al., 2019). The magnitude of this relationship, however, is mainly subject to institutional factors of a foreign country but susceptibly greater on the performance of companies headquartered in developed economies than companies based in emerging economies (Albuquerque Filho et al., 2020; Ipsmiller & Dikova, 2021; Kirca et al., 2012).

The effect of internationalization on the performance of companies based in developed and emerging economies can be different. It is explained in different ways. Firstly, companies based in emerging economies generally have lower labor costs, do not engage in knowledge-intensive activities, and do not hold a knowledge base for international expansion (Amsden & Hikino, 1994; Andrade e Galina, 2013). Second, emerging economies often display weaker institutions (Khanna & Rivkin, 2001; Peng, 2003; Peng & Parente, 2012). Third, developed economies generally present more stable economic and political scenarios when compared to emerging economies (Peng, 2003; Mathews, 2006), which influences internationalization since generated returns could be higher in higher-risk economies (Rugman, 1976). Fourth, often the domestic market of emerging economies may be too narrow to offer scale and further competitive advantage (Khanna & Rivkin, 2001).

Following the remarks of Hitt et al. (2006) and Makino and Cols (2004), the magnitude of the relationship between internationalization and performance is subject to institutional and other specific factors related to the host country; furthermore, international expansion has a stronger impact on the performance of companies from developed countries than on companies from emerging countries (Kirca et al., 2012).

In well-developed institutional contexts, companies are better equipped with advanced technology and strong intellectual property protection that helps safeguard their competitive advantages (Wan, 2005). In addition, companies from developed economies show higher levels of company-specific assets, enabling them to transfer and exploit these assets more efficiently and reflect on better performance in international markets compared to companies from emerging economies (Jain et al., 2019; Tang et al., 2019).

Once internationalization provides access to new markets and influence financial performance positively, contingent to the market selected by the company, the following hypotheses are proposed:

H1: Internationalization influences the financial performance of Brazilian companies positively.
H2: Internationalization influences the financial performance of European companies positively.
H3: Internationalization influences the financial performance of Brazilian companies differently in comparison to European companies.

2.2 Explorative and exploitative innovation activities, organizational ambidexterity, and financial performance

As part of successful competitive strategies, innovation has been recognized as a critical element for organizational survival and competitiveness (Dess & Picken, 2000). For example, it is argued that companies that use more advanced technologies are likely to be more efficient in using their resources (Block & Keller, 2015).

Innovation is associated with intangible assets (Lev, 2001). It is also a driver of competitive advantage in diverse technological, social, and marketing settings (Conto, Antunes Jr. & Vaccaro, 2016). In consequence, it helps companies set barriers against competitive threats and attract preferences.

Among several perspectives on innovation, this study addresses the activities of both incremental and radical innovation drawn from March's pioneering study (1991) on innovation activities, i.e., exploration and exploitation. Exploration and exploitation innovations are "essentially different learning activities, among which they compete with the company's attention and scarce resources" (March, 1991, p. 71).

The combination of these two types of activity defines the ambidextrous organizational structure (also called organizational ambidexterity) for innovation management (Yoshikuni, Favaretto, Albertin, & Meirelles, 2018). Ambidexterity assumes that the achievement of strategic objectives requires an optimal distribution of resources in two seemingly conflicting demands: adaptability (exploration) and alignment (exploitation) (Severgnini, Galdamez, & Vieira, 2019).

Organizational ambidexterity may be visualized from a perspective of commitment to the demands of competitiveness. Although it has been shown that ambidexterity-focused organizations tend to perform better in the market (Gilsing & Nooteboom, 2006; Popadiuk & Bido, 2016), contributions aimed at understanding how the simultaneous involvement of explorative and exploitative innovation may explain a company's performance are still needed.

2.3 Innovation, internationalization, and financial performance

The literature proposes that company-level characteristics are essential factors that explain how internationalization relates to performance. Initiated by Hymer (1976), this perspective recognizes a company's specific advantage as a driving vector of internationalization, which was then refined by Dunning (1988) when examining different types of production inputs leading to the company's growth. Later, resource-based view (RBV) scholars characterized unique strategic resources as key determinants of market success.

RBV reinforces the perspectives developed by Hymer (1976) and Dunning (1988), internalization theory, and the Eclectic Paradigm (OLI model), respectively, which provide the theoretical bases to explain a company's international operations. According to these approaches, a firm's operations become internationalized when markets are internalized across national boundaries due to transaction costs, providing them with advantages of ownership and knowledge. This specific advantage then enables companies with a high degree of internationalization to convert research and development (R&D) into a new form of production at lower costs compared to domestic competitors due to economies of scale, in addition to reducing communication costs between R&D, production, and marketing (Bae, Park, & Wang, 2008).

Still, regarding innovation, R&D investments are a widely diffused indicator of innovation efforts in organizations (Nekhili, Boubaker, & Lakhal, 2012). For example, according to Cohen e Levinthal (1990), R&D intensity specifies that the efforts to generate new information and knowledge are motivating factors for technology advancement. On the other hand, according to Bae et al. (2008), areas in which productivity requires more significant value aggregation are more likely to invest substantially in R&D in search for innovation.

Innovation is a vital component of a strategy to attain competitive advantage: not only it enables value generation for consumers in terms of differentiated product/service attributes, but also in terms of lower prices combined with desired quality attributes as a result of innovative business processes, supporting competitive advantage both in domestic and in foreign markets (Brito, Brito, & Morganti, 2009; Oyadomari, Mendonça, Cardoso, & Dultra-de-Lima, 2013, Bedford et al., 2021).

Moreover, innovative companies stand out compared to non-innovative ones in environments marked by industrial and environmental cyclical pressures (Gunday, Ulusoy, Kilic, & Alpkan, 2011). Concerning business resources, institutions, competition, and legal environment in adverse international contexts, innovation contributes to optimizing a company's organizational structure as a function of value creation and organizational adaptation (Baregheh et al., 2009).

In this research, innovation is considered both as exploration and exploitation activities (March, 1991). Cao, Gedajlovic, and Zhang (2009) and Gupta, Smith, and Shalley (2006) emphasize that the synergy between these two types of activity would amplify the effects on performance. More than that, the combination of innovation activities (organizational ambidexterity) may produce different and complementary effects, thus, improving results.

Theoretically, exploration would increase performance if, and only if, exploitation is fully achieved. Therefore, excessive concentration on alignment, refinement, and efficiency (exploitation) generates an imbalance that can lead to organizational stagnation, impacting the company's ability to adapt to environmental changes (external markets) and, consequently, limiting long-term financial results (Levinthal & March, 1993). Alternatively, focusing excessively on adaptation to environmental pressures is too costly, time-consuming, and leads to more significant risks, weakening short-term performance (Karrer & Fleck, 2015).

Thus, capabilities, resources, and innovation contribute to the internationalization process of companies and, consequently, to their performance. Kowalik, Danik, and Sikora (2020) demonstrated that specialized marketing capabilities promote the expansion of the internationalization level of companies, while Ruzzier and Ruzzier (2015) have signaled that company's procedures, routines, and capabilities are positively correlated with its degree of internationalization. Lamotte and Colovic (2015) and Pergelova, Manolova, Ganeva, and Yordanova (2019) showed that internationalization is associated with technological infrastructure and R&D, while Rehman (2017) and Gajewski and Tchorek (2017) highlights productivity and innovation, respectively, as indispensable to internationalization.

Ambidexterity is of high value to a company once it enables advantages of balance and congruence, resulting in more effective performance (He & Wong, 2004; Yoshikuni et al., 2018). Exploitation is significant for achieving financial performance in the short run, thus, increasing the company's investment capacity in explorative innovation. Accordingly, exploration enables the company to generate new revenue streams (exploitation), contributing to long-term advantages (Karrer & Fleck, 2015). The authors pointed out the necessity to analyze explorative and exploitative innovation separately and their combined effects on organizational performance (Ceptureanu et al., 2021). The author demonstrated the positive influence of innovation ambidexterity on organizational performance.

From the above, it may be concluded that ambidexterity is an ideal and exceptional capability, since it provides advantages of balance and congruence, substantiating a more effective performance (Severgnini, Galdamez & Vieira, 2019). Furthermore, innovation exploitation is important for achieving financial performance in the short term, which helps to increase the company's investment capacity in exploration innovation. In the same direction, exploration innovation allows generating new revenue streams (innovation exploitation), from which new profits are obtained and long-term survival expected (Karrer & Fleck, 2015).

Therefore, considering that innovation can generate future benefits for the company and contribute to superior financial performance, it is proposed that:

H4: In Brazilian companies, innovation positively moderates the relationship between internationalization and financial performance.
H5: In European companies, innovation positively moderates the relationship between internationalization and financial performance.
H6: In European companies, the determining function of the influence of innovation in the relationship between internationalization and financial performance presents a higher angular coefficient than Brazilian companies.

Based on the study's hypotheses, the proposed relationship between the constructs of internationalization, innovation, and financial performance are demonstrated and grounded in the following model (figure 1).

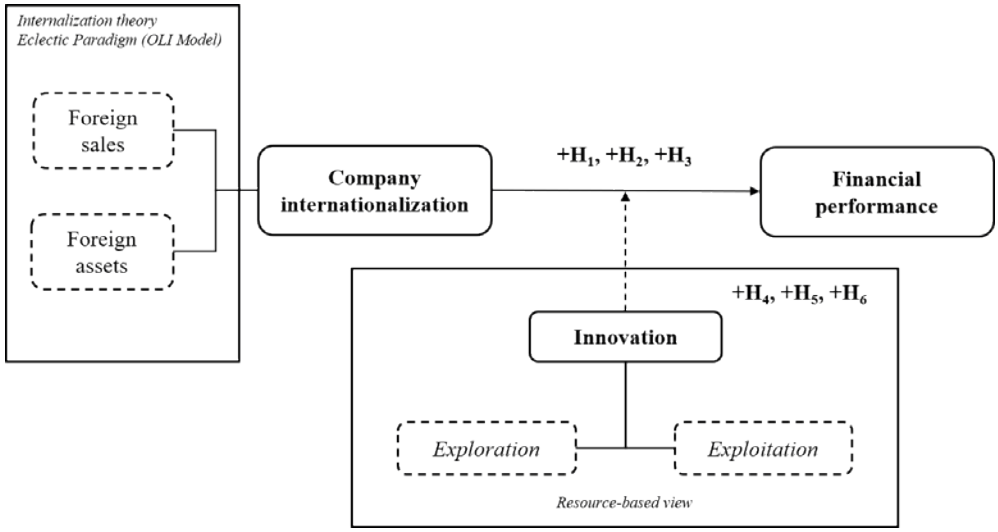

Figure 1. Operational model

Based on figure 1, company operations become international as crucial activities in the foreign market are internalized. It occurs when advantages of ownership and knowledge are envisioned. Therefore, internationalization is considered to affect its financial performance positively. However, success in internationalization will increasingly depend on creating competitive advantages based on technological innovation (Lamotte & Colovic, 2015; Stal, 2010). Under RBV, Internalization Theory and the OLI model, the dynamics of entry modes into a foreign market and the development of capabilities during the internationalization process are driven by the company's specific resources, i.e., innovation, in the creation of a sustainable competitive differential and further superior performance in international markets (Fahy, 2002; Ubeda-Garcia et al., 2021).

3. Methodology

For this study, a population of non-financial companies was considered 68 Brazilian companies (340 observations) listed in B3, and 300 companies from Europe, based in Belgium, France, Netherlands, Ireland, Luxembourg, Portugal, and United Kingdom (1500 observations) listed in NYSE Euronext. Data were collected from the Capital IQ® database making up an unbalanced panel and refer to the 2014-2018 period. Instead of limiting the sample to Brazilian companies, European companies were included so as to analyze whether innovation activities of companies located in countries with divergent economic and institutional environments affect internationalization and financial performance. Several studies indicate that this may be the case (Kirca et al., 2012; Schulze et al., 2016; Albuquerque Filho et al., 2020).

Recent empirical studies have used accounting-based measures as a proxy for performance (Jain, Celo, & Kumar, 2019; Sun et al., 2019). A possible argument has to do with financial indicators commonly analyzed by internal managers, which are essential in the verification of business risks. Thus, corporate performance here was represented by ROA, that is, the ratio of a company's net income and total assets. Therefore, the variable ROA was selected as the dependent variable, similarly to previous studies, i.e., Chen and Hsu (2010), Chen and Tan (2012), Contractor et al. (2003), Gaur and Kumar (2009) and Li (2007).

Independent variables encompass internationalization and innovation that were obtained through the Capital IQ® database. First, internationalization was measured as a composite index, operationalized by the ratio of external sales to total sales (INTER1) and the ratio of external assets to total assets (INTER2). Then, an index identified as the degree of internationalization (DI) was formed from these variables, corresponding to the average of INTER1 and INTER2. Such a procedure yields more robust results due to a lower prediction error and greater validity as a construct in the internationalization-performance relationship (Annavarjula et al., 2006).

Regarding innovation, radical innovation (exploration) and incremental innovation (exploitation) are independent variables and moderators in the internationalization-performance relationship. Based on previous studies, it is argued that exploration and exploitation activities enhance each other's effects (Bernal, Maicas, & Vargas, 2018; Gupta et al., 2006). In this line, a balance between exploration and exploitation is expected to achieve better performance and competitive advantage (March, 1991). As a proxy for exploration, the value of R&D investments was used, whereas for exploitation, the value of capital expenditures (CAPEX) was used, obtained by the quotient between the value of capital expenditures and total assets (Bedford et al., 2021, Cui et al., 2021;Kim, 2015; Younge & Tong, 2018,).

Following March's (1991) categories, R&D investment falls under exploration because it entails activities focused on discovery and creation aiming at rupture, implicating high risks. Meanwhile, CAPEX corresponds to exploitation as it is more product and process-oriented, aiming to refine and expand skills, technology, and efficiency. CAPEX demands a large volume of resources, involving dense and non-recurring investments (Dudley, 2012). In addition, capital goods are relevant for generating further innovation and productivity gains.

As for R&D investments as a measure of innovation, several studies recommend as a proxy for technological intensity due to its association with the innovation potential of organizations; moreover, R&D investments are often used to measure an organization's innovation capacity (Thomas & Eden, 2004; Younge & Tong, 2018). Regarding capex investments, Massell's (1962) studies showed that the prominent historical growth of the United States was the result of the acquisition and adoption of more sophisticated production technologies such as new machines and equipment. Ghosal and Nair-Reichert (2007) and Kim (2015) identified that companies' adoption of new technologies was related to their increase in productivity, competitiveness, and innovation.

Similarly to the literature, this study adopted the following control variables: product diversification (DIVERS), measured with the Herfindahl Index (Kumar, 2009; Tang et al., 2018); company size (SIZE), represented by the natural logarithm of the value of total assets (Chen & Tan, 2012; Sun et al., 2019); the age of the company (AGE), obtained by the number of years since its foundation (Tang et al., 2018); leverage, as the quotient of the total debt value and the total equity value (LEVE) (Chen & Tan, 2012; Reuer & Miller, 1997); growth (GROW), obtained through the annual change in the company's net revenue in period t in relation to t – 1 (Hejazi & Santor, 2010); risk (RISK), corresponding to the quotient between the total debt value and the total asset value (Hejazi & Santor, 2010).

Statistical tests were conducted with the aid of the software Data Analysis and Statistical Software (STATA). The empirical regression models for the panel data analysis used to test the hypotheses are presented in Equations 1 and 2:

$$ROA_{i,} = \alpha_i + \beta 1ROA_{it-1} + \beta 2DI_{it} + \beta_{3\text{-}5}\sum CONTRit, + \eta_i + \omega_t + \upsilon_{it} \quad \text{(Equation 1)}$$

$$ROA_{i,} = \alpha_i + \beta 1ROA_{t-1} + \beta 2DI_{it} * INOV + \beta_{3\text{-}8}\sum CONTRit, + \eta_i + \omega_t + \upsilon_{it} \quad \text{(Equation 2)}$$

In which:

- ROA = Return on assets (company performance measure);
- DI = Expresses de degree of internationalization represented by the arithmetic mean between external sales in relation to total sales and the quotient between external assets in relation to total assets;
- INOV = Corresponds to exploration (R&D), exploitation (CAPEX) and the interaction of radical innovation (R&D) with incremental innovation (CAPEX);
- CONTR*ij* = Represents the control variables of the econometric model associated with company i in the t period, represented by product diversification (DIVERS), size (SIZE), age (AGE), leverage (LEVE), growth (GROW) and risk (RISK);
- β = model coefficients;
- *i* = company;
- *t* = time;
- η = Specific effect of the company (non-observed heterogeneity);
- ω = Time component (*dummies* for year);
- υ = Error

The estimation of parameters of the regressive models was obtained through the System Generalized Method of Moments (GMM-Sys), which provides greater robustness of estimation in the presence of endogeneity and serial autocorrelation from the use of sequentially exogenous instrumental variables (Roodman, 2009).

The bias of endogeneity could explain the divergent results regarding the relationship between internationalization and performance (Bowen, 2007; Jean et al., 2016; Reeb, Sakakibara and Ishtiaq, 2012). Furthermore, the Sis-GMM can mitigate sources of endogeneity: unobserved heterogeneity, dynamic endogeneity, and reverse causality.

Unobserved heterogeneity relates to variables that are difficult to measure or not directly observed, influencing both dependent and independent variables. A company's competitiveness, managerial capabilities, and technology monitoring applied to the internationalization process are examples of unobserved heterogeneity (Himmellberg, Hubbard & Palia, 1999; Jean et al., 2016). Thus, if sources of endogeneity are neglected, the econometric model may suffer from the omitted variable bias (Bowen & Wiersema, 2009). Estimates of panel regressions, such as Fixed Effects (EF) and GMM, control unobserved heterogeneity, unlike Ordinary Least Squares Method (OLS), applied in cross-sectional data (Coles, Lemmon, & Meschke, 2012).

Dynamic endogeneity arises when the dependent variable is affected by its unbalanced values. Studies indicate that the company's performance is affected by its first lag, requiring the use of dynamic models to investigate the relationship between internationalization and performance variables (Jean et al., 2016). The FE estimator does not allow the inclusion of lags of the dependent variable in the model since it is based on the assumption of strict exogeneity of regressors, unlike the GMM estimator models (Wintoki, Linck, & Netter, 2012).

Reverse causality, in turn, is presented when the dependent variable is affected, but it also influences one or more regressors simultaneously (Roberts & Whited, 2013). Some studies have shown that performance and internationalization are jointly determined, emphasizing the importance of treating the latter as endogenous (Hejazi & Santor, 2010). Alternatives to control concurrency include identifying external instruments for endogenous variables and using the Two-Stage Least Squares (2ELE) estimator. However, finding valid external instruments is a difficult task, and the Sis-GMM estimator can deal with reverse causality by selecting valid internal instruments for endogenous variables and using dynamic models (Wintoki, Linck & Netter, 2012).

Thus, Sonza and Kloeckner (2014, p. 327), based on Arellano and Bover (1995), point out that "the set of instruments available in the GMM-Sys estimator is larger and allows more accurate estimates". In GMM-Sys, the instruments are temporally lagging making them exogenous to fixed effects, being, therefore, a combination of transformations into first differences with transformations in levels, resulting in a system of equations. (Roodman, 2009). Hence, the choice on GMM is appropriate since it deals with endogeneity and for being robust for heteroscedasticity, as well as for satisfying the distributional premises (Wooldridge, 2001).

Thus, the independent variables are instrumentalized: in the level-set equation, by the second, third, and fourth lags of the variables in differences; and, in the equation in differences, by the second lag of the level-set variables (because the other lags are redundant) (Roodman, 2009). The number of lags used for the instrument proliferation is limited, and so, hansen's test tend to accept the hypothesis that the instruments are valid (Roodman, 2009). In addition, the econometric evidence pointed out in the literature converges for lags between two and five lags, to the extent that the application of broader lags may present unwanted effects of over-fitting (Medeiros & Mol, 2017).

4. Results

Table 1 shows descriptive statistics and the correlation matrix of dependent and independent variables. It is noted that the average value of external sales (INTER1), of external assets (INTER 2), and DI of European companies are higher than those of Brazilian companies. At the same time, exploration (R&D) and exploitation (CAPEX) activities are more recurrent and higher in European companies. This result may indicate higher financial performance (ROA) for European companies.

Table 1
Correlation Matrix

Brazilian Companies								
Variable	**N**	$\bar{x}$	σ	**1**	**2**	**3**	**4**	**5**
1. INTER 1	275	0,274	0,259					
2. INTER 2	275	0,234	0,213	0,445**				
3. DI	275	0,167	0,176	0,921**	0,764**			
4. R&D	340	0.809	1,921	0,150*	0,064	0,181**		
5. CAPEX	340	3,005	2,389	0,415**	0,454**	0,451**	0,510**	
6. ROA	340	0,300	4,277	-0,300	-0,096	-0,090	-0,017	-0,060
European Companies								
Variável	**N**	$\bar{x}$	σ	**1**	**2**	**3**	**4**	**5**
1. INTER 1	1349	0,551	0.303					
2. INTER 2	1349	0,429	0.299	0,568**				
3. DI	1349	0,342	0.215	0,810**	0,872**			
4. P&D	1384	1,013	0.052	0,114**	0,144**	0,043		
5. CAPEX	1384	3,347	2.843	0,259**	0,331**	0,270**	-0,110**	
6. ROA	1500	0,418	0.307	0,007	-0,012	0,032	-0,148**	0,281**

* and ** denote statistical significance at the 1% and 5% and levels, respectively.

Source: Study's data.

Moreover, a negative and statistically significant correlation between exploration (R&D) and financial performance (ROA), but a positive and significant correlation with the exploitative innovation activities (CAPEX) of European companies were verified; this, however, was not identified for Brazilian companies. In contrast, external sales (INTER1), external assets (INTER 2), and DI did not show significant correlations with financial performance (ROA). As the correlation matrix signals a possible presence of multicollinearity, a Variance Inflation Factors test (VIF) was performed, displaying acceptable values (1.07 to 1.67) (Neter, Kutner, Nachtsheim, & Wasserman, 1996).

Table 2

Innovation moderation in the relationship between internationalization and financial performance in Brazilian companies

Variable	Model 1	Model 2	Model 3	Model 4
ROA_{t-1}	0,0013	0,1384**	0,1323***	0,1344***
	(0,78)	(1,96)	(1,83)	(1,88)
DI	**-0,0452**			
	(-1,48)			
DI x *Exploration*		**-0,0001**		
		(-0,71)		
DI x *Exploitation*			**0,0250**	
			(0,02)	
DI x *Ambidexterity*				**0,0048****
				(2,26)
SIZE	0,0005	0,0072	0,0056	0,0077
	(0,89)	(1,29)	(0,97)	(1,44)
GROW	0,0000	-0,0000	0,0000	0,0000
	(0,99)	(1,24)	(1,33)	(1,22)
DIVERS	0,1490	-0,0260	-0,0278	0,0182
	(-0,051)	(-0,16)	(-0,18)	(0,11)
RISK	-0,1153*	-0,0919**	-0,0965**	-0,0954**
	(-1,94)	(-2,25)	(-2,36)	(-2,31)
LEVE	-0,0005	0,0015	-0,0012	0,0014
	(-0,71)	(1,15)	(1,06)	(1,09)
AGE	-0,0001	-0,0004	-0,0003	-0,0004
	(-1,03)	(-1,23)	(-0,94)	(-1,34)
_constant	0,0696	Omitted	Omitted	Omitted
	(0,85)	-	-	-
Time fixed effects	Yes	Yes	Yes	Yes
Company fixed effects	Yes	Yes	Yes	Yes
Number of observations	272	272	272	272
Number of instruments	67	67	67	67
Moderator	-	P&D	CAPEX/AT	(P&D x CAPEX/AT)
Wald Chi2	19,65***	67,25*	64,64*	72,59*
Hansen's J Test	58,33	62,01	59,80	62,95
Arellano-Bond AR(1)	-1,74***	-2,27**	-2,19**	-2,26**
Arellano-Bond AR(2)	0,26	-0,31	-0,34	-0,32

*, ** and *** denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: Study's data.

As shown in Table 2, residual autocorrelation tests (Arellano & Bond, 1991) do not reject the hypothesis of autocorrelation absence of second-order residuals, indicating that the instruments are exogenous. In turn, Hansen's J test (instrument validation) legitimized all estimates considering a significance level of 10%, thus reinforcing the instruments' exogeneity and evidencing validity of the GMM system instruments.

Also, in Brazilian companies, the variable ROAt-1, which corresponds to the first lag of the response variable and mediates the persistence of financial performance, presented statistical significance at 5% in model 2 and 10% in models 3 and 4. The positive coefficient obtained in models 2, 3, and 4 shows that the firm's financial performance in t-1 contributes to forming the firm's financial performance in t. This result strengthens the importance of using dynamic models in business studies and international strategies, showing that static specifications are subject to the omission bias of relevant variables.

Results of model 1 indicate that DI alone does not influence financial performance in Brazilian companies (sig. > 10%), which leads to the rejection of H1. However, the control variables included in the model only risk (RISK) were significant but negatively associated with financial performance. Hence, higher risks tend to decrease financial performance in Brazilian companies.

Models 2 and 3 were estimated to verify the individual moderating effects of exploration and exploitation activities in the DI of Brazilian companies. In model 2, it is observed that the effect of exploration with DI did not show statistical significance on financial performance; similarly, in model 3, it is observed that the interaction of exploitation with DI was not statistically significant. However, it is emphasized that in both models, the variable risk negatively affects the financial performance of Brazilian companies.

Regarding the effect of the interaction between exploration and exploitation with DI specified by model 4, the positive and significant coefficient (coef. 0.0048, sig. < 0.05) indicates that the interaction of constructs (DI-ambidexterity) affects financial performance in Brazilian companies, confirming the fourth hypothesis (H4). In other words, each additional unit of DI-ambidexterity interaction increases financial performance each year, ceteris paribus. Thus, the higher the levels of investment in capital goods and the greater the intensity of R&D investment in Brazilian companies combined, the higher their degree of internationalization, ultimately implicating superior financial performance.

Table 3 shows the regression results for the moderation effect of innovation on the relationship between internationalization and financial performance in European companies. Based on Table 3, the adequacy of models 1 and 4 regarding the assumptions of the GMM-Sys denotes the robustness of the estimates. The autocorrelation tests of the AR residues of Arellano and Bond (1991) for the first-order autocorrelation of residuals rejected the null hypothesis of the absence of serial correlation. However, they did not reject it for the second-order autocorrelation. Furthermore, the p-values of Hansen's J test for overidentification in models 1 and 4 did not reject the null hypothesis of validity of the instruments in both specifications. On the other hand, models 2 and 3, which present the interaction of exploration (R&D) and exploitation (CAPEX), were not validated to the assumptions of the GMM-Sys since they were also not statistically significant.

The coefficients of the first lag of the dependent variable (ROAt-1) were statistically significant and lower than 1 in all models. In other words, the positive estimates sustain that financial performance in European companies in *t-1* better contributes to the composition of their financial performance in *t*.

Table 3

Moderation of innovation in the relationship between internationalization and financial performance of European companies

Variable	Model 1	Model 2	Model 3	Model 4
ROA_{t-1}	0,3325**	0,0972*	0,0959*	0,1344***
	(2,47)	(3,48)	(3,93)	(1,88)
DI	**-0,4233*** **			
	(-1,68)			
DI x *Exploration*		**0,0001**		
		(0,83)		
DI x *Exploitation*			**0,2297**	
			(0,17)	
DI x *Ambidexterity*				**0,0050****
				(2,02)
SIZE	0,0399	0,0397	0,0413	0,0469**
	(1,46)	(1,01)	(0,97)	(2,04)
GROW	0,0000	0,0000**	0,0000	0,0000
	(1,08)	(2,37)	(1,18)	(0,72)
DIVERS	-32,521	-54,119**	-46,720	-9,0349
	(-0,61)	(-2,06)	(-1,13)	(-0,61)
RISK	-0,0081	-0,0048	-0,0140	0,0043
	(-0,40)	(-0,22)	(-0,58)	(0,38)
LEVE	0,0008	-0,0009	-0,0011	-0,0005
	(0,42)	(-0,52)	(-0,80)	(-0,75)
AGE	0,0255	-0,0451	-0,0517	-0,0037
	(0,85)	(1,11)	(0,99)	(-0,16)
constant	-0,1982	*Omitted*	-0,4434	-0,0059
	(-1,29)	-	(-3,11)	(-0,05)
Time fixed effects	Yes	Yes	Yes	Yes
Company fixed effects	Yes	Yes	Yes	Yes
Number of observations	1158	1158	1158	1158
Number of Instruments	67	67	67	67
Moderator	-	P&D	CAPEX/AT	(P&D x CAPEX/AT)
Wald Chi2	39,04*	95,60*	113,19*	72,59*
Hansen's J Test	32,11	43,69	58,91	58,91
Arellano-Bond AR(1)	-2,20***	0,65	-0,69	-2,22**
Arellano-Bond AR(2)	-1,55	-1,22	-1,22	-1,12

*, ** and *** denote statistical significance at the 1%, 5% and 10% levels, respectively.

Source: Study's data.

As for the degree of internationalization (DI) of European companies, as shown in model 1, it is observed that this construct was statistically significant at 10%. The negative coefficient recorded by this variable indicates that in European companies, internationalization contributes negatively to financial performance when independently analyzed. More specifically, ceteris paribus, with the increase of each unit of internationalization, the financial performance of European companies plummets, thus, leading to a rejection of H2.

In addition, also regarding model 1, there is a statistically significant influence of the variables growth and diversification of products on financial performance. The higher the growth and the lower the diversification of products in European companies, the higher their financial performance.

It is also inferred, through Table 3, that the interaction between exploration and exploitation with DI was positive (coef. 0.0050) and statistically significant at 5%, confirming H5. Thus, it is noted that the moderating effect of innovation's ambidexterity at the degree of internationalization increases the prominence of higher financial performance. More precisely, with each unit increase in innovation activities (exploration and exploitation) in European companies, better internationalization, *ceteris paribus*, and consequently better financial performance.

Based on the results shown herein, hypotheses H3 and H6 may also be confirmed. Once the internationalization on financial performance effect was not significant for Brazilian companies. On the other hand, it was negative and statistically significant for European companies. In addition, it was found that the angular coefficient of the models regarding the interaction between DI ambidexterity in European companies (coef. 0.0050) was higher than in Brazilian companies (0.0048).

Table 4 summarizes the results of the hypotheses. H1 to H3 refer to the hypotheses established for the direct relationship between internationalization and financial performance, while H4 to H6 refer to the moderating effect of innovation in the relationship between internationalization and financial performance.

Table 4

Summary of results and analyses vis-à-vis research hypotheses

Hypothesis	Description	Results	Significance
H1	Internationalization influences the financial performance of Brazilian companies positively	Does not influence	Rejected
H2	Internationalization influences the financial performance of European companies positively	Negative influence	Rejected
H3	Internationalization influences the financial performance of Brazilian companies differently in comparison to European companies	-	Not rejected
H4	In Brazilian companies, innovation positively moderates the relationship between internationalization and financial performance	Positive influence	Not rejected
H5	In European companies, innovation positively moderates the relationship between internationalization and financial performance	Positive influence	Not rejected
H6	In European companies, the determining function of the influence of innovation in the relationship between internationalization and financial performance presents a higher angular coefficient than Brazilian companies	Positive influence	Not rejected

Source: Study's data.

H1 and H2 were rejected for not corroborating the relationship established in this study (Table 4). H3 was not rejected as a non-significant relationship was inferred for Brazilian companies and a significant negative relationship for European companies. H4, H5, and H6 were also not rejected, as shown by GMM regressions.

5. Discussion

This study contributes to the literature by examining how firms appropriate value from innovation ambidexterity in their internalization process. For this purpose, it was analyzed the moderating effect of innovation ambidexterity on the relationship between internationalization and financial performance in emerging economies compared to developed economies. Regarding the Brazilian companies, results showed that the level of internationalization alone was not statistically significant, and therefore does not confer influence on financial performance. Therefore, it cannot be affirmed that Brazilian companies with higher degrees of internationalization tend to have higher financial performance than those with a lower degree of internationalization. Similar results in the national literature were found by Marcos, Nascimento, Nez, and Kroenke (2018), while in respect to the scenario of emerging economies, they are consistent with the findings of Chen and Hsu (2010), Pattnaik and Elango (2009) and Tang et al. (2018), which also did not detect a significant linear relationship between the constructs. On the other hand, these results contradict the findings of Chang and Rhee (2011), who analyzed a sample of Korean companies, of Chen and Tan (2012), who analyzed Chinese companies, of Gaur and Kumar (2009), who studied Indian companies, and Loncan and Nique (2010) and Silva and Boaventura (2011), who analyzed samples of Brazilian companies.

Although multinational companies based in emerging economies have gained more prominence in the global market (Stal, 2010), there are economic and institutional obstacles (Khanna & Rivkin, 2001; Kirca et al., 2012; Mathews, 2006) that end up interfering in their internationalization. In the Brazilian scenario, several reasons may justify the nonexistent relationship between the degree of internationalization and financial performance: geographical isolation, which favors only internationalization with Mercosur partners, communication issues (language), and the adverse effects of psychic distance, which impairs the internationalization process (Stal, 2010), precisely the difficulty of overcoming cultural differences, economic, geographical, regulatory, legal, and, mainly, ethical and business practice issues (Campbell, Eden & Miller, 2012).

In Brazilian companies, the results evidenced by the models that consider individual influences of exploration and exploitation activities as moderating variables of the degree of internationalization were not statistically significant. Therefore, no evidence may be inferred about its subsequent impact on financial performance.

Alternatively, among Brazilian companies, the effect of innovation ambidexterity in DI denotes that the balance between innovation activities moderates positively and significantly DI with subsequent impacts on financial performance. In other words, the higher the level of investment in capital goods and the greater the intensity of R&D investment in Brazilian companies combined, the higher the level of internationalization and further financial performance.

In the European scenario, results revealed that, individually, the DI was statistically significant, affecting financial performance negatively; for European companies, the higher the level of internationalization, the worse the financial performance. Negative relationships in samples from developed economies were also found by Siddharthan and Lall (1982). In turn, these findings differ from those observed by Brida et al. (2016) and Rugman and Oh (2010), which identified a nonlinear relationship between constructs in the Spanish and American contexts, respectively.

It is reasonable to assume that, although European companies largely have competitive advantages over their rivals – generally acquired through advanced technology or market preference – results may be due to growth stagnation, mainly since they are located in small markets, insufficient to absorb any production increase (Bartlett, Ghoshal, & Birkinshaw, 2004). In addition, culture also interferes with the internationalization of European companies due to resource constraints and the legislation and taste of consumers from other countries (Ipsmiller & Dikova, 2021). In this case, when entering new markets, marginal costs inherent to internationalization eventually outweigh the marginal benefits wielding a negative impact on performance (Li, 2007), and so, competitive differentials capable of leveraging their degree of internationalization until they yield positive results are necessary.

Moreover, similarly to Brazilian companies, exploration and exploitation activities in European companies, taken individually as moderating variables of the relationship between internationalization and financial performance, were not statistically significant, so it is assumed that they do not impact financial performance. In turn, the relationship between DI and ambidexterity and performance in European companies has proved positive and statistically significant. That is, the greater the balance between investment in capital goods and R&D investment in European companies, the higher the level of internationalization and, consequently, the better the financial performance.

Based on the results of the regression models and following the RBV, organizational competence and idiosyncrasy are variables of distinction between companies (Barney, 1991). Thus, innovation functions as an intervening variable contributing to raising the degree of internationalization in Brazil and Europe companies'. This result reinforces the assumptions of the Internalization Theory and the OLI model regarding the need for strategic resources to expand into new markets and achieve better performance. Hence, as punctuated by Heavey and Simsek (2017) and Levinthal and March (1993), an excessive focus on exploitation innovation activities may lead the company to a suboptimal equilibrium state, while the concentration on innovation exploration activities may lead to high costs of experimentation, of ideas to be developed, and fewer skills (Karrer & Fleck, 2015). This, in turn, ends up not favoring internationalization, corroborating the results here presented.

Some studies explain the relevance of technological and innovation resources and capabilities for internationalization. For example, Lamotte and Colovic (2015), demonstrated that information technology infrastructure is associated with early internationalization. Pergelova et al. (2019) pointed out that digital technologies positively affect the internationalization, and that this relationship is moderated by R&D. Rehman (2017), accordingly, found that the productivity of a company relates to export sales, while innovation contributes to the process of internationalization as, more innovative companies evidenced greater export orientation (Gajewski & Tchorek, 2017).

The simultaneous engagement of these two types of activities requires different organizational structures, strategies and contexts, as exploitation innovation considers the short term while exploration innovation envisions the long term (Karrer & Fleck, 2015). Results confirm a need to analyze not only explorative and exploitative innovation separately, but also their combined effects on organizational performance (Ceptureanu et al., 2021). They evidence a positive influence of innovation ambidexterity in the relation between internationalization and financial performance. It confirms prior studies regarding the synergy between these two types of activity would amplify the effects on performance (Ceptureanu et al., 2021, Zhang et al., 2019, Cao, Gedajlovic, & Zhang, 2009; Gupta, Smith, & Shalley, 2006).

Central to this investigation is that capital investment enables a company to innovate through R&D investment, and this, in turn, allows it to create crucial competitive advantages to enter and compete in international markets. Similarly, by internationalizing, the company can acquire new technologies and increase its R&D level as a way to overcome market pressures, especially in international markets. From there, it starts to increase performance. Therefore, achieving a balance between both innovation activities becomes relevant for profitability (March, 1991). Thus, the results of this study corroborate Junni, Sarala, Taras, and Tarba (2013) and Karrer and Fleck (2015) regarding the importance of balancing innovation activities in promoting higher gains, especially in foreign markets.

Moreover, the economic and institutional aspects of the country of origin (location, context, and culture) can influence the internationalization process of companies (Ipsmiller & Dikova, 2021). In emerging economies, i.e., Brazil, companies may use innovation as a strategy to strengthen their level of internationalization and, from there, apply internationalization as a catalyst to acquire resources such as new technologies and strategic assets, which are paramount to compete with global rivals, in addition to helping overcome the economic and institutional constraints of other countries (Luo & Tung, 2007). In European companies, innovation can help them overcome the legitimacy challenges, market constraint, and resource dependence in order to achieve successful internationalization, and this surely impact their financial performance (Ipsmiller & Dikova, 2021).

Overall, it should be noted that the company should invest in technology and R&D to add value to its products and achieve greater productivity for its internationalization efforts (Loncan & Nique, 2010).

6. Final Remarks

Results found here show that a company's unique capabilities are vital under conditions of great dynamism and market uncertainty, enabling them to obtain competitive advantages in foreign markets. This research enabled to verify the effects of innovation ambidexterity in different countries with different economic environments since internationalization alone may not impact a company's financial performance, which may happen due to the conditions of its country of origin. The country of origin image can be a relevant strategic tool, expressing an intangible component: it may influence different decisions related to the country, such as travel, investments, and acquisition of products, besides being visualized as a characteristic that affects the willingness of the consumer to pay more.

Based on the results presented, there is a need for specific resources, such as innovation, but specifically, innovation ambidexterity, which is capable of yielding improvements in products, processes, and management guidelines as means for the company's expansion into the international market, thus, contributing to the improvement of its performance with a view to continuity. Exploitation acts as an important resource for achieving financial performance in the short term, which helps increase the company's investment capacity in exploration. In the same direction, exploration makes it possible to generate new revenue streams (exploitation), generating new profits and ensure long-term survival. Therefore, this research advances studies regarding the internationalization-performance relationship by identifying the ambidexterity of innovation activities as an additional factor that interferes in this relationship. It innovates by investigating the relationship between constructs in companies from different economic and institutional contexts.

Another implication of this study concerns management practice. Since a company's insertion into international markets generates several costs and benefits do not arise spontaneously, managers of both Brazilian and European companies can mitigate or even overcome weaknesses by investing in capabilities, knowledge, and know-how that necessary to support R&D investments until their innovative capacity is able to mitigate the costs of internalization in international markets.

From an analytical perspective, the results of the regression models allow concluding that the company, regardless of the economic and institutional scenario in which it is inserted, needs strategic intangible resources to boost its expansion into foreign markets, considering that transaction costs are lower than those of internalization in an international context, and that the latter, in turn, is mitigated by the company's innovative capacity, as advocated in this study. Thus, RBV strengthens the Theory of Internalization and the OLI Theory, showing that innovation positively moderates the relationship between internationalization and financial performance.

Despite the methodological rigor undertaken and the relevant findings, the following limitations should be acknowledged in this study: only one emerging economy for comparison with a group of developed countries; the use of one measure for financial performance and two variables for internationalization, in addition to the time frame, which comprised five years. Thus, for future research, it is suggested: i) expansion of the sample, providing comparison grounds with other emerging and developed economies; (ii) use of additional representative measures of business performance and internationalization. Finally, future studies should investigate other factors that will moderate the relationship between internationalization and financial performance.

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Organizational Culture, Controllership Partnership Level, and Performance Appraisal Systems

Marília Janaina da Silva Bassi
https://orcid.org/0000-0002-4584-1351

Paschoal Tadeu Russo
https://orcid.org/0000-0002-7293-4385

José Carlos Tiomatsu Oyadomari
https://orcid.org/0000-0003-3059-3102

Maria Thereza Pompa Antunes
https://orcid.org/0000-0002-9501-2789

Abstract

Objective: To understand associations between the different intensities of organizational culture typifications (CO), levels of partnership exercised by controllership (NPC), and the breadth of organizational performance appraisal systems (ASADO).

Method: Descriptive, quantitative study based on a survey with 89 respondents, primarily controllers. The respondents' perceptions toward the three variables previously mentioned were analyzed using multivariate analysis (ANACOR and HOMALS).

Results: The results reveal that organizations with stronger organizational cultures are directly associated with more participatory controllership (higher levels of controllership partnership), using more comprehensive performance appraisal systems. Additionally, the results show an absence of a direct association between organizational culture and the breadth of performance appraisal systems.

Contributions: For academia, the results promote an understanding of the direct association between NPC and ASADO and the impossibility of establishing a direct association between CO and ASADO. Thus, this study transcends the usual explanatory approaches of the Contingency Theory. For professional practice, especially for those responsible for controllership, the results provide a clear perspective of the association between strong organizational cultures with higher levels of controllership partnership and between the latter, with more comprehensive performance appraisal systems.

Keywords: Organizational Culture, Controllership as a business partner, Performance Appraisal System.

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1. Introduction

The contingency relationships between the Organizational Culture variable (Schein, 1984; Smircich, 1983) and the variables Organizational Structure and Organizational Performance (Carmona, Silva, & Gomes, 2018; Gordon & DiTomaso, 1992; Kotrba *et al*., 2012; Parente *et al*., 2018; Smircich, 1983; Zheng, Yang, & McLean, 2010) have been studied for decades (O'Reilly *et al.*, 2014). Additionally, some studies report an association between the strength of culture (which can also be called cultural intensity and measured through the consistency, or centrality, of the responses obtained in surveys addressing specific cultural standards or values of a given organizational context) and its influence on performance (Lee & Yu, 2004; Gordon & DiTomaso, 1992).

Bringing this reflection to the field of Management Accounting, we may say that controllership, as an administrative area (Catelli, 2001; Melo & Paulo, 2000), is part of the organizational structure, and, contingently, through adapting the services it provides, it fits the organization's needs and other contingency factors, among which Organizational Culture, thus actively participates in the development and use of various artifacts intended to contribute to managers' decision-making processes (Tarifa *et al.*, 2011; Henri, 2006).

The evolution process of controllership and controller has been the subject of many studies, especially those assessing associated activities (Beuren, Fachini & Nascimento, 2010; Borinelli, 2006; Catelli, 2001; Tarifa *et al*., 2011). However, some authors (Goretzki, Strauss & Weber, 2013; Järvenpää, 2007; Weber, 2011) propose a new research approach, assessing controllership as a "Business Partner", as controllership and controller start developing more proactive tasks towards business areas (Weber, 2011). In a way, the literature is in line with what happens in practice because the term Business Partner is already incorporated into the organizational context, as business literature shows, and in companies, as in the case of BASF, which adopts this term (Arenales , 2016).

There is some criticism regarding performance appraisal systems' lack of clarity and objectivity and their breadth and purpose as to what is assessed (Neely, Bourne, & Kennerly, 2000; Neely, Gregory, & Platts 1995). The reason is that these systems determine what, how, and when measures are taken (Merchant & Van der Stede, 2007) and are used as the basis for performance assessments. In short, Performance Appraisal Systems can be understood as artifacts or devices that provide answers to managers' informational needs and are also subject to adjustments required by different elements in the organizations' internal and external contexts.

On the other hand, Organizational Culture can be understood as a relevant strategic resource (Parente *et al*., 2018; Santos,1998), while certain forms of Organizational Culture, especially those that show stronger typifications, may be associated with adjustments in the other existing structures (Santos *et al.*, 2014; Smircich, 1983; Lee & Yu, 2004; Gordon & DiTomaso, 1992). Thus, for example, controllership may be associated with different tasks and processes, resulting in different performances (Tarifa & Almeida, 2018; Bonisenha & d'Angelo, 2018; Parente *et al.*, 2018; Santos,1998).

Much effort has been exerted to highlight the contributions of controllership and the controller's role in organizations (Järvenpää, 2007; Weber, 2011; Goretzki *et al*., 2013; Arenales, 2016). However, professionals trying to implement controllership as a Business Partner still face many difficulties. Understanding the association between cultural factors and the development of performance appraisal systems can contribute to how controllership develops within organizations, characterized in terms of Level of Partnership. Thus, this study's objective is to improve understanding of the associations between the different intensities of types of Organizational Culture, levels of partnership in controllership, and breadth of performance appraisal systems.

Based on the arguments previously presented, and seeking to expand the reach of what previous studies addressed separately, the following guiding question was established: "**What are the associations between the different intensities of the types of organizational culture, level of partnership exercised by controllership, and the breadth of organizational performance appraisal systems?**"

In order to empirically investigate this question, a survey was conducted with 89 professionals working in non-financial companies in Brazil, in which controllership is an administrative body.

This study also contributes to the literature on the topic, seeking to highlight associations between artifacts, structures, and cultural typifications (Schein, 1984), in addition to showing how the characteristics of the variables Organizational Culture, Levels of Controllership Partnership, and Breadth of Performance Appraisal Systems are identified in different organizational contexts, with a focus on improving the performance of controllership (Oyadomari *et al*., 2014).

2. Literature Review

The following items present the literature review that supported hypothesis formulation, the associations between the variables Organizational Culture, Levels of Controllership Partnership, and Breadth of Performance Appraisal Systems.

2.1 Characteristics of Organizational Culture and Controllership as a Business Partner

Schein (1984) conceptualizes Organizational Culture as a dynamic pattern of basic assumptions defined by a group, as a response to problems, which are taught to new members, characterizing "the correct way to perceive, think, and feel in relation to those problems" (Schein, 1984, p. 3). It can also be understood as "the social glue" or normative that promotes organizational cohesion (Schein, 1984, p. 14; Smircich, 1983), working as a control mechanism, albeit informal, approving or disapproving behaviors; giving meaning, direction, mobilization, and motivation to an organization's members; manifesting itself through practices, behaviors, and artifacts shared among a company's members (Pothukuchi *et al*., 2002; Cao *et al*., 2015). The literature shows that a company's business areas and units tend to respond better when management practices are compatible with the current organizational culture model (Pothukuchi *et al*., 2002).

Research shows that cultures perceived to be strong, i.e., in which there is a high level of consensus (Ho, Wu & Wu, 2014), or cultures that are more clearly defined and have consistent, and stable values and rules, regardless of their substantive value, are associated with greater adaptability and better performance (Gordon & DiTomaso, 1992; Hansen & Wernerfelt, 1989; Lee & Yu, 2004). Although there is evidence that Organizational Culture influences Organizational Structure (Smircich, 1983; Zheng & McLean 2010), it has not been identified whether the different perceptions of culture strength have direct implications in such an association, as has already been verified with performance (Lee & Yu, 2004; Gordon & DiTomaso, 1992).

Cameron and Quinn (2005) developed the Organizational Culture Assessment Instrument (OCAI), which enables identifying the cultural characteristics of a given organization, including the existence of predominant patterns, i.e., stronger patterns. Numerous studies have used the tool developed by Cameron and Quinn (2005) (Barreto *et al*., 2013; Dubey *et al*., 2019; Hartnell, Ou, & Kinicki, 2011; Hock-Doepgen *et al*., 2021; Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2011; Schein, 2010; Sony, Antony & Douglas, 2020; Tian *et al*., 2018).

The OCAI presents four groups of cultural values, with specific characteristics observed in organizations: (i) Clan Culture: it is similar with family businesses, the characteristics of which include valuing the participation of company members in the decision-making process, teamwork, and the development of human resources; (ii) Adhocracy Culture: focused on innovation processes and motivated by events external to the company, characterized by creative and motivating leadership, diversified internal operations, and flexibility and restructuring abilities; (iii) Hierarchy Culture: the objectives and actions to be performed by the organizational business' areas and units are established by the top management; it is characterized by bureaucratic and conservative motivational factors; and (iv) Market Culture: does not refer to the traditional aspects of a consumer market, but rather an inherent type of market, based on external influences and the company's specific activities, focused on results and customers, and others external factors that contribute to the company's development. Its characteristics include a focus on competitiveness and productivity.

Studies also show that controllership performs better when it is organizational strategy-oriented, acting with a high level of involvement and commitment to the company's global business, cooperating with the business' other areas and units, which has been considered to be a business partner behavior (Järvenpää, 2007; Weber, 2011, Goretzki *et al.*, 2013). The reason is that by acting at higher levels of partnership, controllership can contribute, more actively and directly, to the organization's strategic management (Weber, 2011; Rieg, 2018).

Figure 1 presents the conceptual framework developed by Weber (2011, p. 42), in which the author sought to highlight the controllership's different levels of action, the close connections between them, and the various activities performed at different levels. It enables characterizing, among the four stages presented, the stage of development and/or maturity of a given controllership based on the activities it performs. The ranges presented in Figure 1 are called in this paper "controllership's maturity stages" and are arranged from the lowest to the highest level of maturity, from bottom to top. In the fourth and last stage, controllership proactively provides information, contributes to the development of plans, and challenges and encourages management from a new perspective of the business and its context. In this last phase, controllership assumes a business partner behavior (Weber, 2011).

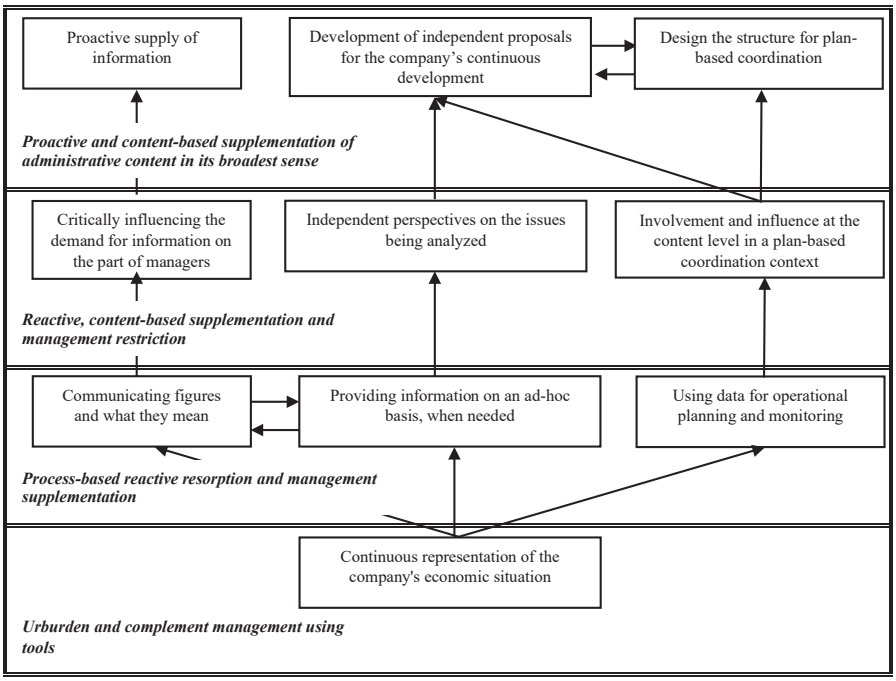

Figure 1. Conceptual framework of controllership evolution

Source: Weber (2011 p. 42)

As previously described, the evolutionary process of controllership occurs through the activities' progress, which considers the elimination of rationality' bottlenecks in its development due to controllership's increased maturity (Weber, 2011 p. 27). Therefore, the conceptual framework presents the range of tasks for each level considered controllership's responsibility, considering that the activities of the previous stages are not abandoned with the evolutionary process but added to the new tasks resulting from the process (Weber, 2011).

According to the level (or stage) reached by controllership, it will be more or less active as a business partner of the company's remaining areas and units, i.e., it may be more or less perceived as a business partner. Therefore, based on the elements presented, the first hypothesis is suggested:

Hypothesis 1: Stronger cultural typifications are directly associated with controllership' higher levels of business partnership.

2.2 Characteristics of Organizational Culture and Performance Appraisal Systems

Bititci *et al*. (2012, pp. 24-25) note that the organizational culture model and the nature of work conducted in an organization influence how a company's performance is measured and managed. The literature addressing Performance Appraisal Systems report the influence of organizational culture, and, as a result, of management styles, for the successful implementation of these systems (Bititci *et al*., 2006); systems seeking not to punish people, but rather, encourage discussions and analysis, present better results (Franco & Bourne, 2003).

"Performance measurement is a topic which is often discussed but rarely defined. Literally, it is the process of quantifying action, where measurement is the process of quantification and action leads to performance" (Neely, Gregory & Platts, 1995, p. 80). One of the factors leading to this is that individual authors tend to focus on different aspects of performance measurement systems. Hence, as a result of different visions and objectives, performance appraisal systems commonly aim to meet specific needs: some seek to assess performance in small and medium-sized companies (Garengo, Biazzo, & Bititci, 2005), whereas others are intended to measure and communicate the performance expected by the various stakeholders (Silva, Nuzum, & Schaltegger, 2019). Currently, the importance of systems helping measure performance in light of the sustainability of businesses and organizations is emphasized (Cagno *et al*., 2019; Silva *et al*., 2019).

Neely et al. (2000) consolidated various propositions based on Globerson (1985) and Maskell (1991) and developed a conceptual framework to identify the desirable attributes of a performance appraisal system (Table 1). This framework shows the breadth of such systems through two dimensions: 1) desirable characteristics of a performance appraisal (design) system; and 2) desirable characteristics for its use (process evaluation). This is the conceptual framework used to support this study's instrument.

Table 1

Characteristics of a Performance Appraisal System

Desirable characteristics for a performance measurement system	Desirable characteristics for the use of performance measurement systems (process evaluation)
The process should be easily reviewed – measures should change as circumstances change	Performance measures should allow/facilitate benchmarking
The purpose of each performance measure should be emphasized	Objective performance criteria are preferable to subjective ones
Data collection and methods to calculate performance level should be clear	Ratio-based performance measures are preferable to absolute numbers
Everyone (customers, employees, and managers) should be involved in the selection of measures	Performance criteria should be under the direct control of the organizational unit being assessed
The performance measures selected should take into account the organization	Performance measures should encourage continuous improvement, rather than just monitoring
Performance measures should derive from the company's strategy	Performance measures should be simple and easy to use
	Performance measures should provide quick feedback
	Non-financial measures should be adopted

Source: Neely et al. (2000, p. 1131), based on Globerson (1985) and Maskell (1991)

In this study, the breadth of a Performance Appraisal System is defined as a construct capable of operationalizing the combination of various characteristics present in the system's design and use, based on the conceptual framework of Neely *et al.* (2000).

Finally, Performance Appraisal Systems are artifacts that result from a organization's culture (Schein, 1984) and the different elements of an company's internal context, among which the strength of the different typifications of Organizational Culture, which is a relevant strategic resource (Parente *et al.*, 2018; Santos, 1998). The extent to which such systems are developed and used results from the culture strength (measured by the consistency of responses provided to surveys addressing organizational adaptability and stability).

Based on the elements previously presented, the second hypothesis is proposed:

Hypothesis 2: Stronger cultural typifications are directly associated with greater breadth of performance appraisal systems

On the other hand, research has shown associations between different cultural typifications and sets of Management Accounting practices (Tarifa & Almeida, 2018) and even people management processes (Santos *et al.*, 2014). Performance appraisal systems and their uses are adjusted over time as the culture, and associated structures mature (Bititci *et al.*, 2006). Hence, controllerships with higher levels of partnership might have conceptual elements, knowledge, and operating systems that result from higher levels of aggregation, integration, and scope that ensure timely reports (Frezatti, Relvas & Junqueira, 2010), which enable the development of more comprehensive or sophisticated Performance Appraisal Systems. Hence, the third hypothesis is proposed:

Hypothesis 3: Higher levels of controllership's business partnership are directly associated with greater breadth of performance appraisal systems.

3. Methodological Procedures

This descriptive, quantitative, cross-sectional study was based on a survey. The quality, reliability, and applicability of the questionnaire developed to collect data were tested using Cronbach's alpha coefficient (Hora, Monteiro & Arica, 2010) in addition to a pretest applied to eight controllership professionals, chosen according to typicality. These professionals were not included in the final sample. This procedure enabled clarifying unclear aspects and measuring the average response time.

The survey was conducted online (Miranda, Riccio & Miranda, 2012, p. 119), which enabled reaching a higher number of respondents and reduced traditional research costs (Dillman, 2000). The primary source used to identify the participants was one of the authors' professional social networks, LinkedIn.

The questionnaires were collected between September and October 2018: 119 questionnaires returned out of a total of 336 contacts from the author's network, whose functional profile was aligned with the study's objectives, i.e., professionals working with the management and use of performance appraisal systems developed by their companies' controllership. Hence, 35.42% of the questionnaires were returned. Those questionnaires that did not clearly inform a direct involvement with the three dimensions under study – organizational culture, controllership, and performance appraisal systems – were excluded. Hence, the final sample consisted of 89 professionals: 48 controllers, 26 controllership managers, four directors, two Chief Operating Officers (COO), and nine professionals with different job positions. Most professionals worked in medium and large companies (34 large and 45 medium); only ten were from small companies.

The results were obtained using multivariate data analysis (Figueira, 2004a,b; Fávero *et al.*, 2009), according to Correspondence Analysis (ANACOR), a model used to analyze the relationship between two qualitative variables.

Categorical indicators were used as a measurement of the latent variables "breadth of the performance appraisal system" and "controllership partnership level," while the OCAI measured the variable "organizational culture".

The categories presented in Table 2 refer to the results obtained with OCAI and statistical tests.

Table 2
Categorization of the Types of Organizational Culture (Cat_Cult)

Acronym	Cultural typification	Quantity
Cla	Predominantly Clan culture	30
Ino	Predominantly Adhocracy culture	7
Hie	Predominantly Hierarchy culture	32
Mer	Predominantly Market Culture	16
Cla_Hi	Mixed cultural model, with equivalent proportions of cultural aspects predominantly associated with the Clan culture and Hierarchy culture	1
Ino_Hi	Mixed cultural model, with equivalent proportions of cultural aspects predominantly associated with the Adhocracy culture and Hierarchy culture	3

The results concerning the questionnaire's part 2 (Table 2) show that the hierarchy cultural model (Hie) predominated among the companies in the sample. The clan cultural model (Cla) was the second most frequent, partially corroborating the findings of Tarifa and Almeida (2018), who also found a predominance of companies with group cultural typification (Cla) followed by the hierarchy model.

As for the results concerning Levels of Controllership Partnership (Table 3) and Breadth of Performance Assessment Systems (Table 4) obtained with the instruments, we sought to establish categories that expressed a direct relationship with the characteristics under study (see the categories' descriptions in Tables 3 and 4). Based on this structure, the scores were classified in groups: six for the first instrument and five for the second.

Table 3
Categorization of Level of Controllership Partnership (Cat_Contr)

Acronym	Description of Levels of Controllership Partnership	Quantity
BP_F	"Weak": it shows that the company's controllership is limited to the reactive supply of data and information	6
BP_B	"Low": it shows that, in addition to activities related to the previous level, the company's controllership also reports information and uses it for planning purposes	2
BP_M	"Moderate1": it shows that, in addition to activities related to the previous stages, the company's controllership also provides independent information perspectives and acts in the coordination of the company's action plans	2
BP_R	"Moderate2" shows that controllership provides independent proposals for the needs identified, develops and coordinates the rites, but does not satisfactorily perform the previous levels' activities	13
BP_A	"High": it shows that controllership operates satisfactorily in providing independent proposals for the needs it identifies, develops, and coordinates the rites as a protagonist, and satisfactorily perform the previous stages' activities for which it is responsible	31
BP_S	"Advanced": it shows that controllership, with a high level of performance, provides independent proposals for the needs it identifies, develops, and coordinates the rites as a protagonist, and satisfactorily perform the previous stages' activities, thus is considered a business partner	35

The questionnaire's part 3 (Table 3) shows a predominance of companies (74%) with controllerships characterized by a high level of partnership (BP_A=31 and BP_S=35). Comparing the findings with the literature was not possible because few studies categorize the functions of controllership as a business partner (Arenales, 2016; Silva, 2017; Lunkes, Schnorrenberger & Alexadre, 2016; Järvenpää, 2007; Weber, 2011), and most are case studies so that the comparisons are restricted.

The questionnaire's part 4 (Table 4) revealed that most respondents (66%) perceived their companies to have performance appraisals systems with great breadth (SD_A=49 SD_S=89), while the same table shows that 22% of the respondents rated their systems as unsatisfactory (SR_F=20).

Table 4

Categorization of the Breadth of the Performance Appraisal Systems (Cat_Sis_Desem)

Acronym	Description of Levels of Breadth of Performance Assessment Systems	Quantity
SDF	"Weak": it shows that the company has a performance appraisal system that operates with an unsatisfactory breadth	20
SDB	"Low": it shows that the breadth of the company's performance appraisal system is adequate but has room for improvement to achieve good functioning	2
SDM	"Moderate": it shows that the company has a performance appraisal system of satisfactory breadth only for one of the metrics considered, while it only reaches adequate breadth for the other (has potential for improvement)	8
SD_A	"High": it shows that the company has a performance appraisal system with high breadth, where both metrics of analysis work with the breadth that already presents higher levels of evolution/development	48
SD_S	"Advanced": it shows that the company has a performance appraisal system with advanced breadth, as both metrics present the highest rate of evolution/development they can achieve	11

Next, the Homogeneity Analysis (HOMALS), a model designed to verify the relationship between two or more qualitative variables, was used. According to Fávero et al. (2009 p. 291), HOMALS enables to simultaneously analyze the relationships between all variables together, using a simple two-dimensional configuration, the reason why it applies to social sciences.

The two techniques are intended to investigate the existing associations between the variables considered in a multidimensional space (Figueira, 2004a,b) and are interdependence models that have become increasingly popular for dimensional reduction in the analysis process. The easy graphical interpretation of data, presented with percentage mappings, it enables direct application by showing the correspondence of variable categories, particularly those measures in nominal scales (Hair et al., 2009, p. 441). The statistical tests were performed using Stata, version 12.

4. Results and Discussion

Associations between Organizational Culture x Controllership Partnership Level (associated with H1); Controllership Partnership Level x Breadth of Control Evaluation Systems (associated with H2); and Organizational Culture x Breadth of Performance Appraisal Systems (associated with H3) were verified via ANACOR.

Table 5 presents the results obtained for assessing the association between Organizational Culture and Controllership Partnership Level.

The ANACOR test was statistically significant at 1% (pr=0.0000), showing that the association between organizational culture and controllership partnership levels did not occur randomly in our sample, failing to reject H1. Thus, this finding corroborates Smircich's (1983) statements, for whom culture influences managers' behavior, in such a way that they constitute structures that contribute to keeping the organizations' balance. It also makes us reflect on the results reported by Zheng et al. (2010) and Santos et al. (2014). These studies report an association between organizational culture and structure; the first study qualifies it as a mediator of organizational performance, and the second emphasizes its influence.

Table 5
Level of Association: Organizational Culture x Controllership Partnership Level

Cat_Cult	Cat_Contr						
	BP_F	BP_B	BP_M	BP_R	BP_A	BP_S	Total
Cla	1	0	1	7	12	9	30
Ino	0	0	1	0	3	3	7
Hie	2	1	0	4	10	15	32
Mer	2	0	0	1	6	7	16
Cla_Hi	0	1	0	0	0	0	1
Ino_Hi	1	0	0	1	0	1	3
Total	6	2	2	13	31	35	89

Pearson Chi2 (25) = 62.6006 Pr = 0.000
Cultural typifications s: Cla=Clan; Ino=Adhocracy; Hie=Hierarchic; Mer=Market; Cla_Hi=Clan and Hierarchic, simultaneously; Ino_Hi= Adhocracy and Hierarchic, simultaneously.
Level of Controllership Partnership: BP_F=Weal; BP_B=Low; BP_M=Moderate; BP_R= Moderate2; BP_A=HIgh; BP_S=Advanced.

Likewise, for the analysis of the association between Level of Controllership Partnership and Breadth of Control Evaluation Systems, the ANACOR test was statistically significant at 1% (pr=0.003), showing that the association between these two variables did not occur randomly in our sample, failing to reject H2.

The results presented in Table 6 confirm the findings of Franco-Santos, Lucianetti, and Bourne (2012, p. 41). They consider that performance appraisal systems influence the capabilities of organizational structures, considering that controllership at its different levels reflects this set of skills and capabilities. The results also confirm what Zheng *et al.* (2010) report, i.e., that the breadth of performance appraisal systems directly reflects the different dimensions that enable understanding an organization's performance. Finally, the results confirm Goretzki *et al.* (2013) reports regarding how controllers were transformed into business partners after a new CFO's entry, leading to the reformulation of roles and, consequently, changing the controllership's performance which reflected on information systems.

Table 6
Association Level: Level of Controllership Partnership x Breadth of Performance Appraisal Systems

Cat_Contr	Cat_Sis_Desem					
	SD_F	SD_B	SD_M	SD_A	SD_S	Total
BP_F	5	1	0	0	0	6
BP_B	0	0	1	1	0	2
BP_M	1	0	1	0	0	2
BP_R	2	0	1	10	0	13
BP_A	6	1	3	19	2	31
BP_S	6	0	2	18	9	35
Total	20	2	8	48	11	89

Note: Pearson chi2 (20) =41.9299 Pr=0.003
Levels of Controllership Partnership: BP_F = Weal; BP_B = Low; BP_M = Moderate1; BP_R= Moderate2; BP_A= High; BP_S= Advanced.
Breadth of Performance Appraisal Systems: SDF=Weak; SDB=Low; SDM=Moderate; SD_A=High; SD_S=Advanced.

Finally, the ANACOR test used to analyze the association between Organizational Culture and Breadth of Performance Appraisal Systems, was not statistically significant (pr=0.969), showing that the association between these two variables was random; thus, rejecting H3. Table 7 presents the test results.

Table 7
Level of Association: Organizational Culture x Breadth of Performance Appraisal Systems

Cat_Cult	Cat_Sis_Desem					
	SD_F	SD_B	SD_M	SD_A	SD_S	Total
Cla	6	2	3	16	3	30
Ino	1	0	1	5	0	7
Hie	8	0	2	18	4	32
Mer	4	0	2	7	3	16
Cla_Hi	0	0	0	1	0	1
Ino_Hi	1	0	0	1	1	3
Total	20	2	8	48	11	89

Note: Pearson chi2 (20) = 9.9302 Pr = 0.969
Cultural typifications s: Cla=Clan; Ino=Adhocracy; Hie=Hierarchic; Mer=Market; Cla_Hi=Clan and Hierarchic, simultaneously; Ino_Hi=Adhocracy and Hierarchic, simultaneously.
Level of Controllership Partnership: BP_F=Weak; BP_B=Low; BP_M=Moderate1; BP_R= Moderate2; BP_A=High; BP_S=Advanced.

First, this result is not in line with those presented by Braunscheidel, Suresh, and Boisnier (2010), who identified that organizational culture can be considered the basis that supports a company's management practices and operations. Second, we could not confirm the position of Bititci *et al.* (2012, pp. 14-15), for whom organizational culture is a critical factor for successfully implementing a performance appraisal system. However, based on our results, it does not mean that organizational culture is not indirectly associated with these systems. In this sense, we agree with Pothukuchi *et al.* (2002), for whom business areas and units tend to respond better when management practices are compatible with a company's organizational culture model.

To improve understanding of the relationships between the three variables addressed here, the HOMALS technique was adopted to simultaneously investigate the relationship between the three variables. The results are presented in Tables 8 and 9.

Table 8

Jointly Analysis 1 (HOMALS): Organizational Culture x Level of Controllership Partnership x Breadth of Performance Appraisal System

Dimension	singular value	principal inertia	chi2	percent	cumul percent
dim 1	1	1	89.00	60.13	60.13
dim 2	.5243248	.2749165	24.47	16.53	76.67
dim 3	.4449859	.1980125	17.62	11.91	88.57
dim 4	.364188	.1326329	11.80	7.98	96.55
dim 5	.2395453	.0573819	5.11	3.45	100.00
Total		1.662944	148.00	100.00	

Note: Correspondence analysis - Number of observations=89; Pearson chi2 (85) = 148.00;
Prob > chi2 = 0.0000; Total inertia = 1.6629; Number of dimensions=2; Exp. Inertia (%) = 76.67
Statistics for row and column categories in symmetric normalization.

The results obtained by HOMALS reveal a statistically significant association at 1% (pr=0.000) between the three variables. Thus, this association is not random. The HOMALS results also show that the most intense associations (measured based on inertia, the most significant figures are highlighted at the top of Table 9) occur when there are clearly defined organizational culture patterns in organizations, without mixing different types of cultural values. The highest significance occurred with hierarchic culture organizations, followed by clan, market, and adhocracy organizations. These findings are indirectly aligned with Gordon and DiTomaso (1992) and Lee and Yu (2004), for whom the strength of culture is a predictor of performance's intensity.

The OCAI has been criticized because it is considered an instrument that does not measure culture correctly; instead, it classifies it into different groups according to types of cultural values (Berkemeyer et al., 2015; Zoghbi-Manrique-de-Lara & Ting-Ding, 2016). However, in this study, we verified that the companies that were clearly categorized into a single type of cultural value, according to the OCAI, were more strongly associated with higher levels of partnership in controllership. Thus, in a way, we may say that the strength of culture when the OCAI distinctly identifies a single culture typification differs from when a mix of cultural profiles is identified.

The most intense associations found for the other two variables (levels of controllership partnership and breadth of performance appraisal systems) are present when there are higher levels of controllership partnership and greater breadth of performance appraisal systems (greater inertia highlighted at the bottom of Table 9).

Table 9

Joint Analysis 2 (HOMALS): Organizational Culture x Level of Controllership Partnership x Breadth of Performance Appraisal System

Categories	overall			dimension_1			dimension_2		
	mass	quality	%inert	coord	srcorr	contrib	coord	srcorr	Contrib
Cultura									
Cla	0.337	0.656	0.098	0.107	0.024	0.004	0.762	0.633	0.374
Ino	0.079	0.610	0.114	0.107	0.005	0.001	-1.668	0.605	0.417
Hie	0.360	0.435	0.069	0.107	0.036	0.004	-0.493	0.399	0.167
Mer	0.180	0.040	0.063	0.107	0.020	0.002	0.148	0.020	0.008
Cla_Hi	0.011	1.000	0.595	-9.381	1.000	0.989	0.000	0.000	0.000
Ino_Hi	0.034	0.096	0.062	0.107	0.004	0.000	0.736	0.093	0.035
BP_Sist_Inf									
BP F/SDF	0.056	0.008	0.051	0.107	0.007	0.001	0.018	0.000	0.000
BP F/SDB	0.011	0.570	0.013	0.107	0.006	0.000	1.454	0.564	0.045
BP B/SDM	0.011	0.267	0.012	0.107	0.006	0.000	-0.941	0.260	0.019
BP B/SD A	0.011	1.000	0.595	-9.381	1.000	0.989	0.000	0.000	0.000
BP M/SDF	0.011	0.570	0.013	0.107	0.006	0.000	1.454	0.564	0.045
BP M/SDM	0.011	0.454	0.079	0.107	0.001	0.000	-3.180	0.453	0.217
BP R/SDF	0.022	0.105	0.006	0.107	0.026	0.000	0.257	0.079	0.003
BP R/SDM	0.011	0.570	0.013	0.107	0.006	0.000	1.454	0.564	0.045
BP R/SD A	0.112	0.606	0.023	0.107	0.033	0.001	0.613	0.573	0.081
BP A/SDF	0.067	0.968	0.012	0.107	0,040	0.001	-0.711	0.928	0.065
BP A/SDB	0.011	0.570	0.013	0.107	0.006	0.000	1.454	0.564	0.045
BP A/SDM	0.034	0.138	0.037	0.107	0.006	0.000	0.673	0.132	0.029
BP A/SD A	0.213	0.169	0.018	0.107	0,082	0.002	0.151	0.087	0.009
BP A/SD S	0.022	0.267	0.024	0.107	0.006	0.000	-0.941	0.260	0.038
BP S/SDF	0.067	0.598	0.008	0.107	0.055	0.001	0.461	0.542	0.027
BP S/SDM	0.022	0.105	0.006	0.107	0.026	0.000	0.257	0.079	0.003
BP S/SD A	0.202	0.955	0.049	0.107	0.028	0.002	-0.844	0.927	0.275
BP S/SD S	0.101	0.347	0.027	0.107	0.025	0.001	0.526	0.321	0.053

Note: Level of Controllership Partnership: BP_F=Weak; BP_B=Low; BP_M=Moderate1; BP_R= Moderate2; BP_A=High; BP_S=Advanced.
Cultural typifications: Cla=Clan; Ino=Adhocracy; Hie=Hierarchy; Mer=Market; Cla_Hi=Clan and Hierarchy simultaneously; Ino_Hi= Adhocracy and Hierarchy simultaneously.
Breadth of Performance Appraisal System: SDF=Weak; SDB=Low; SDM=Moderate; SD_A=High; SD_S=Advanced.

These results suggest that when the controller is close to the managers, understanding the factors that influence the result of the areas under their command, s/he can favor an increase in the breadth of the performance appraisal systems and measure the results more broadly and deeply (Frezatti et al., 2010), possibly reaching the transaction level, as argued by the GECON model (Catelli, 2001). In short, using the market language, such actions lead to what is conventionally called "obtaining different granularities of information". Furthermore, by being close, s/he manages to improve the breadth of information systems by helping managers plan, control, and make decisions, contributing to their performance and that of controllership (Oyadomari *et al.*, 2014).

Therefore, the tests' results indicate that stronger typifications of organizational culture, or in other words, clearly defined typifications, are associated with higher levels of controllership partnership, which in turn, are associated with a greater breadth of performance appraisal systems. However, no direct association was found between the organizational culture model and the breadth of performance appraisal systems. In this sense, the results, although not in a similar way, diverge from the results reported by Henri (2006), for whom there is a positive association with the diversity of performance measures, which is one component of the breadth of the performance appraisal system, regardless of the type of culture (flexible or control).

However, we cannot deny that the organizational culture model influences the breadth of performance appraisal systems, which may occur indirectly, considering that these types of culture influence controllership areas, and these operationalize more or less broad models. In this sense, controllership would "mediate" the relationship between organizational culture and performance appraisal systems, which would confirm the statements of Zheng et al. (2010), who identified that structure mediates the effect of organizational culture on performance (business effectiveness).

Additionally, this study's findings empirically confirm the reports of Ho et al. (2014), for whom companies aligned around a consensus – possibly, among other reasons, as a result of a distinctly defined organizational culture (Cameron & Quinn, 2005) – have better conditions to develop management technologies, a central role of the controllership area. It contributes to achieving the congruence of organizational goals and developing and disseminating management practices, such as performance appraisal systems (Neely *et al.,* 2000).

5. Conclusions

This study met the main objective of understanding associations between different intensities of organizational cultural typifications, the level of partnership exercised by the controllership area, and the breadth of organizational performance appraisal systems.

Data were analyzed using multivariate analysis (ANACOR, HOMALS), which enabled identifying the existence of a statistically significant association in our sample between Organizational Culture Model and Levels of Controllership Partnership, and between Levels Controllership Partnership and Breadth Performance Appraisal Systems. However, no statistically significant association was found between the Organizational Culture Model and the Breadth of the Performance Appraisal Systems.

These findings suggest that when controllership materializes management practices in the organization (a fundamental role), it can be more assertive if a given type of organizational culture is stronger. Thus, from this perspective, controllership can be characterized as a mediator between Organizational Culture and Performance Appraisal Systems.

The results also reveal the importance of controllership[to be more participative, to expand performance appraisal systems, which, in addition to the Contingency Theory approach, explains the breadth of performance appraisal systems.

In terms of organizational practices, our results suggest that controllership, based on interactions with the areas that use its services, interprets the elements of organizational culture and influences the breadth of performance appraisal systems. For example, if culture has a more participatory and democratic nature, controllership services, in normative terms, should serve different users of information, in different areas and organizational levels, providing information to validate, or not, the different interpretations of these users regarding the formulation of diagnoses and solving-problems proposals, in addition to monitoring these initiatives. Thus, the breadth of performance appraisal systems should be of a more collective type, based on interdependent goals that prioritize the group's performance. On the other hand, if culture is hierarchical, in light of the Contingency Theory, controllership in the interaction with users should prioritize information for decision-makers, resulting in performance appraisal systems more focused on the hierarchical levels that make decisions.

The results indicate that senior managers should develop actions to 'impregnate' the culture in people, in a way it is present in the organization's routine actions, because it facilitates the controllership's performance as a business partner, though statistical techniques do not allow establishing causality between the variables. These results complement the view of Dambrin, Lambert & Sponem (2007) and Goretzki *et al*. (2013), in which the authors infer that cultural change occurs through the actions of new controllers, who expand the participation in the controllership areas in which they work, and, consequently, influence the culture of their respective organizations.

Additionally, this study's results contribute to the development of academic knowledge, to the extent it provides empirical elements to reflect on the influence of organizational culture on management practices through the development and use of constructs and instruments, promoting a reflection beyond the concepts of Contingency Theory.

On the other hand, these results do not confirm which types of organizational culture are associated with specific levels of controllership partnership and breadth in performance appraisal systems. However, the results show that a clearly defined organizational culture positively influences controllership, leading to active and participatory practices, regardless of its type. Finally, the statistical analyses do not allow establishing causal relationships between the variables or making generalizations; thus, future studies investigating potential causal relationships will be helpful to expand knowledge on the subject.

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Appendix 1 – Study's Instrument

Part 3 The Controllership area:

1. Generates reports on the company's economic situation.
2. Delivers support reports only to the department to which it reports.
3. Generates support reports for other organizational areas.
4. Provides information to other organizational areas, which are used in the decision-making process of these departments, and to establish their strategies.
5. Delivers the reports it configures and provides support to ensure these are understood.

6. Seeks to find out with the remaining organizational areas information relevant to their decision-making processes - to ensure that such information is provided.
7. Presents, either to the senior management or other organizational departments, information (even if not requested) it considers relevant to the organizational decision-making process.
8. Generates information for specific purposes (on demand) whenever necessary.
9. Acts independently and critically, is free to express its opinion to the senior management regarding the results (thus presenting its opinions).
10. Develops models of proposals and projects to be implemented in the company – to contribute to organizational development and continuity.
11. Generates data that are used in organizational planning (i.e., setting goals and strategies).
12. Generates data used to assess whether organizational goals and strategies are being achieved as planned.
13. Gets involved and influences the development of goals and strategies for other areas – to ensure that their goals are aligned with the company's goals.
14. Is responsible for coordinating and aligning the activities developed by the company – to ensure that organizational goals and targets are achieved.

Part 4 Performance Appraisal = PA

1. There is a formal PA system in the organization where I work.
2. The purpose of each measure used to conduct PA in the company is clarified (clearly and precisely stated).
3. The measures adopted in the company for PA are based on the company's strategies and are related to the activities assessed.
4. The method used to collect data for the organization's PA is always clear and objective.
5. There is a transparent and objective method/calculation used for the organization's PA.
6. The opinion of everyone in the company (customers, employees, and managers) is considered when establishing/preparing the company's PA measures.
7. The measures adopted for the PA are based on the company's characteristics and particularities.
8. The measures and methods used for the company's PA are flexible – open to adjustments and amendments, when necessary.
9. The measures adopted for the company's PA allow it to assess itself against its competitors – facilitating the incorporation of perceived best practices and/or improving its methods.
10. The measures adopted for the company's PA are exclusively based on data presented in its financial and accounting measures – not taking into account any other information or data available.
11. Criteria adopted for an area's PA are defined by the organizational unit itself.
12. Criteria adopted for the company's PA are well defined, and its objectives are clear.
13. The measures adopted for the company's PA consider financial and "non-financial" measures (increase in the number of customers, market share, etc.) generated at the end of the period analyzed.
14. The measures adopted for the company's PA are simple and easy to use/apply.
15. The measures adopted for the company's PA encourages quick actions by the parties involved.
16. The measures adopted for PA encourage the continuous improvement of the parties involved – instead of just monitoring them.

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Related-party transactions among companies in pyramid structure: a comparison of explanatory factors in parent companies and affiliates

Silvia Amélia Mendonça Flores
https://orcid.org/0000-0002-0424-8375

Igor Bernardi Sonza
https://orcid.org/0000-0001-5403-3279

Abstract

Objective: In the absence of mechanisms to protect minority shareholders, controlling companies may seek private gains using mechanisms such as Related-Party Transactions (RPTs) or the deviation of rights. This study's objective is to analyze explanatory factors of RPTs among controlling/controlled and affiliate companies with a pyramid structure in Brazil.

Method: Data concerning RPTs were obtained from the Reference Forms of 153 companies from 2010 to 2017. Quantile regression was performed to find the factors (pyramid structure, performance, firm's value, and corporative governance) that best explain RPTs among controlling/controlled and affiliate firms.

Results: The explanatory factors for RPTs between parents/subsidiaries include deviation of rights, leverage, foreign shareholders, and independent auditors. The explanatory factors for affiliate companies include effects of return on assets (ROA), tangibility, and being audited by one of the Big four accounting firms.

Contributions: This study shows that pyramid structures influence RPTs among parents/subsidiaries and the performance of affiliate firms, while corporate governance did not moderate/mitigate conflicts of interest. Therefore, topics characterized by concentrated ownership structures, seldom explored in the Brazilian literature or emergent markets were addressed here, presenting alternatives to agency relations.

Keywords: Related-party transactions; Pyramid structure; Controlling/controlled companies; Affiliates.

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1. Introduction

From the perspective of the Agency Theory, in the absence of mechanisms to protect minority shareholders, controlling companies may seek private gains (Cho & Lim, 2018) and some methods can be used to maximize their interests, e.g., related-party transactions (RPTs) and deviation of rights, and consequently, expropriate minority shareholders (Cheung, Jing, Lu, Rau, & Stouraitis, 2009). RPTs can be understood as business connections as they correspond to transactions (e.g., assets, goods, equity, among others) performed with shareholders, members of the board of directors, or affiliated companies or subsidiaries (Cho & Lim, 2018).

RPTs are commonly carried out among companies affiliated with business groups. Groups tend to organize in a pyramid structure, forming family business groups (Almeida & Wolfenzon, 2006; Bena & Ortiz-Molina, 2013; Claessens, Djankov, & Lang, 2000), and RPTs are analyzed according to the companies' position within this structure, which can be that of a controlling owner/subsidiary or affiliate. Affiliates are those with a significant shareholding in other companies, without, however, controlling them. Controlling owner/subsidiaries, on the other hand, are characterized by a relationship of subordination through stock ownership (Almeida, 1987).

Another form of expropriation of minority shareholders refers to the deviation of rights in the pyramid structure, i.e., the difference between voting rights and cash flow rights (Kang, Lee, Lee, & Park, 2014). A company (or individual, family, or government) in a pyramid structure controls multiple companies through a hierarchical ownership relationship (Almeida & Wolfenzon, 2006). In these ownership structures, the controlling shareholder exercises control through at least one publicly listed company (La Porta, Lopez-de-silanes, & Shleifer, 1999).

The traditional view of pyramid structures is based on an attempt to maximize deviation between voting rights and cash flow rights based on the companies' intermediate levels, generating differences between control and ownership (Aldrighi & Mazzer Neto, 2005). Therefore, deviation of rights and related-party transactions are ways to expropriate minority shareholders. Furthermore, the relationship between these concepts is based on the assumption that voting power, caused by deviations, can ensure controlling shareholders a greater capacity and flexibility to become involved in RPTs for their own benefit (Rahmat, Amin, & Saleh, 2018). Given the preceding discussion, the general objective is to analyze the explanatory factors of RPTs, in parent/subsidiaries and affiliate companies with a pyramid structure in Brazil.

This study's relevance lies in investigating related-party transactions in companies with indirect ownership structure; a topic seldom explored in the Brazilian literature. Therefore, it is worth analyzing the explanatory factors of these transactions, considering the companies' positions (parent/subsidiaries or affiliates) in the pyramid structure. Additionally, conducting it in an emergent market is relevant as RPTs are prevalent in these economies due to failures in corporate governance and the widespread presence of groups controlled by families via pyramid structure and cross-ownership structures (Wang, Cho, & Lin, 2019).

To analyze the relationship between RPTs and pyramid structures, data were collected from the Reference Forms of 153 companies listed on the stock exchange. In addition, quantile regressions were estimated for the 2010 to 2017 period. In general, the results show that pyramid structures are an explanatory factor for RPTs involving parent/subsidiary companies. However, no statistically significant differences were found among affiliate companies for deviation of rights in RPTs. Regarding the remaining results, the firms' performance and corporate governance influenced RPTs with affiliate companies. However, in the parent/subsidiary model, corporate governance does not decrease the amount transacted between these companies.

From a theoretical perspective, this study advances in the context of agency relations based on differences between control structure and ownership structure (deviations). The objective is to examine RPTs in pyramid structures, considering the effect of business relationships. Most studies analyze transactions broadly. Therefore, a theoretical contribution consists of showing that subordination between parent/subsidiaries may encourage RPTs. The results are relevant because they show a positive association between RPTs and levels of deviation of rights, ratifying the hypothesis of conflicts of interest in which controlling shareholders may use transactions to obtain private benefits. As a result, RPTs and deviation of rights can be considered channels for the expropriation of minority shareholders. In this sense, the greater the level of deviations (measured via quantile regression), the greater the likelihood of a company using RPTs between parent/controlled companies.

This paper is structured into five sections, starting with the introduction. The second section presents the theoretical framework, with questions addressing related-party transactions and pyramid structure. The third section presents the methodology, and the fourth section the results. Finally, the last section presents final considerations with some reflections intended to better understand the topics addressed here.

2. Related-party transactions in pyramid structures: conceptions and hypotheses

2.1 Related-party transactions

RPTs are commonly performed among companies affiliated to a business group, conceptualized by economic sociology as a set of companies that are legally separated, however, linked by persistent and/or informal relationships (Granovetter, 2005). Business groups in the Brazilian context refer to groups of companies, which in addition to being strictly controlled by the same entity, comprise at least one company listed in the capital market (listed-firm business groups) or have diversified business units in at least three sectors (diversified business groups) (Aldrighi & Postali, 2010).

Thus, the literature recognizes three motivations for RPTs: tunneling, propping, and earnings management (Cheung et al., 2009). The tunneling concept was introduced by Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) and is an important contribution to the RPTs topic. According to the authors, tunneling refers to the transference of resources from one company at the base of the pyramid to those on higher levels, increasing the controlling companies' gains (Johnson, La Porta, Lopez-de-Silanes, & Shleifer, 2000). The inverse also occurs and is called propping, the objective of which is to help companies at the base of the pyramid (Bertrand & Mullainathan, 2003; Jian & Wong, 2010). Aggressive accounting choices and profit manipulation are related to earnings management, which, in RPTs, may come from cash sales between related parties (Jian & Wong, 2010).

RPTs regulation in Brazil is based on technical pronouncement CPC No. 5/R1 (CVM, 2010, p.4), which defines transactions as "transfers of resources, services or obligations between an entity that reports the information and a related party, regardless of whether a price is charged in counterpart". CPC 5/R1 presents some examples of transactions that must be disclosed, such as (i) purchases or sales of goods (finished or unfinished); (ii) purchases or sales of property and other assets; (iii) provision or receipt of services; (iv) leases; (v) research and development transfers; (vi) transfers under license agreements; (vii) transfers of a financial nature (including loans and contributions to capital in cash or equivalent); (viii) provision of guarantees, endorsements or sureties; (ix) assumption of commitments in case a particular event occurs in the future, including contracts to be executed (recognized or not); and (x) settlement of liabilities on behalf of the entity or by the entity on behalf of a related party.

For users of financial statements to have an insight into the effects of the relationships between the parties, companies must disclose transactions that have a total value greater than BRL 6 million, 1% of the company's total assets or which, in the opinion of the administrators, are considered relevant. Hence, the companies must detail information, such as the amount of the transaction and existing balances, including terms and conditions, and the relationship between the reporting entity with the respective related party, in addition to other factors that characterize the transaction, according to the Securities and Exchange Commission (CVM, 2010).

In the specific case of RPTs and company value, two competing aspects are addressed in the literature (Bona-Sánchez, Fernández-Senra, & Pérez-Alemán, 2017; Kang et al., 2014). The first is called the efficient transactions hypothesis, which shows that RPTs may minimize transaction costs and contribute positively to a firm's value (Gordon, Henry, & Palia, 2004). On the other hand, in the hypothesis of conflicts of interest, RPTs are thought to reduce a firm's value due to conflicts between majority and minority shareholders (Gordon et al., 2004; Johnson et al., 2000). Next, it is shown how pyramid structures may influence these RPTs.

2.2 Pyramid Structure

Pyramid structures exist through indirect control of a corporation exercised by another corporation (Tirole, 2006), with discrepancies between control and property rights being the primary way of measuring them (Aldrighi & Postali, 2011). These are more common in countries with poor shareholder protection, enabling the creation of new companies through pyramid control (Almeida & Wolfenzon, 2006). The chain of ownership formed by the pyramids allows the ultimate owner to control all companies, including those with no direct ownership (Bertrand & Mullainathan, 2003).

The traditional view of the formation of pyramid structures is based on an attempt to maximize the deviation between voting rights and cash flow rights, based on the intermediate levels of companies, generating differences between control and ownership (Aldrighi & Mazzer Neto, 2005). Voting rights come from ordinary shares, determining company control, while cash flow rights result from the number of shares held by a shareholder, with or without voting rights (Bortolon, 2010). Thus, an excess of voting rights may increase the power of large shareholders and, consequently, represent a potential for expropriating minority shareholders (Aldrighi & Mazzer Neto, 2005; La Porta et al., 1999).

Almeida and Wolfenzon (2006) developed an alternative theoretical model to explain the formation of pyramid structures, being one of the papers most frequently cited in the literature addressing this subject. According to the authors, pyramids are characterized by companies that need high levels of investment and/or with low profitability. The advantage of financing allows families who already publicly control other companies to develop new ventures, indirectly owning shares in a new company. This pyramid structure may allow families to benefit from this new 'financing', which will not appear profitable to outside investors (Almeida & Wolfenzon, 2006).

Pyramid structures are prevalent in some countries, such as Continental Europe, Asia, and South America, often organizing themselves into family business groups (Claessens et al., 2000). Therefore, the interconnection between business groups and pyramid structures lies in the firms' ownership relations, as pyramids are the primary form in which these groups are organized (Almeida & Wolfenzon, 2006).

Brazil is an interesting case to be studied due to its stock market structure (two classes of shares are issued) and changes in corporate governance rules. According to the law, companies can issue registered ordinary shares and registered preferred shares. The first class of shares has voting rights, while the second has preference in receiving dividends and capital reimbursement in the event of the company's dissolution. Therefore, companies can use the two classes of shares in pyramid structures to maintain their voting power and seek investments in the capital market. Thus, the issuance of two classes of shares and pyramid structures are considered techniques for deviating from the "one share, one vote" principle (La Porta et al., 1999; La Porta, Lopez-de-silanes, Shleifer, & Vishny, 2000).

In this case, pyramid structures may use RPTs to obtain benefits along the hierarchical chain, according to the relationships established between the companies. Among these relationships, there is the presence of parent/subsidiary and affiliate companies. Souza, Knupp, and Borba (2013) showed that a larger number of affiliate and controlled companies results in greater values involved in RPTs. For the authors, this fact suggests that RPTs may have strategic or financial purposes linked to the existing corporate nature, such as equity participation (affiliate companies) or control influence (controlling companies/subsidiaries). Therefore, it is expected that the most significant deviation of rights arising from the pyramid structure influences RPTs. Based on this context, the following research hypothesis is proposed:

Hypothesis 1: There is a positive association between RPTs between controlling/controlled companies and/or affiliates and deviation of rights in pyramid structures

In this context, the relationship between RPTs and pyramid structures lies in the option of controlling shareholders to use transactions to obtain private benefits along the ownership chain. Thus, a pyramid structure may encourage RPTs, with a positive association between them (Kang et al., 2014; Maheshwari & Gupta, 2018).

Incentives for RPTs may also be related to a firm's performance and value. For example, empirical results show that RPTs are negatively associated with a firm's value due to conflicts of interest (Bona-Sánchez et al., 2017; Cheung, Jing, et al., 2009). Also, trading with higher related parties is associated with worse company performance (Wang et al., 2019), as these companies may have incentives for opportunistic gains (Kang et al., 2014).

On the other hand, RPTs between companies in the same group can positively influence a firm's value (Wong, Kim, & Lo, 2015), as well as companies with greater similarity and vertical integration in the group, can obtain better performance from RPTs (Wang et al., 2019). Organizing companies into groups can reduce transaction costs and allow for the formation of internal markets. Internal markets facilitate interrelationships among affiliated companies, providing economies of scope and better allocation of resources, leading to better performance when carrying out RPTs (Wang et al., 2019). For example, Maheshwari and Gupta (2018) found a positive association between RPTs and performance, confirming the synergy that may exist in domestic markets. However, the literature generally indicates that RPTs are associated with firms' poor performance and value. As a result, the following research hypothesis is considered:

Hypothesis 2: There is a negative association between RPTs with controlling/controlled and/or affiliated companies and firm value.
Hypothesis 3: There is a negative association between RPTs with controlling/controlled and/or affiliated companies and performance.

Another aspect reported in the literature as a potential explanatory factor for RPTs is corporate governance. Considering that control and ownership structures can determine the companies' corporate governance, an increase in the level of investor protection is expected to result in a lower number of pyramid structures (Almeida & Wolfenzon, 2006) and RPTs (Kang et al., 2014). In the case of RPTs, most of the literature shows that RPTs are more likely to occur when corporate governance mechanisms are weak (Bhuiyan & Roudaki, 2018; Kang et al., 2014; Rahmat et al., 2018). As a result, the following research hypothesis is proposed:

Hypothesis 4: There is a negative association between RPTs with controlling/controlled and/or affiliated companies and corporate governance.

Thus, in general, these are the main aspects of the RPTs analyzed in this study. Based on the RPTs between companies of the same group, it is relevant to analyze the effect of these operations on the parent/subsidiary and affiliate companies. Thus, it is possible to identify the explanatory factors for RPTs according to the existing relationships between companies. The method is presented in the next section.

3. Method

3.1 Characterization of the sample and variables

Annual data concerning Brazilian companies listed in [B][3] were accessed via reference forms for the 2010 to 2017 period to identify pyramid structures. Data were extracted using the R package GetDFPData (Perlin, Kirch, & Vancin, 2019), allowing access to information from the companies' financial statements and the CVM's reference forms. Filters can be used in the latter to list the items one intends to access.

The criteria used to select the sample was the definition of pyramid structures proposed by La Porta et al. (1999), in which pyramids are companies in which the controlling shareholder exercises control through at least one publicly traded company. The sampling process resulted in an unbalanced panel, with 961 observations and 155 companies adjusted according to the exclusion criteria of companies/year with negative Tobin's Q greater than 10 (Kirch, Procianoy, & Terra, 2014). Thus, the final sample consists of 929 observations and 153 companies with a pyramid structure in Brazil. Among these, related-party transactions carried out between parent companies/subsidiaries and affiliates were selected.

The total value of RPTs performed with parent companies/subsidiaries and affiliates was the dependent variable, considering its magnitude may represent more significant tunneling potential (Chen, Li, & Chen, 2017). To adapt to the model, inflation was adjusted, and the natural logarithm was applied to the total values (Silveira, Prado, & Sasso, 2008).

Deviation of rights was calculated to represent the pyramids' control and ownership structure. It is found from existing ownership chains and results from the difference between the share of voting rights and the share of cash flow rights. Therefore, data collection began by identifying the direct shareholders of each company, filtering out only those of a legal nature. Upon verifying the existence of a listed legal shareholder, the company was included in the sample and its direct shareholders were identified, which are, therefore, indirect shareholders of the company in the sample. This procedure was repeated until it reached the controlling shareholders in each property chain.

The share of cash flow rights was calculated as the product of equity interests (total shares) in companies along the chain (Aldrighi, 2014; Bortolon, 2010). In turn, the share of voting rights in indirect ownership depends on the existence of control. For example, if the largest shareholder (MAU) is the controlling shareholder (with at least 50% of the voting rights), the share of voting rights is equal to the direct participation that the last intermediate in the ownership chain holds in the voting capital of the company analyzed. On the other hand, if MAU is not the controlling company, the calculation is identical to the share of cash flow rights, that is, the product of the interests (Aldrighi, 2014).

To identify the effect of firm performance and the value of firms on RPTs, return on assets (ROA) and Tobin's Q were considered, which are measures widely adopted in the literature for this purpose (Kang et al., 2014). As for the expected sign of these variables concerning the RPTs, it can be positive or negative. Companies with high performances and value can use RPTs to maintain/increase their results from the perspective of efficient transactions, which reduce costs (Wong et al., 2015). On the other hand, companies with financial restrictions will be more likely to use this type of operation to obtain opportunistic gains (Kang et al., 2014; Wang et al., 2019).

Corporate governance was analyzed as a way to mitigate the expropriation of minority shareholders. In this case, governance was measured considering three dummy variables: (1) company adherence to the differentiated segment of the New Market; (2) presence of independent members on the audit committee (Kang et al., 2014; Rahmat et al., 2018); and (3) external audit performed by one of the four most prominent companies in the field (Deloitte, Ernst & Young, KPMG or PricewaterhouseCoopers - PwC) (Bhuiyan & Roudaki, 2018; Rahmat et al., 2018).

To complement the analysis, control variables were included. "Company size" was selected because larger companies are more likely to conduct a more significant number of RPTs (Kang et al., 2014). Leverage is related to performance issues and monitoring on the part of creditors. Firms with vulnerable financial positions tend to participate in RPTs to overcome difficulties (Bhuiyan & Roudaki, 2018). On the other hand, leverage may imply greater monitoring on the part of creditors (Aldrighi, 2014), a situation that could decrease RPTs (Matos & Galdi, 2014).

As for tangibility, fixed assets can serve as guarantees in RPTs, and, therefore, a positive relationship is expected between tangibility and the greater occurrence of these contracts. Intangible assets are more difficult to monitor and, consequently, may be subject to management decisions (Himmelberg, Hubbard, & Palia, 1999), facilitating RPTs. Regarding foreign capital, companies with foreign shareholders are expected to engage in more transactions with each other (Cheung et al., 2009).

Table 1 shows the definitions of the variables used in this study, starting with related-party transactions, which represent the dependent variables. Next, the explanatory factors for RPTs are described, which comprise the pyramid structure (deviation of rights), performance, firm value, and corporate governance. These relationships were mediated by control variables related to the topics, including important measures for analyzing results, such as size and leverage. The variables were selected and described based on the literature presented in the references. Next, the regression model is described.

Tabela 1
Variáveis da Pesquisa

Variables and Acronym	Measure	References	
Total value of RPTs between parent/ subsidiaries (LVC)	Log (LVC) per company/year	Silveira et al. (2008); Matos and Galdi (2014)	
Total value of RPTs with affiliate companies (LVCOL)	Log (LVCOL) per company/year		
Variable and Acronym	**Measure**	**References**	**ES**
Deviation (LD)	Log (D), where D= DVMC − DFC where: DVMC: right to vote due to the existence (or not) of a controller MAU	Aldrighi (2014); Aldrighi et al. (2018)	(+)
Return on Assets (ROA)	ROA = $\frac{Operating\ Result}{Total\ Assets}$	Kang et al. (2014); Maheshwari and Gupta (2018); Wang et al. (2019)	(+) or (-)
Tobin's Q (QT)	QT = $\frac{VMAO + VMAP + DIVT}{Total\ Assets}$ where: VMAO: market value of ordinary shares; VMAP: market value of preferred shares; DIVT: book value of liabilities (current + noncurrent) minus current assets, after excluding inventories	Bona-Sánchez et al. (2017); Maheshwari and Gupta (2018)	
Presence in the New Market (NM)	Binary variable equal to (1), if the company participates in the New Market; and (0) otherwise	Aldrighi et al. (2018)	(-)
Big Four (Big4)	Binary variable equal to (1), if the company is audited by one of the Big four; and (0) otherwise	Bhuiyan and Roudaki (2018); Rahmat et al. (2018)	
Independent auditing (Audit)	Binary variable equal to (1), if the company has independent members in the audit committee; and (0) otherwise	Kang et al. (2014); Rahmat et al. (2018)	
Size (LRCL)	Log (RCL), where RCL= net sales revenue	Kang et al. (2014)	(+)
Leverage in relation to Total Assets (Alav)	ALAV = $\frac{Current\ Liabilities + Noncurrent\ Liabiities}{Total\ Assets}$	Aldrighi (2014); Aldrighi et al. (2018); Maheshwari and Gupta (2018)	(+) or (-)
Tangibility (Tangib)	TANGIB = $\frac{Fixed\ Assets}{Total\ Assets}$	Souza e Bortolon (2014); Aldrighi et al. (2018)	
Foreign Capital (Estrang)	Binary variable equal to (1), if there are ordinary shares and/or preferred shares by foreign capital; and (0) otherwise	Cheung et al. (2009)	(+)
Temporal Fixed Effects	Binary variable where 1 indicates the year the data is generated and (0) otherwise	Kang et al. (2014); Bona-Sánchez et al. (2017)	

Legend: *the RPTs' quantitative variables considered the period of reference disclosed by the companies and not specifically the transaction date, as many transactions remain active for the long term. ES (expected sign) corresponds to the association between dependent and independent variables. The expected sign is based on the empirical literature review.

Source: Developed by the authors (2021).

3.2 Quantile Regression Model

The model adopted here is derived from the estimator proposed by Machado and Santos Silva (2019), developed for panel data with fixed effects, considering linear and non-linear specifications. Linear estimation was chosen, in which individual effects can affect the entire distribution, based on conditional quantiles. Thus, panel data with individual effects, considering the estimation with conditional quantiles for probability distributions (location and scale), have the pattern described in Equation (1).

$$Y_{it} = \alpha_i + X'_{it}\beta + (\delta_i + Z'_{it}\gamma)U_{it} \quad (1)$$

With Pr $\{\delta_i + Z'_{it}\gamma > 0\} = 1$. The parameters ($\alpha_i$, δ_i), capture the individual fixed effect (i) and Z is defined before. The sequence $\{X_{it}\}$ is strictly exogenous, *i.i.d* for any fixed i, and independent between i. U_{it} é *i.i.d* (through i and t), statistically independent of X_{it} and normalized to satisfy the moment conditions. Model 1 implies Equation 2.

$$Q_\gamma(\tau|X_{it}) = \left(\alpha_i + \delta_i q(\tau)\right) + X'_{it}\beta + Z'_{it}\gamma q(\tau) \quad (2)$$

Where $\alpha_i(\tau) \equiv \alpha_i + \delta_i q(\tau)$ is called the scalar coefficient of the quantile fixed effect (τ) for individual i or the distribution effect in (τ). The distribution effect differs from the usual fixed effect in that it is not, in general, a displacement. That is, the distribution effect represents the effect of time-invariant individual characteristics that, like other variables, may have different impacts on different regions of the Y conditional distribution. The fact that $\int_0^1 q(\tau)d\tau = 0$ implies that α_i can be interpreted as the average effect for individual i. Thus, the quantile regression for a panel of data with fixed effects is then estimated via Method of Moments (MM-QR), allowing for dynamic relationships that function with orthogonality conditions (Hansen, 1982).

As it is a robust model, quantile regression for panel data with fixed effects was estimated to understand the explanatory factors of RPTs in parent/subsidiaries and affiliated companies. Therefore, as in the traditional panel, the RPTs represent the dependent variable, which corresponds to the total value of RPTs over time. The main independent variables refer to deviations of rights, performance, firm value, and corporate governance. Finally, the control variables contributing to the interpretation of the coefficients were included.

The use of quantile regression is justified by the need to analyze the effect of each level of deviation of rights on the respective levels of values of the RPTs. Higher levels of deviations are expected to encourage a greater volume or value of transactions. Furthermore, in quantile regression, outliers can be used because the method is robust for these values. Regarding the chosen estimator for quantile regression (Machado & Santos Silva, 2019), no application was found in Brazil, so the recently developed data panel is appropriate, which characterizes this study's robustness and originality.

Regarding fit, traditional linear models use the coefficient of determination (R^2) as a reference. This statistic can be understood as the percentage of variability of the response variable explained by the independent variables. In the quantile regression, the pseudo-R^2 for each quantile is estimated. However, this measure may not be adequate, so that the regression specification error test is recommended to analyze the adjustment of quantile regression with panel data and fixed effects (Machado & Santos Silva, 2019).

The Regression Specification Error Test (RESET) proposed by Ramsey (1969) aims to identify specification errors in a regression. In RESET, a model under the null is compared with an alternative one, an undeclared generalization of that model. Thus, it seeks to identify nonlinearities in its functional form (Greene, 2012). The null hypothesis establishes that the model is correctly specified. Therefore, failing to reject the null hypothesis (p-value>0.05), suggesting that the model is valid, and its coefficients can be interpreted. Next, the results and discussion are presented.

4. Results and Discussion

To characterize the companies in the sample, the sectors of activity were analyzed, according to CVM classification (industrial goods; cyclical consumption; non-cyclic consumption; financial and others; basic materials; oil, gas, and biofuels; health; information technology; telecommunications; and public utility). The three most representative sectors were public utility (32.40%), finance and others (20.02%), and industrial goods (18.57%). Before the application of quantile regression, descriptive statistics were analyzed, as shown in Table 2.

Table 2
Descriptive Statistics of Variables

Variable/ Statistics	Mean	Median	Standard Deviation	Minimum	Maximum	p10	p25	p75	p90
VT CT*	4.29	0.26	9.36	0.00	36.10	0.00	0.03	1.68	16.40
LN CT	19.40	19.47	2.98	12.89	24.32	15.33	17.68	21.33	23.61
VT CG*	2.32	0.03	6.61	-0.03	26.00	0.00	0.00	0.36	5.62
LN CG	17.75	17.77	3.56	10.32	24.20	12.46	15.59	19.81	22.82
Deviation	0.31	0.19	0.34	0.00	0.94	0.00	0.00	0.61	0.90
ROA	0.05	0.05	0.11	-0.22	0.27	-0.08	0.01	0.12	0.22
Qtobin	0.95	0.77	0.69	0.07	3.05	0.27	0.56	1.10	1.87
RCL*	2.80	0.59	4.49	0.00	16.80	0.00	0.02	3.63	8.70
ALAV	0.53	0.58	0.26	0.02	0.95	0.13	0.33	0.74	0.87
Tang	0.11	0.00	0.19	0.00	0.65	0.00	0.00	0.16	0.46

Legend: * represents BRL Billion. VT CT: total in BRL of related-party transactions between controlling/controlled companies; LN CT: natural logarithm of the total in BRL of related-party transactions between controlling/controlled companies; VT CG: total in BRL of related-party transactions with affiliate companies; LN CG: natural logarithm of the total in BRL of related-party transactions corresponding to affiliate companies; ROA: return on total assets; RCL: net sales/ service revenue; ALAV: leverage by total assets; Tang: tangibility of assets.

Source: Study's data.

Table 2 shows that the mean total value of transactions for parent/controlled companies is R$ 4.29 billion and R$ 2.32 billion for affiliates. Additionally, these variables were used in natural logarithm to include them in the panel data model. Note that the mean and median for these data are very close, showing the adequacy of the information obtained by the tests performed.

Performance information also shows that data showed consistency due to the proximity of the mean and median, meaning that companies show a positive return of 6% on average. About the firm's value, measured by Tobin's Q, the market value represents 95% of the equity value. In leverage terms, third-party capital represents 53% of total assets, with fixed assets corresponding to 11.8% of this same variable.

After identifying the profile of the variables, the correlation between them was tested, noting that they were suitable to be used in quantile regression models. The results are shown in Table 3.

Table 3
Correlation of Variables

	Deviation	LN CT	LN CG	ROA	Qtobin	RCL	ALAV	Tang
Deviation	1							
LN CT	-0.07	1						
LN CG	-0.26	0.45	1					
ROA	0.17	0.08	0.00	1				
Qtobin	-0.10	0.11	0.11	0.08	1			
RCL	0.06	0.15	0.22	0.13	0.00	1		
ALAV	0.19	0.08	0.19	0.07	0.05	0.37	1	
Tang	-0.02	0.18	0.29	0.04	-0.05	0.15	0.10	1

Legend: LN CT: natural logarithm of the total value in BRL of related-party transactions between parent/controlled companies; LN CG: natural logarithm of the total value BRL of related-party transactions associated. ROA: return on total assets; RCL: net sales/services revenue; ALAV: leverage by total assets; Tang: tangibility of assets.

Source: study's data.

The correlation test was applied to check whether the variables were highly related. The results show that most variables have a low correlation. In addition, the Variance Inflation Factor (VIF) was tested, in which the mean did not exceed 5. Therefore, the variables did not show multicollinearity, enabling their use in quantile regression models.

In this sense, after characterizing the sample and the study variables, the quantile regression models were estimated for the parent/subsidiary and affiliate companies. It was evident that the explanatory factors in the relationship between the amount transacted with parent companies and subsidiaries are: deviations of rights, leverage, auditing, and the presence of foreign shareholders (Table 4). The model coefficients are valid, considering the adequacy test (p-value 0.3280). Furthermore, the deviations are significant in the 50% and 75% quantiles, with a 1% increase in this variable increasing the RPTs by about 0.01%. Statistical significance is concentrated in the highest quantiles, showing that these transactions become more frequent as the deviations between voting rights and cash flow rights increase.

These results confirm hypothesis 1 and corroborate the literature (Kang et al., 2014; Maheshwari & Gupta, 2018), showing that RPTs can be a channel for expropriation based on the deviation of rights. From a practical perspective, the organization of companies in pyramid structures can facilitate the use of RPTs along the subordination chain between parent/subsidiaries. Under the hypothesis of conflicts of interest (Gordon et al., 2004), these transactions can be a way for companies to obtain private gains; therefore, it is essential to analyze their explanatory factors.

Regarding other aspects, note that leverage is negatively and significantly associated at the 50% and 75% quantiles. That is, an 1% increase in leverage causes a 0.16% increase in RPTs. Matos and Galdi (2014) found that debt negatively influences RPTs with parent/controlled companies because of creditors' greater monitoring. Also, this fact can be attributed to the development of an internal capital market among companies belonging to a given group. The relationships between these companies may reduce transaction costs and increase debt capacity (Cai, Zeng, Lee, & Ozkan, 2016). However, leverage can influence RPTs up to certain levels of value or occur only in periods of crisis, when there is a greater transaction of resources between companies (Almeida, Kim, & Kim, 2015).

Regarding audit committees, the model coefficients have the greatest impact, significant in almost all quantiles considered (except for the 10%). In this sense, the amount transacted between these related parties increases with the presence of independent auditors. The expected relationship was contrary, concluding that governance mechanisms may not be efficient in controlling RPTs. The positive influence of independent auditors on the value of transactions may be associated with the fact that governance variables have a limited impact on the prices of RPTs with controlling shareholders (Cheung, Qi, Raghavendra Rau, & Stouraitis, 2009).

The non-significant results regarding corporate governance are similar to previous studies conducted in Brazil and refute hypothesis 4. For example, Oda (2011) analyzed the RPTs and the market value of companies belonging to the New Market but did not infer a relationship between corporate governance mechanisms and the outcome of RPTs. Souza et al. (2013) also reported that there is no evidence that the value of RPTs can have any relationship with the adoption of differentiated levels of corporate governance in Brazil.

Other Brazilian studies (Silveira et al., 2008; Souza & Bortolon, 2014) found negative relationships between the level of RPTs and the quality of corporate governance, while the adoption of effective corporate governance mechanisms may minimize the impact of RPTs on company value. Due to these differences, corporate governance is a topic that future studies should explore further to understand the mechanisms of RPTs better.

Table 4

Explanatory factors RPTs between controlling/controlled companies

Variables	Log Total Value of RPTs between Controlling/Controlled Companies				
	Quantile 0.10	Quantile 0.25	Quantile 0.50	Quantile 0.75	Quantile 0.90
LD	0.0113	0.0122	0.0133**	0.0142*	0.0149
ROA	0.1433	0.0533	-0.0583	-0.1506	-0.2259
Qtobin	0.0018	-0.0032	-0.0094	-0.0145	-0.0187
LRCL	0.0153	0.0148	0.0143	0.0138	0.0134
Alav	-0.1413	-0.1494	**-0.1594****	**-0.1677***	-0.1745
Tang	0.1148	0.0556	-0.0179	-0.0787	-0.1283
Audit	0.1758	**0.1970****	**0.2234*****	**0.2451*****	**0.2629*****
Big4	0.0525	0.0322	0.0070	-0.0137	-0.0307
NM	0.0453	0.0229	-0.0048	-0.0278	-0.0465
Estrang	**0.1776***	**0.1834*****	**0.1905*****	**0.1964*****	**0.2013*****
EF Year	Yes	Yes	Yes	Yes	Yes
Nº Obs.	261	261	261	261	261

(***), (**), (*) Statistically significant at 1%, 5%, and 10%, respectively.
Legend: this table presents the results of the quantile regression model with a fixed panel considering operations with controlling/controlled companies, where LD: logarithm of the deviation of rights; ROA: asset profitability to measure performance; QTobin: Tobin's Q to measure the company's value; LRECL: log of net revenue to measure size; Alav: leverage measured by total assets; Tang: tangibility; Audit: dummy for the presence of independent members in the audit committee; Big4: dummy for companies audited by Big4; NM: dummy for presence in the New Market; Estrang: dummy for the presence of foreign capital in the control structure and ownership structure. Note: The mean value of the variance inflation factor (VIF) for this model is 1.21.

Source: study's data.

Another statistically significant variable in this model was the presence of foreign shareholders. Significance was obtained in all quantiles, increasingly and positively related to RPTs, indicating that the presence of these shareholders in the ownership and control structure of pyramid companies may encourage RPTs (Cheung, Jing, et al., 2009).

This same model was estimated for the RPTs with affiliates to understand the explanatory factors of the RPTs in these companies (Table 5). Related-party transactions with these companies were less frequent, as there is significant shareholding but no control. The results show that the indirect structure of the affiliate companies is not an explanatory factor for the RPTs, because, despite finding a negative relationship between the variables, this was not significant for any of the quantiles.

Table 5

Explanatory factors for RPTs and affiliate companies

Variables	Log of Total Value of RPTs with Associated companies				
	Quantile 0.10	**Quantile 0.25**	**Quantile 0.50**	**Quantile 0.75**	**Quantile 0.90**
LD	-0.0096	-0.0068	-0.0047	-0.0027	-0.0011
ROA	-0.0224	-0.0064	0.0055	0.0169**	0.0261**
Qtobin	0.0181	-0.0322	-0.0698	-0.1057	-0.1349
LRCL	0.0169	0.0181	0.0189	0.0198	0.0205
Alav	-0.1057	-0.0614	-0.0284	0.0032	0.0289
Tang	**-0.1352****	**-0.1242*****	**-0.1159*****	**-0.1080*****	**-0.1017*****
Audit	0.5006	0.3834	0.2959	0.2122	0.1443
Big4	-0.5298	**-0.4141***	**-0.3277****	**-0.2452****	-0.1782
NM	-0.1921	-0.0382	0.0767	0.1866	0.2758
Estrang	0.2665	0.2222	0.1891	0.1574	0.1317
EF Year	Yes	Yes	Yes	Yes	Yes
Nº Obs.	78	78	78	78	78

(***), (**), (*) Statistically significant at 1%, 5%, and 10%, respectively.
Legend: this table presents the results of the quantile regression model with a fixed panel considering operations with affiliate companies, where LD: logarithm of the deviation of rights; ROA: asset profitability to measure performance; QTobin: Tobin's Q to measure the company's value; LRECL: log of net revenue to measure size; Alav: leverage measured by total assets; Tang: tangibility; Audit: dummy for the presence of independent members in the audit committee; Big4: dummy for companies audited by the Big4; NM: dummy for presence in the New Market; Estrang: dummy for the presence of foreign capital in the control structure and ownership structure. Note: The mean value of the variance inflation factor (VIF) for this model is 1.26.

Source: study's data.

This result partially rejects hypothesis 1 and may be related to the fact that affiliate companies have a significant shareholding in other companies but do not control them. Thus, controlling companies may not be interested in carrying out RPTs with these companies. This result corroborates Souza et al. (2013), which reports that parent/subsidiary companies are more frequently involved with RPTs than affiliate companies. The authors believe that companies adopting RPTs prefer having a power relationship (control) when investing in other companies.

The explanatory variables of these operations include ROA, tangibility, and Big four auditing companies. In this case, return on assets has positive and significant coefficients at the 75% and 90% quantiles. Its effect on the value of RPTs is small (approximately 0.01%), showing that higher performances positively contribute to increasing transacted values, refuting hypothesis 3. Statistical significance in the upper quantiles shows that ROA is an explanatory factor for RPTs with affiliate companies when they reach a certain level.

Overall, the relationship between RPTs and performance has shown that there is a negative effect of these operations (Wang et al., 2019), as companies may have incentives for opportunistic gains (Kang et al., 2014), harming their performance. However, from the perspective of efficient transactions, RPTs can reduce costs and result in financial growth (Maheshwari & Gupta, 2018; Wang et al., 2019; Wong et al., 2015), which explains this study's findings.

Regarding tangibility, there is a negative influence present in all the quantiles, with coefficients ranging from 0.10% to 0.13%. This effect shows that fixed assets reduce the volume transacted between affiliate companies, corroborating Souza and Bortolon (2014).

The last explanatory factor of RPTs with affiliate companies corresponds to auditing firms being one of the Big four auditing companies. As expected in the literature (Kang et al., 2014), corporate governance, based on the previously mentioned variable, reduces the volume of RPTs with affiliate companies. The result corroborates hypothesis 4. Significance was found for three quantiles, with coefficients ranging between 0.24 and 0.41.

From this perspective, some variables were not significant. Comparatively, significance for the firms' value, represented by Tobin's Q, size, and adhesion to the New Market, was not found in any of the models. Regarding the firms' value, the trend in the literature is towards a negative association with RPTs, due to possible opportunistic interests on the part of controlling companies (Bona-Sánchez et al., 2017; Cheung, Jing, et al., 2009). As for size, a positive influence was expected due to larger companies being more likely to engage in RPTs. It is noteworthy that the associations reported in these two variables generally occur in general models, that is, models that do not separate RPTs between parent/controlled and affiliate companies.

Concerning corporate governance, some measures were significant in the models and some quantiles. In this sense, knowing that controlling shareholders can use RPTs to leverage their voting power, it is essential to understand how and which corporate governance measures can reduce these sources of private benefits. Therefore, the variables for which significance was not found could be addressed in future studies.

Under the theoretical framework of the Agency theory, if there are different interests between the parties, conflicts may occur between the capital holder and the administrator. Along the same lines, countries with poor legal protection against expropriation accumulate another conflict of interest generated by majority and minority shareholders. Therefore, controlling companies can use mechanisms that maintain/increase their voting power, a situation that might reduce a company's value and expropriate minority shareholders. Among these mechanisms, RPTs and pyramid ownership were addressed in this study. Evidence supports the relationship between these factors, showing that companies are likely to conduct RPTs through the pyramid ownership structure and maintain control with the lowest investment level, generating rights deviations. Next, the conclusions are presented.

5. Conclusions

This study's objective was to analyze the explanatory factors of RPTs in parent/controlled and affiliate companies with a pyramid structure in Brazil. This longitudinal study was conducted from 2010 to 2017 in 153 companies with a pyramid structure. Quantile regressions were estimated to identify explanatory factors. The conclusion is that a pyramid structure is one explanatory factor for RPTs in transactions between parent/controlled companies, not rejecting hypothesis 1. However, affiliate companies showed no influence of deviation of rights in the RPTs' total value. It may be related to the volume transacted between these parties since there are more operations with parent companies than with associates. Silveira et al. (2008) showed that operations with parent/controlled companies correspond to 75.6% of the total, while only 1.4% corresponds to affiliate companies. As a result, the existence of subordination between parent/controlled companies may encourage RPTs for specific interests, increasing the level of deviations.

As for the analysis of accounting performance, empirical evidence revealed that this is a positive explanatory factor for RPTs with affiliate companies. Because there are few transactions with these parties, RPTs may not have the power to affect the value of these firms. As for Tobin's Q, this was not significant for any analysis, and this result may be associated with the level of deviation of these companies. For Kang et al. (2014), a firm's value is only harmed by RPTs when conflicts of interest between controlling and minority shareholders are severe.

Regarding the influence of corporate governance on RPTs, it moderated transactions only with affiliate companies. The sign was opposed to the expected in the parent/subsidiary model; the expected sign was the opposite, showing that corporate governance does not reduce the amount transacted between these companies. Previous evidence has shown that governance mechanisms have little impact on RPTs, and results remain inconclusive (Cheung, Qi, et al., 2009; Oda, 2011).

The theoretical contribution of this study is that RPTs are a subject seldom explored in the Brazilian context, especially considering the particularities of relationships, such as operations with controlling/controlled and affiliate companies. Furthermore, in Brazil, the reasons for the formation of pyramid structures are controversial and require empirical evidence, given a lack of literature on this topic (Aldrighi & Postali, 2011).

The empirical contribution consists of applying the quantile regression method for panel data, which is innovative and suitable for longitudinal analyses. Thus, the results contribute to the Brazilian literature, showing how a pyramid structure influences each of the levels of values of RPTs performed between controlling/controlled and affiliate companies.

The results can help improve information disclosure processes concerning companies listed on the stock exchange. For example, many descriptions of RPTs are general, not clearly describing the operation performed. Thus, due to the recent mandatory disclosure of RPTs (2010), standardization and improved disclosure of information can be sought, with valuable results for institutions regulating the capital market.

In addition, the fact that corporate governance showed no moderating role might indicate that the legal environment in the Brazilian market allows controlling shareholders to use strategies to ensure their voting power. Consequently, the results are of interest to minority shareholders, who may pay attention to RPTs among companies belonging to a pyramid structure, given the risk of expropriation and private benefits. In short, considering the breadth of topics such as firm value, performance, and corporate governance, evidence from the Brazilian context is important, particularly when considering RPTs and pyramid ownership.

General limitations are inherent to the research method used, which is susceptible to the endogeneity present in corporate governance studies. Another intrinsic limitation of this study is the definition of variables, such as, for example, the use of binary variables for some aspects addressed here.

Another limitation refers to the time frame; 2017 was the last year for which data were available in the database. The first year considered in the analysis refers to the time when data started being disclosed in the reference form. Additionally, note that due to the focus in this study, the selection criterion for pyramid structures was based on the existence of at least one intermediary listed. This definition was used to verify whether access of this intermediary to the stock exchange would be relevant for RPTs.

Suggestions for future research include more descriptive studies addressing RPTs. Due to the number of qualitative information, it would be appropriate to separate transactions according to nature and verify their determinants. RPTs can also be analyzed from other perspectives; as such operations are used as a way to expropriate minority shareholders. Literature is found regarding the interaction between RPTs, performance, and firms' value, but empirical results for Brazil are still scarce, especially addressing the same time frame as the one addressed here. Evidence basically serves to guide the formulation of new research hypotheses, which can contribute to a better understanding of the motivations for forming pyramid structures and RPTs in the Brazilian market.

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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.

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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;
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  - 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[1]

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

3.1 Tables

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

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

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

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

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

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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
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