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Accounting and Actuarial Students Expectations about Brazilian Corporate Governance Practices after Car Wash Operation

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Abstract

This paper aims to develop a better understanding of accounting and actuarial students' expectations of the Brazilian corporate governance after the car-wash operation. Additionally, is evaluated the self-comprehension of these students about the corporate governance system and its mechanisms. Using a previously published survey, data were collected from two colleges in the São Paulo city, totaling 112 responses. Data were initially submitted to a confirmatory factorial analysis (CFA) for the constructs built, which were used after to composed a structural equation model (SEM). The main finding indicates that these students are skeptical about the increase in the Brazilian corporate governance post-car wash, this result is supported by the background development and denotes in a certain way the students' consciousness related to the need of deep reforms in business environments. Furthermore, respondents listed human resources strategic management as the most prominent corporate governance tool. However, the students revealed certain disbelief of traditional mechanisms such as the board of directors and internal audit as potential inhibitors of fraud and corruption. This study is limited by the inclusion of accounting and actuarial students at only two São Paulo – Brazil universities. Further studies can ampliate this sample, as well as, consider other colleges and majors. This paper contributes to the literature related to corporate governance and education bringing a holistic assessment of the students' perception, encouraging the discussion of current models and instruments of Brazilian governance, especially in the classroom, as these were not sufficient to inhibit the frauds and corruptions evidenced.

Key-words: Corporate Governance Education; Accounting and Actuarial Students; Confirmatory Factorial Analysis (CFA) Structural Equation Modeling (SEM); Car-wash operation.

1. INTRODUCTION

Since Jensen and Meckling (1976) formalized the agency conflict, following the seminal work of Berle and Means (1932), the body of knowledge called corporate governance gained researching scale focused on the management practices of organizations. In a modernistic way, corporate governances have been directed to guarantee the well-being of all the organizations' stakeholders and not only shareholders (Jacoby, 2005).

However, studies systematizing the teaching of corporate governance for business students, are still rare and incipient, some outstanding examples are Jacobs (2009), Rezaee, Zhang, and Saadullah (2011), Rezaee et al. (2012), and Zuckwelier, Rosacker, and Hayes (2016).

Potentially the scarcity of studies involving education and governance comes from the fact that "corporate governance with the agency problem: the separation of management and finance. The fundamental question of corporate governance is how to assure financiers that they get a return on their financial investment. ". Under this scope, a more considerable amount of targeted research is expected for market agents and corporations. However, Rezaee, Zhang, and Saadullah (2011) point out that teaching the concepts and fundamentals of corporate governance, especially for business students, is an excellent opportunity to instill in future leaders knowledge of ethics, integrity, competence, and professional accountability.

This discussion gains particular prominence from the perspective of the current moral-ethical crisis faced by public-private relations in Brazil, which earned more media momentum with the beginning and development of the car-wash operation. In this context, the present study aimed to evaluate the perception of accounting and actuarial students of the mechanisms that form a corporate governance system (Zuckwelier, Rosacker & Hayes, 2016, Tysiac, 2012, Rezaee et al., 2011, Khongmalai, Tang & Siengthai, 2010; Jacobs, 2009; Denis & McConnell, 2003 Shleifer & Vishny, 1997).

Furthermore, in a more forward view, the following question was formulated: *what are the expectations of accounting and actuarial students about the effects of the car-wash operation on the corporate governance practices of Brazilian companies*?

The focus on accounting and actuarial students was considered appropriate given their greater involvement in matters related to the topic of corporate governance, as well as their higher familiarity with issues related to the corporate risk management (Zuckwelier, Rosacker & Hayes, 2016).

Aiming at the achievement of these goals, it was adapted to the current context with the insertion of specific questions about students' expectations regarding governance practices in the post-car wash, a questionnaire initially formulated by Khongmalai, Tang & Siengthai (2010), and after complemented by Zuckwelier, Rosacker & Hayes, 2016. A total of 112 responses were collected from two universities located in the city of São Paulo. Data were initially submitted to a confirmatory factorial analysis (CFA) for the elaboration

of constructs (latent variables), used after to form a structural equation model (SEM), allowing the simultaneous evaluation of the corporate governance mechanisms.

In a general way, the results indicated that the students surveyed claim a good understanding of the importance of the corporate governance for their careers, as they suggest that this topic is relevant to the business development. Also, factors such as the board of directors and internal audit were somehow interpreted by students as ineffective to inhibit the managers' misconduct. Regarding the central evaluation of this study, it was verified that the researched students are skeptical of the potential improvements in corporate governance practices after the car-wash operation. Such results are potentially indicating that the accounting and actuarial students surveyed, understand the need for broader reforms in the Brazilian corporate arrangement, which will not necessarily come from the fact that there is an ongoing federal investigation.

This paper contributes to the literature related to corporate governance and education, as it brings a holistic assessment of the students' perception encouraging the importance of the discussion about the current models and instruments of governance present in Brazil, especially in the classroom, as these were not sufficient to inhibit the frauds and corruptions evidenced.

The remaining of the paper is organized as follows: (ii) theoretical background where the main arguments are discussed and, posteriorly, raised the hypotheses; (iii) methodological procedures adopted and presentation of the proposed theoretical model; (iv) presentation of the CFA and the results of the regressed structural model; and (v) conclusions.

2. THEORETICAL BACKGROUND

This section outlines the importance of corporate governance education for business students, followed by the operation car wash timeline, and the hypotheses raised.

2.1. CORPORATE GOVERNANCE FOR BUSINESS STUDENTS

Corporate governance (CG) has become a prominent topic of the discussion in market and academic. Becht, Bolton and Roell (2002), point out the reasons: (i) the worldwide wave of privatization; (ii) pension fund reform and the growth of private savings; (iii) the takeover wave of the 1980s; (iv) deregulation and the integration of capital markets; (v) the 1998 East Asia crisis, which has put the spotlight on corporate governance in emerging markets like Russia and Brazil; and (vi) a series U.S. such as Enron and WorldCom. Beyond this reasons, Silveira (2014) added the global financial crisis in 2008.

In this sense, Rezaee et al., (2012) examined the importance of CG and ethics education in accounting curriculum, according to the authors view corporate governance has had a significant impact on academy and market, however corporate governance education has rarely been debated in academic research. Coffee (2006) mention the failures of gatekeepers in cases such Enron and WorldCom, and he points out the importance to teach corporate governance to students.

Furthermore, Rezaee, Zhang, and Saadullah (2011) mention that corporate governance (CG) is an essential concept to prepare future business leaders with integrity, competency, and accountability. Zuckwelier, Rosacker, and Hayes (2016) mention the relevance of CG education indicating the US Treasury Department recommendations business schools and accounting programs include such topic in their curriculum (Department of Treasury, 2007).

The Advantage Quality, Global Business Education (AACSB, 2005) found in an international resource with 500 accredited business schools, that 8 percent of them have the corporate governance in their structure as a required or optative discipline.

A recent study by Zuckwelier, Rosacker, and Hayes (2016) applied the questionnaire to business students from two American universities to identify students' perceptions of the relative importance of best corporate governance. The survey was developed by Khongmalai, Tang, and Siengthai (2010), which applied it to experienced professionals of state-owned enterprises in Thailand. It is divided into six categories which were considered most important by the managers of state-owned enterprises: board of directors (BD), internal audit (IA), information technology (IT), internal controls (IC), human resources of strategic management (HRSM) and risk management (RM).

Zuckwelier, Rosacker, and Hayes (2016) found out that students understand HRSM as the essential practice of corporate governance, after RM, IC, BD, IT and IA. On the other hand, the results of the perceptions of the experienced professionals of the work of Khongmalai, Tang, and Siengthai (2010) in the following order: HRSM, IT, BD, RM, IA, and IC.

2.2. THE OPERATION CAR WASH AND THE NEED TO DISCUSS CORPORATE GOVERNANCE[1]

The car wash is a police operation initiated in 2014 with the investigation of money laundering at gas stations and a car wash, so the name. However, what started with a small business operation turned out to be the biggest corruption scandal in Brazil's history and one of the largest in the world (BBC, 2017; The Guardian, 2017).

The “doleiros” (black market money dealers) who were involved in money laundering also worked on corruption schemes with executives from the largest company in Latin America. Petrobras is a state-owned oil and gas company that had the highest market value in Latin America, the flagship of the Brazilian economy that had the most significant oil discovery of the 21st century, accounting for more than one-eighth of all investments in Brazil (The Guardian, 2017; Folha de São Paulo, 2014).

According to the investigations, directors of the company overpriced contracts with contractors for construction of offices, refineries, platforms among others. This scheme diverted from 1 to 5% of contract values and worked to enrich the company's directors and politicians and to maintain the government's coalition (El País, 2017).

Table 1 summarizes the main events of the police operation since 2014. It is important to mention that until 2018, the operation car wash still in progress, naturally without a known data for its closure.

Table 1: The car wash chronology

Dates	Events
March 17, 2014	The police arrested 17 people, including Paulo Roberto Costa, director of refining and supply at Petrobras, between 2004 and 2012. The operation is called ‘Lava Jato’ (Car Wash)
November 14, 2014	Federal police launched a new phase of the car wash operation, which involved searches of large contraction companies such as Camargo Correa, OAS, Odebrecht and seven other companies.
March 6, 2015	The Federal Supreme Court authorizes investigating 12 senators and 22 deputies for corruption in Petrobras
June 19, 2015	The powerful businessman Marcelo Odebrecht is arrested, president of the construction company that takes his last name. He is sentenced to 19 years and four months in prison.
August 3, 2015	Detained José Dirceu, chief of staff of former president Luiz Inácio Lula da Silva. The following year he will be sentenced to two terms of imprisonment, at 23 years, three months and 11 years.
November 25, 2015	The Labor Party (PT) senator Delcídio do Amaral is detained for obstructing the investigation. Amaral decides to confess and associates the then president Dilma Rousseff and Lula
March 10, 2016	The São Paulo Attorney's Office denounces Lula for money laundering and concealment of assets.
March 22, 2016	Investigators find in Odebrecht Construction a system of "professional" corruption based on the payment of bribes.
May 12, 2016	Rousseff is suspended from office for adulterating public accounts in a separate case. Michel Temer, Vice-President, took over the Presidency on an interim basis.
May 23, 2016	A hollow conversation overthrows the prime minister of the interim government. Romero Jucá had to leave the Ministry of Planning hours after Folha de S. Paulo published a recording in which he suggested articulation to contain Car wash Operation, having as one of the strategies the impeachment of Dilma Rousseff. It will be the first of the seven ministers that Temer will lose directly or indirectly achieved by the operation.
June 15, 2016	Temer is implicated in the plot by Sérgio Machado, former president of Transpetro, a Petrobras subsidiary.

[1] Due to the imminence of the facts and the still early academic literature on the car-wash operation, this section was primarily elaborated based on news stories published in renowned newspapers.

August 31, 2016	Dilma is definitively deposed by the Senate. Temer is the interim president.
September 26, 2016	Police arrest Antonio Palocci, former finance minister and former head of government of Rousseff.
October 19, 2016	Former deputy Eduardo Cunha, an ultraconservative who gave impetus to Rousseff's impeachment, is arrested for corruption. At the end of March 2017, he will be sentenced to 15 years and 4 months in prison for corruption.
January 19, 2017	Judge Teori Zavascki, in charge of the Car wash, died in the fall of the small plane in which he traveled.
January 30, 2017	Eike Batista, who was the richest man in Brazil, is arrested in an unfolding of the Petrobras case.
February 16, 2017	Prosecutors from 11 countries announced that they will investigate Odebrecht's crimes in coordination.
March 14, 2017	Attorney General Rodrigo Janot calls for the opening of 83 investigations against politicians with a privileged forum, based on the confessions of former Odebrecht executives.
April 11, 2017	The Federal Supreme Court agrees to open investigations into eight government ministers of President Michel Temer. The case also includes 29 senators, at least 40 deputies, and three governors.

Source: Adapted from Folha de São Paulo (2014); El País (2017)

The car wash operation was a milestone in the Brazilian history with more than $ 2 billion paid by Petrobras in bribes and secret payments. Oderbrecht spent $ 3.3 billion in bribes. More than 1,000 politicians associated with corruption case of the JBS. Sixteen companies involved with corruption, at least 50 accused congressional representatives, four former presidents under investigation, and politicians, as well as businesspersons, imprisoned (EL País, 2017; The New York Times, 2017; Bloomberg, 2017).

However, political problems remain far from being wholly resolved; there are a large number of politicians cited in recordings that stay in power, including the actual president (BBC, 2017).

It is important to be highlighted that corporate governance is a unique topic principally for emerging markets as Brazil because according to Claessens and Yurtoglu (2013) better corporate governance systems in emerging economies promote greater access to financing, lower cost of capital, better performance, and more favorable treatment of all stakeholders.

Furthermore, following the Coffee (2006) approach employed to dissect the Enron crisis in the US stock market, it will be necessary understand how the Brazilian gatekeepers have been failed such as other corporate governance mechanisms to the point of allowing corporate fraud. In this way, we understand that corporate governance education for Brazilian business students plays a primary role in this debate for the same reasons mentioned by the Rezaee, Zhang, and Saadullah (2011).

2.2. HYPOTHESES DEVELOPMENT

Rubino and Vitolla (2014) studied how firms have used information technology (IT) as support for Enterprise Risk Management (ERM). According to the authors, the supports provided by IT to ERM creates an integrated corporate governance tool that allows companies to achieve internal controls (IC), risk management (RM), and internal audit (IA) purposes. Regarding Board of Directors (BD), Raghupathi (2007, p. 93) argue that the "board of directors are beginning to look beyond the accounting roots of IT governance toward the risk of legal liability and harm to product brand and corporate reputation." Klamm, Kobelsky, and Watson (2012) indicate that the board of directors plays a matter role in IT investments monitoring the returns of its projects. Zuckwelier, Rosacker, and Hayes (2016) findings indicate that North-American business students appointed IT as a less relevant primary corporate governance instrument than other mechanisms such as risk management and internal controls, for instance. Taking into consideration these studies, we are motivated to formulate the following hypothesis.

H1: The higher understanding of information technology (IT) relevance in a business model, the greater the subsequent comprehension of the board of directors (BD), internal audit (IA), internal control (IC), and risk management (RM) relevance for corporate governance purposes.

Ege (2015) found that internal audit function quality increases after the management misconduct. This result is very aligned with the Brazilian business environment, because companies like Petrobras, for example, reinforce its reports after the operation ‘Car Wash’ with actions to mitigate future frauds, including the internal audit (IA) mechanism.

Although authors such as Tysiac (2012) and Ege (2015) highlight the relevance of internal audit after accounting and finance milestones, like the Sarbanes-Oxley, in the Brazilian context, expressive frauds occurred in companies that had internal audit departments and reported them as a tool of corporate governance. This fact may have created in the accounting and actuarial students, who answered our survey, a bias that the internal audit would not be able to act to inhibit management misconducts preventively. From this perspective, we raised our second hypothesis.

H2: The higher the relevance attributed to the internal audit (IA), the less self-declared knowledge about corporate governance (SKCG).

The relationship between internal control and corporate governance has been studied by several authors (Denis & McConnell, 2003; Daily, Dalton & Canella, 2003; Krishnan, 2005; Klamm, Kobelsky & Watson, 2012). In general means, these authors argue that internal controls, more specifically after the Sarbanes-Oxley Act, are an efficient way to monitor the management activities and assure that it has been conducted to maximize the firms' interesting. Zuckwelier, Rosacker, and Hayes (2016) found that internal control (IC) has a very matter role in the corporate governance system under the North-American business students' perceptions. From this line of arguments, we raised our third hypothesis.

H3: The higher the relevance attributed to the internal control (IC), the more self-declared knowledge about corporate governance (SKCG).

Board of directors (BD) is a corporate governance mechanism responsible for ensuring that the management pursues ways to optimize the shareholders' interests (Adams, Hermalin & Weisbach, 2008; Zuckwelier, Rosacker & Hayes, 2016). Several authors such as Denis and McConnell (2003), Shivadashi and Zeinner (2004), and Carver (2007), have discussed best strategies to increase the effectiveness of BD performance. However, Khongmalai, Tang and Siengthai (2010, p. 618) mention that: "the failure of boards of directors at Enron and WorldCom highlighted the need for more appropriate instruments to prevent misconduct by the board of directors." Coffee (2006) comment that one of the causes of the American stock market crisis of 2001/2002 was the board of directors without independence to supervise the managers' conduct.

This line of argumentation about the board of director mentioned by Coffee (2006) and Khongmalai, Tang and Siengthai (2010), is in order with the Brazilian environmental as demonstrated by the operation 'Car Wash'. The most prominent Brazilian public company, Petrobras, had in its board of directors, politicians that were indicated by the Minister of Economy, who did not necessarily possess enough technical knowledge to carry out the activities that would be required of them as advisors.

Given the recent context of corporate crises and scandals in Brazil, it is expected that although the board of directors is a critical element in a corporate governance system, accounting and actuarial students have some disbelief about the ability of boards of directors to inhibit misleading actions by corporate managers. In this way, we establish our fourth hypothesis.

H4: The higher the relevance attributed to the board of directors (BD), the less self-declared knowledge about corporate governance (SKCG).

Knechel and Willekens (2006) using a database of Belgium firms, identified that audit fees are lower when a company discloses a relatively high level of compliance risk management (RM). Bhimani (2009) mention that RM concept helps companies to make the deployment of the internal controls transparent and visible, in this context the author relates that risk management and corporate governance are inextricably interdependent.

Accounting and actuarial students, especially the second group, are taught to understand the importance of risk management in the companies' business model. Vaughan and Vaughan (2014, p. 16) establish that: "Risk management is a scientific approach to dealing with risks by anticipating possible losses and designing and implementing procedures that minimize the occurrence of loss or the financial impact of the losses that do occur." Our fifth hypothesis follows from these considerations.

H5: The greater recognition of the importance of the risk management (RM) activities, the better self-declared knowledge of corporate governance (SKCG).

Zuckwelier, Rosacker, and Hayes (2016) indicate that human resources strategic management (HRSM) was recently added as a critical element of corporate governance studies. Martin and Gollan (2012) offering a framework to incorporated HRSM in the CG systems aiming to increase the effectiveness in the allocation of the teamwork in the right positions. Zuckwelier, Rosacker, and Hayes (2016) also verified that HRSM was the most critical element of CG regarding the percentage of total variance according to the North-American business students' view. This is a very interesting result because Vaughan and Vaughan (2014) describe two main methodologies to deal risks in a broad sense, being one way called engineering approach and another labeled human approach.

This background employed in a corporate governance perspective, allows us to understand that internal controls, internal audit, and informational technology are clear examples of the engineering approach to handling agency conflict, while HRSM is a direct demonstration of how the human method can also be used to deal with

the agency conflict. Vaughan and Vaughan (2014) mention that these approaches can be engaged together to increase the risk management effectiveness. After these considerations, we formulated our sixth hypothesis.

H6: The higher the relevance attributed to the human resources strategic management (HRSM), the better self-declared knowledge of corporate governance (SKCG).

The most relevant interaction between latent variables in this studied is the association among the self-declared knowledge of corporate governance (SKCG), and the construct developed explicitly for this research called corporate governance expectations after the 'car-wash' (CGECW). The relative importance of corporate governance, here nominated as SKCG, was previously developed by Zuckwelier, Rosacker and Hayes (2016), to assess the perception of business students about the corporate governance in their professional career. In a general way were formulated questions to achieve the students' self-declaration about the relevance and believe about corporate governance.

Primarily, we adapted the questions provided by Zuckwelier, Rosacker, and Hayes (2016), creating the construct SKCG. In this step, our primary purpose was to evaluate the association between this latent variable and, BD, IA, IC, HRSM, and RM simultaneously. Furthermore, we developed 25 specific new questions aiming to capture the students' expectations about the Brazilian corporate governance after the operation 'car wash', from these further questions we composed the construct CGECW.

In spite of the corporate governance relevance preconized by the literature (e.g. Denis & McConnell, 2003; Daily, Dalton & Canella, 2003; Krishnan, 2005; Klamm, Kobelsky & Watson, 2012; Tysiac, 2012; Ege, 2015; & Zuckwelier, Rosacker and Hayes , 2016), it is expected that the accounting and actuarial students do not have positive expectations regarding the Brazilian corporate governance in the period post the operation 'Car Wash'.

According to Jacoby (2005), the corporate governance is not a vague jargon to be used by firms only to emphasize their management activities. Jacoby (2005) highlights that corporate governance is a set of actions, which has to be linked with the interests of the society, and only through this path can be legitimated by the stakeholders, including the students.

Brazilian corporate governance demonstrated several failures. However, these failures do not only result from internal controls that did not point out mistakes or from internal auditors that were unfit in their activities, more than that, but the capital structure model of some Brazilian organizations is also that apparently, it is wrong. The term public companies in Brazil does not make a direct relation to that group of firms with the pulverized capital in stock markets mentioned by Berle and Means (1932). Brazilian public companies sometimes are state-owned firms, in which the government participates as the principal shareholder, and may even appoint politicians or someone related to them to technical positions such as the board of directors as well as use such firms to achieve specific public economy goals to the detriment of other shareholders. Under this context, we formulate our seventh hypothesis.

H7: The greater self-declared knowledge of corporate governance (SKCG), the less corporate governance expectations after the 'car-wash' (CGECW).

3. METHODOLOGY

This section presents the most relevant details about the methodological procedures related to data collection and the statistical approach.

3.1. DATA COLLECTION

Business students were recruited in two colleges located in Brazil (public and private) in 2017, more specifically this study surveyed students in the central of the São Paulo city, totaling 112 participants. We focused on accounting and actuarial courses in both universities, because according to their curriculum, the background of these degrees are oriented to risk management, internal and external audit, internal controls, among others (Zuckwelier, Rosacker & Hayes, 2016; Tysiac, 2012; Rezaee et al., 2011; Khongmalai, Tang & Siengthai, 2010; Jacobs, 2009; Denis & McConnell, 2003 Shleifer & Vishny, 1997). Furthermore, we also choose the two courses here researched, because they are offering corporate governance discipline involving the primary literature of this topic (e.g., Berle & Means, 1932; Jensen & Meckling, 1976). Table 2 presents the student's profiles.

Table 2: Profiles of Participants

Major / Professional Experience	Without	<= 1 Year	> 1 <= 3 Years	> 3 <= 5 Years	> 5 Years	Total
# Accounting Students	4	10	36	8	20	78
% Accounting Students	5%	13%	46%	10%	26%	100%
# Actuarial Students	6	10	6	2	10	34

% Actuarial Students	18%	29%	18%	6%	29%	100%
# Total	10	20	42	10	30	112
% Total	9%	18%	38%	9%	27%	100%

Source: Authors (2018).

Using the total line as a reference, it is possible to verify that only nine percent of the participants mention there is no professional experience, while the majority, almost thirty-eight percent, declared to have professional experience between one and three years of career. The second column with more participation it is about the students who stated professional expertise over five years, thereabout twenty-seven percent.

Comparing both groups, it is possible to verify that the number of accounting students is higher due to just one school offer this major. In general terms accounting students have declared more experience in the professional field than actuarial respondents, almost forty-six percent of accounting participants mention they had between one and three years of experience, while the higher percentage of actuarial experience is less than one year. The percentage of accounting and actuarial students, who answered more than five years of professional experience, is the same, respectively, twenty-six percent and twenty-nine percent.

3.2. CONSTRUCTS AND VARIABLES

The survey's constructs composed eight questions groups: Board of Director (BD), Human Resources Strategic Management (HRSM), Internal Audit (IA), Internal Control (IC), Information Technology (IT), Risk Management (RM), Self-declared Knowledge of Corporate Governance (SKCG), and Corporate Governance Expectations after 'Car-Wash' operation (CGECW). Table 3 reveals a brief description of the constructs and the number of questions employed to measure them.

Table 3: Constructs of the structural proposal model

Constructs	Definition	# of indicators	Previous Literature
BD	Higher scores indicate high expectations about the role of the board of directors as a corporate governance tool	9	Zuckwelier, Rosacker & Hayes (2016); Khongmalai, Tang & Siengthai (2010)
HRSM	Higher scores indicate high expectations about the role of the human resources strategic management as a corporate governance tool	12	
IA	Higher scores indicate high expectations about the role of the internal audit as a corporate governance tool	5	
IC	Higher scores indicate high expectations about the role of the internal control as a corporate governance tool	5	
IT	Higher scores indicate high expectations about the role of the information technology as a corporate governance tool	10	
RM	Higher scores indicate high expectations about the role of the risk management as a corporate governance tool	7	
SKCG	Higher scores indicate high self-declared knowledge about corporate governance and its role in companies successful	3	
CGECW	Higher scores indicate high expectations about Brazilian firms corporate governance expectations after the car-wash	25	Developed for this research

Source: Authors (2018).

For all the questions were used a Likert's scale from 1 (strong disagree) to 5 (strong agree). The questionnaire is presented in Appendix A.

3.3. STRUCTURAL EQUATION MODELING PROPOSED

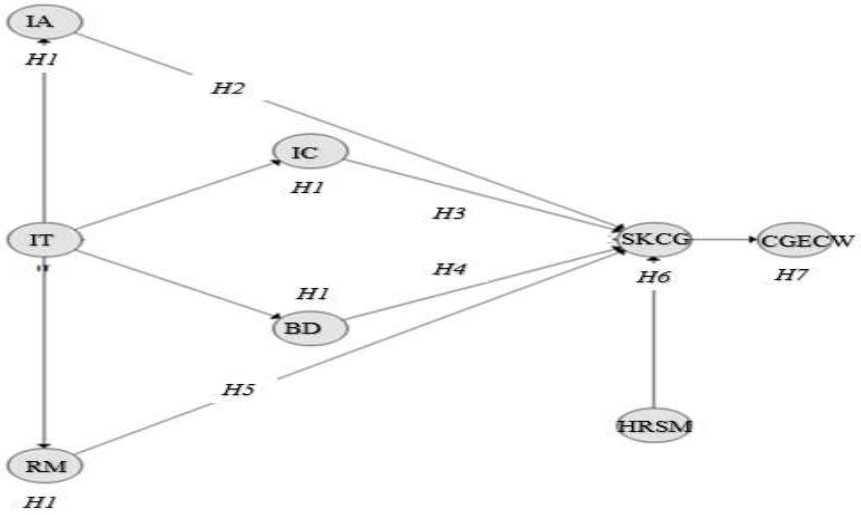
Zuckwelier, Rosacker & Hayes (2016) and Khongmalai, Tang & Siengthai (2010), assessed the corporate governance components here studied in an isolated way, we intend first to verify the interaction between the CG tools cited in Table 3 added the CGECW. To achieve this purpose, we developed a structural equation modeling

(SEM) as showed in Diagram 1. The operational of SEM occur by the Partial Least Square (PLS), for this reason commonly is used the name PLS-SEM. In essence, the PLS algorithm is a sequence of regressions concerning weight vectors. The weight vectors obtained at convergence satisfy fixed point equations (Wold, 1982).

According to Tenenhaus et al. (2004), the SEM allows a simultaneous regression of several equations interrelated among them. From this procedure, it is possible to extract two set of variables: latent and observable. In our case, the questions are the observable variables, and the constructs are the latent variables, following the Diijkstra (2010) orientation.

The theoretical model presented below in Diagram 1, reveals our conjectures about the interrelationships between these two groups of variables, signaling the paths among the hypotheses raised according to the background.

Diagram 1: Theoretical Model Proposed



Source: Authors (2018).

Hair *et al*. (2017) mention that the PLS-SEM is an instrumental technique to explore questionnaire data as well as allows results about inferences between latent variables that cannot be achieved using procedures like factorial analysis, for instance.

4. RESULTS

In this section are presented the latent variables validation using a confirmatory factorial analysis (CFA), and the hypotheses verification through the structural equation model (SEM).

4.1. CONFIRMATORY FACTORIAL ANALYSIS AND CONSTRUCTS VALIDATION

Structural equation models are commonly validated through two-stage procedures (Anderson and Gerbin, 1998; Vieira, Milach & Huppes, 2008), being (i) equations' built whose measurements are acceptable through a confirmatory factorial analysis (CFA); and (ii) verification of the global adjustment and the magnitude of the estimated coefficients.

Hair *et al.* (2017) emphasize that the factorial analysis refers to a statistical procedure employed in the construction of abstract groups starting from observed variables. This method results in the reduction of the variables' number due to the clustering. The use of CFA also contributes to the evaluation of the reliability and validity of the constructs (Garver & Mentzer, 1999; Vieira, Milach & Huppes, 2008). In this way, questions whose correlation coefficients were shown to be less than 0.5 were excluded, as mentioned by Hair et al. (2017).

Although the original model has a large number of observable variables, derived from the questionnaire, aiming to reduce the number of degrees of freedom, as well as, in agreement the factorial load of 0.5 established, was considered only three observable variables for each construct, as illustrated in Table 4. Thompson (2006) mention a simple logic related to the number of variables: the more variables, the larger the sample. For this reason, our model was reduced after the CFA. All the regressions were obtained through the Smart-PLS version 3, using the maximum likelihood method.

Table 4: Question Remaining after Confirmatory Factorial Analysis (CFA)

Index	Questions
BD	*Board of Directors*
Q5.1	The Board of Directors should participate in strategic planning.
Q5.3	Members of the Board of Directors should have experience in relevant industries.
Q5.8	Members of the Board of Directors should exchange critical information and comments.
CGECW	*Corporate Governance Expectations After Car-wash*
Q11.6	There will be more indication of more qualified advisers / experience.
Q11.15	Directors and officers will be less able to override the effects of internal controls under the illegal activities practiced.
Q11.18	The internal audit will be better able to identify and alert possible illegal activities.
HRSM	*Human Resources Strategic Management*
Q9.1	Organizations should align human resource strategy with corporate strategy.
Q9.4	Organizations should align their manpower plan with their strategic business plan.
Q9.5	Organizations should align employees' key performance indicators with departments' and organizational key performance indicators.
IA	*Internal Audit*
Q8.1	Internal auditors should provide recommendations to improve internal control.
Q8.3	Organizations should emphasize risk-based audits.
Q8.4	Organizations should have adequate numbers of qualified internal auditors.
IC	*Internal Control*
Q7.1	Organizations should communicate a clearly- specified segregation of duties and authorization.
Q7.4	Control activities should be realized in all departments.
Q7.5	Organizations should emphasize risk-based control.
IT	*Information Technology*
Q10.4	Organizations should provide information technology to support risk management.
Q10.5	Organizations should provide information technology to support internal control and audit.
Q10.7	Departments should collaborate in developing information technology applications.
RM	*Risk Management*
Q6.1	Organizations should align their risk management plan with corporate strategy.
Q6.2	Organizations should identify key risk indicators at the corporate level.
Q6.3	Organizations should cascade (pass along) key risk indicators to relevant departments.
SKCG	*Self-declared Knowledge of Corporate Governance*
Q11.1*	I understand the extent of the moral and ethical crisis that the car wash operation evidenced in the Brazilian private sector
Q4.2	I believe corporate governance is important to business.
Q4.3	I believe understanding corporate governance concepts will help me in my career.

*This question was moved from CGECW to SKCG due to its self-declared idiosyncrasy.

The measurement adjusts for the constructs' validity and reliability estimated by the maximum likelihood; Composite Reliability (CR), Average Variance Extracted (AVE), and Cronbach's Alpha (CA), are presented in Table 5.

Table 5: Latent variables reliability and validity

Latent Variables	AVE	CA	CR
BD	0.687	0.707	0.728
CGECW	0.638	0.720	0.840
HRSM	0.657	0.739	0.851
IA	0.505	0.672	0.821

IC	0.608	0.691	0.739
IT	0.611	0.758	0.859
RM	0.629	0.675	0.728
SKCG	0.540	0.710	0.798

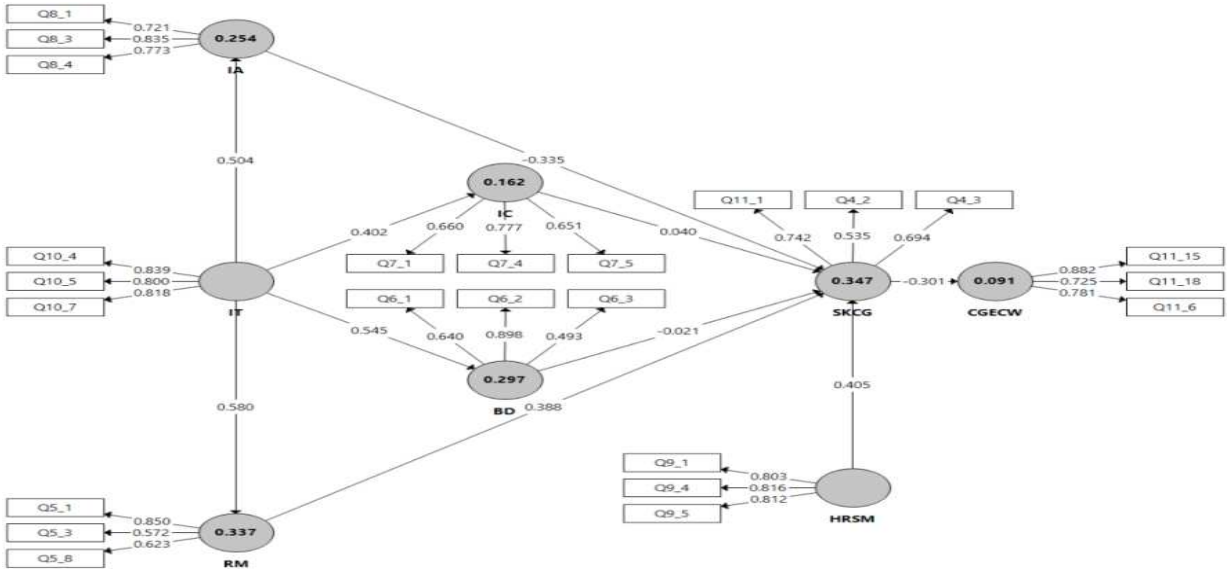
Source: Authors (2018).

According to the SEM literature review developed by Santos et al. (2015), the recommended values for the measure adjustments are AVE > 0.5, CA > 0.7, and CR>AVE, as well as, CR > 0.7. According to this reference, it is possible to mention that the CFA computed robustness latent variables. The only measures, which not attend the previous literature recommendation, are IA, IC, and RM regarding Cronbach's Alpha showing values slightly lower than the 0.7 indicated. However, all other quality criteria (AVE, CR, and CR>AVE) were met for these same constructs. In this way, it is possible to assure the constructs' reliability and validity through the confirmatory factorial analysis.

4.2. THE STRUCTURAL EQUATION MODELING

Diagram 2 shows the structural equation modeling estimated by maximum likelihood. Values on arrows denoting estimated betas and values inside the circles, latent variables, denoting the R-squared.

Diagram 2: Structural equation modeling regressed by maximum likelihood



The model quality was evaluated using the Standardized Root Mean Square Residual (SRMR) employed to assess the average magnitude of the discrepancies between expected and observed correlations; the Normed Fit Index (NFI), which is a comparison of the model Chi^2 against a benchmark; and then the root mean squared residual covariance matrix (RMS_theta) that is correlation measure between the outer model residuals.

According to Hu and Bentler (1999) an SRMR value less than 0.10, or of 0.08 in a conservative way, are considered good. Henseler et al. (2014), mention that the SRMR is a goodness of fit to avoid model misspecification. The calculated SRMR for our model is 0.093. Regarding NFI, Bentler and Bonett (1980) indicate the closer the NFI to 1, the better the fit. Lohmöller (1989) highlights that values above 0.90 are acceptable. Our model NFI is 0.918. Lastly, we evaluated the RMS_theta, which Lohmöller (1989) indicates that should be close to zero, our mode value is 0.071. Under fits matching with the literature indicates, we considered our structural model well designed and enough robustness to test the hypotheses raised in the background.

Table 6: Estimated Parameters

Path Modeling	Hypotheses	Expected Signal	Parameters	Standard Deviation
IT -> BD	H1	+	0.505***	0.084
IT -> IA	H1	+	0.504***	0.088

IT -> IC	H1	+	0.402***	0.087
IT -> RM	H1	+	0.580***	0.077
IA -> SKCG	H2	-	-0.335**	0.139
IC -> SKCG	H3	+	0.040	0.113
BD -> SKCG	H4	-	-0.021	0.131
RM -> SKCG	H5	+	0.388***	0.155
HRSM -> SKCG	H6	+	0.405***	0.132
SKCG -> CGECW	H7	-	-0.301***	0.106

p-value: * < 0.10, ** < 0.05, ***<0.01.

Previous to the analysis of the estimated model, it is necessary to discuss its fundamental logic. As highlighted above, the corporate governance constructs listed here have previously been analyzed from a univariate perspective with sample respondents from the USA and Thailand (Khongmalai, Tang, and Siengthai, 2010; Zuckwelier, Rosacker & Hayes, 2016). However, this study differs from the previous literature by analyzing such variables from a holistic perspective of a governance system, allowing simultaneous evaluations of these constructs, as in the case of the latent variable IT versus the others. Additionally, from this general assessment, it is possible to verify the relationship between the latent terms SKCG and the CGECW.

In this sense, it is not possible to reject *H1: The higher understanding of information technology (IT) relevance in a business model, the greater the subsequent comprehension of board of directors (BD), internal audit (IA), internal control (IC), and risk management (RM) relevance for corporate governance purposes.* The results showed a positive and statistically significant for all paths, being more prominent in the IT and RM relation, with of 0.580 estimated parameter significant at less than 1%. This finding is aligned with the previous literature (e.g., Raghupathi, 2007; Klamm, Kobelsky, and Watson, 2012; and Rubino & Vitolla, 2014).

In relation to *H2: The higher the relevance attributed to the internal audit (IA), the less self-declared knowledge about corporate governance (SKCG)*, it was also not possible to decline such conjecture due to the presence of a high statistical significance of less than 5%, as well as, due to a parameter estimated in line with the expected signal (-0.335). This statistical finding corroborates the central idea that accounting and actuarial students see with parsimony, and certain disbelief, the effectiveness of internal auditing as a potential mitigating element of misconduct management.

With regard to the estimated parameters for *H3*: *The higher the relevance attributed to the internal control (IC), the more self-declared knowledge about corporate governance (SKCG),* and *H4: The higher the relevance attributed to the board of directors (BD), the less self-declared knowledge about corporate governance (SKCG),* were not verified statistically significance being possible to reject both hypotheses, although the estimated coefficients are in line with the signals expected.

Furthermore, it is possible to ratify the *H5: The greater recognition of the importance of the risk management (RM) activities, the better self-declared knowledge of corporate governance (SKCG),* indicating the students surveyed attributed higher scores jointly to RM and SKCG (0.388***). This indication, potentially, can be better understood by the fact that risk management tools, such as ERM, are becoming alternatives for risks' and frauds' mitigation.

Regarding the relationship between HRSM and SKCG, it is not possible to reject the *H6: The higher the relevance attributed to the human resources strategic management (HRSM), the better self-declared knowledge of corporate governance (SKCG),* due to the high statistical significance (0.405***).

Finally, the most critical evaluation of this work resides in the verification of the relationship SKCG and CGECW. The estimated parameter for this evaluation showed a negative signal and a remarkably higher significance (-0.301***). This result allows us to accept the conjecture of *H7: The greater self-declared knowledge of corporate governance (SKCG), the less corporate governance expectations after the 'car-wash' (CGECW).*

This result should not necessarily be understood as general disbelief by the accounting and actuarial students about the corporate governance after car-wash. Most likely, this finding indicates that the students surveyed understand the need to discuss more in-depth ways mechanisms to increase corporate governance in Brazil to prevent risks of fraud and corruption.

Besides, political factors such as the involvement of interim President Michel Temer, the lack of alternatives and political leadership that can promote the necessary changes in a national context, may have influenced the result presented here.

5. CONCLUSIONS

The primary purpose of this study was to evaluate the expectations of accounting and actuarial students about the corporate governance practices of Brazilian companies after the car-wash operation. Additionally, it was also evaluated the perception of such respondents about the relevance of the so-called governance

mechanisms, being: board of directors, human resources strategic management, internal audit, internal control, and risk management.

Aimed at achieving these objectives, a questionnaire was adapted from Zuckwelier, Rosacker & Hayes (2016), and Khongmalai, Tang & Siengthai (2010), which was applied focusing on students of the mentioned courses in two colleges located at the Sao Paulo city. A total of 112 responses were obtained. After collecting such information, the data were submitted to a confirmatory factorial analysis (CFA), aiming at the creation of constructs that allowed the estimation of parameters through Structural Equation Modeling (SEM). It is important to mention that this procedure differentiated this research from the previous literature since it allowed all the constructs to be evaluated simultaneously.

The statistical findings indicated that the students surveyed understand the importance of corporate governance for their careers and the development of corporate activities. Furthermore, they also understand the relevance of the specific mechanisms studied here, with emphasis on the importance attributed to them by human resource strategic management, information technology as a support tool and internal controls. However, regarding the expectations of Brazilian corporate governance in the post car-wash, the accounting and actuarial students surveyed did not reveal perceptions of incremental improvement, that is, the result of this evaluation was negative and statistically significant.

This finding is supported by the arguments expressed in the theoretical background. The students surveyed, in their significant majority, already initiated their professional careers, they have previous technical knowledge about the corporative back-office, and in this sense, much probably they still looking for to the car wash operation with a degree of skepticism. This result might be indicating that they understand that there is a need to carry out reforms within the broader public and private sectors and that, although the car-wash operation has brought to a light spurious relationship between politicians and businesspeople, efforts will be needed far beyond to increases the Brazilian corporate governance.

It is important to note that the present study did not involve evaluations that could analyze the respondents' perception of the relationship between corporate governance of Brazilian companies and political facts. It is suggested that future studies turn to this. Likewise, the present manuscript has a severe sample limitation, because only students from the accounting and actuarial courses are purposely analyzed from the São Paulo city, due to their greater affinity with the subject. However, such perceptions would not necessarily be maintained if other courses and even the same majors were evaluated, however, in other geographical regions of the continental country like Brazil.

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Apendix 1: Questionnaire adapted from

1. Degree course Accounting Acturial Administration Economics	2. Age: 17 – 20 years 21- 25 years 26 - 34 years 35 – 39 years More than 40 years
3. Work experience No experience Until 1 years Between 1 and 3 years Between 3 and 5 years More than 5 years	4. Please indicate your level of agreement with the following statements using the scale 1 _ Strongly Disagree to 5 _ Strongly Agree: 4.1 I believe I understand corporate governance concepts. 4.2 I believe corporate governance is important to business. 4.3 I believe understanding corporate governance concepts will help me in my career.
The next six sections ask questions about corporate governance practices. Please indicate your level of agreement with each question using the scale 1 _ Strongly Disagree to 5 _ Strongly Agree or "I Don't Know".	
5. *Section 1: Board of Directors*: The Board of Directors is defined as the "governing body of an incorporated firm": 5.1 The Board of Directors should participate in strategic planning. 5.2 The Board of Directors is responsible for ensuring an effective management system. 5.3 Members of the Board of Directors should have experience in relevant industries. 5.4 Members of the Board of Directors should have experience in financial or economics areas. 5.5 The Board of Directors should be independent in its decision-making. 5.6 The Board of Directors should understand the organization's operating environment.	6. *Section 2: Risk Management*: Risk Management management is defined as "policies, procedures, and practices involved in identification, analysis, assessment, control, and avoidance, minimization, or elimination of unacceptable risks": 6.1 Organizations should align their risk management plan with corporate strategy. 6.2 Organizations should identify key risk indicators at the corporate level. 6.3 Organizations should cascade (pass along) key risk indicators to relevant departments. 6.4 Organizations should direct their risk management policy. 6.5 Organizations should follow-up on risk management results. 6.6 Organizations should specify the key executive

5.7 The Board of Directors should understand the organization's business processes. 5.8 Members of the Board of Directors should exchange critical information and comments. 5.9 The Board of Directors should follow-up on the progress of board resolutions.	responsible for risk management. 6.7 The risk management system should be integrated throughout the organization.
7. *Section 3: Internal Control*: Internal Control control is defined as "systematic measures (such as reviews, checks and balances, methods and procedures) instituted by an organization to conduct its business in an orderly and efficient manner, safeguard its assets and resources, deter and detect errors, fraud, and theft, ensure accuracy and completeness of its accounting data, produce reliable and timely financial and management information, and ensure adherence to its policies and plans": 7.1 Organizations should communicate a clearly-specified segregation of duties and authorization. 7.2 I understand internal control. 7.3 Organizations should develop internal control manuals for all departments. 7.4 Control activities should be realized in all departments. 7.5 Organizations should emphasize risk-based control. 7.6 Organizations should review the effectiveness of their internal controls.	8. *Section 4: Internal Audit*: Internal audit is defined as "frequent or ongoing audit conducted by a firm's own (as opposed to independent) accountants to (1) monitor operating results, (2) verify financial records, (3) evaluate internal controls, (4) assist with increasing efficiency and effectiveness of operations and, (5) to detect fraud": 8.1 Internal auditors should provide recommendations to improve internal control. 8.2 Organizations should align the audit program with corporate strategy. 8.3 Organizations should emphasize risk-based audits. 8.4 Organizations should have adequate numbers of qualified internal auditors. 8.5 It is important to have various skill mixes of auditors. 8.6 Auditors should have consultation and recommendation capability.
9. *Section 5: Strategic Human Resource Management*: Human resource management is defined as " the administrative discipline of hiring and developing employees so that they become more valuable to the organization": 9.1 Organizations should align human resource strategy with corporate strategy. 9.2 Organizations should formulate a human resource strategy to improve employee productivity. 9.3 Organizations should formulate a human resource strategy to improve employee satisfaction. 9.4 Organizations should align their manpower plan with their strategic business plan. 9.5 Organizations should align employees' key performance indicators with departments' and organizational key performance indicators. 9.6 Organizations should implement performance-based pay. 9.7 Organizations should have career development plans for all levels of employees. 9.8 Organizations should use modern tools for human resource management. 9.9 Organizations should use tools to assess employee satisfaction. 9.10 Organizations should have expertise in strategic human resource management	10. *Section 6: Information Technology*: Information technology is defined as the "set of tools, processes and methodologies (such as coding/programming, data communications, data conversion, storage and retrieval, systems analysis and design, systems control) and associated equipment employed to collect, process, and presente information": 10.1 Organizations should align their master plan for information technology with corporate strategy. 10.2 Organizations should allocate investments for information technology based on strategic outcomes. 10.3 Organizations should provide an executive information system. 10.4 Organizations should provide information technology to support risk management. 10.5 Organizations should provide information technology to support internal control and audit. 10.6 Organizations should provide information technology to support human resource management. 10.7 Departments should collaborate in developing information technology applications. 10.8 Organizations should have collaboration capability on the information technology team. 10.9 Organizations should provide an adequate number of training programs on

practices. 9.11 Departments should collaborate in managing manpower. 9.12 Departments should collaborate in designing training and development programs.	information technology.
11. Perceptions of Corporate Governance after “car wash” operation 11.1 I understand the extent of the moral and ethical crisis that the car wash operation evidenced in the Brazilian private sector 11.2 There will be a positive impact on corporate governance practices of companies. 11.3 There shall be a reduction in the political nomination for members of boards of directors. 11.4 There will be more independent directors. 11.5 Management systems are prepared for future corruption cases. 11.6 There will be more indication of more qualified advisers / experience. 11.7 There will be greater concern about reputational risk on the part of companies. 11.8 There will be an increase in the scope of risk control for other types of risk (eg, legal, reputational and political risk). 11.9 Internal controls will be incremented to detect irregularities. 11.10 There will be more awareness that better governance practices ensure long-term sustainability. 11.11 There will be more diligence in complying with compliance activities by companies. 11.12 There will be more effective adoption of compliance instruments , and not only to comply with corporate governance manuals. 11.13 Directors and officers will be more subject to control of corporate governance instruments (eg, audit system, controller, regiments and statutes). 11.14 Administrators and directors will suffer greater repression in relation to anticompetitive , unfair and illegal conduct . 11.15 Directors and officers will be less able to override the effects of internal controls under the illegal activities practiced. 11.16 There will be increased transparency to mitigate other cases of corruption. 11.17 There will be less manipulation of accounting for the purpose of hiding corruption schemes. 11.18 The internal audit will be better able to identify and alert possible illegal activities. 11.19 The external audit will be better able to identify and alert possible illegal activities. 11.20 There will be a greater possibility for the employees of the company itself to report possible ethical deviations independently. 11.21 Compliance mechanisms will be stronger and more transparent. 11.22 Lenders and investors will demand better mechanisms to prevent corruption. 11.23 The market will penalize firms that have ineffective governance practices more strongly. 11.24 There will be more training for employees, in order to clarify doubts about certain bad behaviors from the point of view of corporate governance. 11.25 Corporate governance is a mechanism of corporate self-regulation more effective than state regulation	