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**Internal control under the approach of COSO ERM framework components: a study in a higher education institution****El control interno bajo el enfoque de los componentes del marco COSP ERM: un estudio en una institución de educación superior****Controle interno sob enfoque dos componentes do framework COSP ERM: um estudo em uma instituição de ensino superior****Authors****Kamilla Alves Barreto**

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### Abstract

**Purpose:** The present work aimed to investigate the perception of managers in a State Higher Education Institution regarding the alignment of the institutional internal control system with international standards, as proposed by COSO in the document Enterprise Risk Management – Integrated Framework.

**Methodology:** To this end, 40 questionnaires were applied to the institution's civil servants to investigate the internal control system. For this research, data were collected using structured interviews conducted through the application of an elaborated questionnaire and the statistical analyzes were operationalized through the Mann Whitney U and the Kruskal-Wallis tests. Based on the bibliographic survey, 35 competencies related to the components of COSO ERM were listed.

**Results:** The results obtained in the analyzes presented significant evidence on the presence of mimetic isomorphism among the public servants analyzed, since a few out of the 35 skills analyzed showed statistically significant differences. By the results, it was possible to understand the general alignment level of UEPB's internal control system with the aspects recommended by COSO. Taking as reference the framework studied as an interconnected structure, where each of the risk management components represents actions necessary for attaining the organizational objectives.

**Contributions of the Study:** The research results contribute to the literature, consolidating risk management practices in the public sector and verifying the profile of agents in terms of their perception of risk management practices, allowing managers to have an operational view of the results found, leading to improvements in risk management.

**Keywords:** Internal control. COSO. Risks.

### Resumen

**Objetivo:** Este estudio tuvo como objetivo investigar la percepción de los directivos de una Institución de Educación Superior del Estado sobre el alineamiento del sistema de control interno institucional a los estándares internacionales, propuesto por COSO en el documento Gestión de Riesgos Empresariales – Marco Integrado.

**Metodología:** Se aplicaron 40 cuestionarios a empleados de dicha institución para indagar sobre el sistema de control interno. Para esta investigación, los datos fueron recolectados a través de entrevistas estructuradas, realizadas a través de la aplicación del cuestionario elaborado y los análisis estadísticos fueron operacionalizados a través de las pruebas U de Mann Whitney y Kruskal-Wallis. Con base en el levantamiento bibliográfico, se enumeraron 35 competencias relacionadas con los componentes de COSO ERM.

**Resultados:** Los resultados obtenidos en los análisis presentaron evidencia significativa sobre la presencia de isomorfismo mimético entre los servidores analizados, ya que pocas competencias, entre las 35 analizadas, mostraron diferencias estadísticamente significativas. A través de los resultados, fue posible percibir el nivel general de alineamiento del sistema de control interno de la UEPB con los aspectos recomendados por COSO. Tomando como referencia el marco estudiado como una estructura interconectada, donde cada uno de los componentes de la gestión de riesgos representan acciones necesarias para alcanzar los objetivos organizacionales.

**Aportes del Estudio:** Los resultados de la investigación contribuyen a la literatura, consolidando las prácticas de gestión de riesgos en el sector público y verificando el perfil de los agentes en cuanto a su percepción de las prácticas de gestión de riesgos, permitiendo a los gestores tener una visión operativa de los resultados encontrados, lo que conduce a mejoras en el riesgo administración.

**Palabras clave:** Control interno. COSO. Riesco.

### Resumo

**Objetivo:** Este estudo teve o objetivo de investigar a percepção dos gestores de uma Instituição Estadual de Ensino Superior quanto ao alinhamento do sistema de controle interno institucional aos padrões internacionais, propostos pelo COSO no documento Enterprise Risk Management – Integrated Framework.

**Metodologia:** Foram aplicados 40 questionários com servidores da referida instituição para investigação quanto ao sistema de controle interno. Para esta pesquisa, os dados foram coletados por intermédio de entrevistas estruturadas, conduzidas através da aplicação do questionário elaborado e as análises estatísticas foram operacionalizadas através dos testes de Mann Whitney U e de Kruskal-Wallis. Foram listadas, a partir do levantamento bibliográfico, 35 competências relacionadas aos componentes do COSO ERM.

**Resultados:** Os resultados obtidos nas análises apresentaram significativas evidências sobre a presença de isomorfismo mimético entre os servidores analisados, uma vez que poucas competências, dentre as 35 analisadas, se mostraram com diferenças estatisticamente significativas. Através dos resultados, pôde-se perceber o nível geral de alinhamento do sistema de controle interno da UEPB aos aspectos preconizados pelo COSO. Tomando como referência o framework estudado como uma estrutura interligada, onde cada um dos componentes do gerenciamento de riscos representa ações necessárias ao alcance dos objetivos organizacionais.

**Contribuições do Estudo:** Os resultados da pesquisa contribuem com a literatura consolidando as práticas de gerenciamento de risco no setor público e a verificação do perfil dos agentes frente a sua percepção quanto às práticas de gerenciamento de riscos, permitindo que gestores possam ter uma visão operacional dos resultados encontrados, levando a melhorias no gerenciamento de riscos.

**Palavras-chaves:** Controle interno. COSO. Riscos.

## 1 Introduction

The changes evidenced in the last decades brought new administration and management methods, involving concepts such as quality, efficiency, transparency, among others, affecting not only the private sector, but also the public sector (Matias-Pereira, 2012). Thus, public administrators face themselves with decisions and new challenges seeking better economic results, without losing focus on the social aspect as well. It requires reliable, qualified and transparent accounting information.

The relevance as regards legitimacy and credibility of the accounting information used in the decision-making process has been increasingly important as a means to meet the growing demand of citizens with expectations that increase at the same rate. Due to this arises the need for good governance that, according to Andrade and Rossetti (2004), should not appear as a simple fad that, temporarily, shall cease to influence the most varied relationships that can be established at various organizational levels.

This way, accounting in public sector organizations will provide the information needed for a new, results-oriented state management model so as to secure the mechanisms needed to increase efficacy, efficiency and effectiveness of public administration (managerial approach). This enables better management of operations and allocation of resources entrusted to public entities in an appropriate, efficient and cost-effective manner, as well as providing information for accountability reporting, management implementation and to report results of operations and the use of public funds, meeting the transparency requirements in ways that highlight the governmental management of public resources.

The spreading of a management model that focuses on results emerged in the scenario of changes that have been occurring in the public sector since the 1990s. This model is characterized by the implementation of management methods from private administration and greater autonomy on the part of managers.

Currently, the concepts of internal control already reflect this, as they aim to achieve the organizations' objectives and adjusting to principles of ethics, economy, efficiency, effectiveness and compliance, and the fulfillment of accountability obligations (Committee of Sponsoring Organizations of the Treadway Commission [COSO], 2004, 2013), given that good governance will be achieved through an effective internal control (Oliveira; Linhares, 2006; Araújo; Fernandes, 2012).

The COSO ERM framework is recommended by the *International Organization of Supreme Audit Institutions* (INTOSAI, 2004b) for public sector entities and, as regards the assessment of risks, provides the development of strategies for management by identifying and assessing the impacts of their occurrence.

With the appropriate financial resources to develop its actions in the areas of education, research and outreach, the State University of Paraíba (UEPB) can make a decisive contribution to solving serious problems that ravage Paraíba, including the education and healthcare sectors. The Institution has endeavored to unify the thinking of all segments of the university community for a greater understanding of financial autonomy and greater awareness about the role of the public university. With its autonomy, UEPB was able to expand and improve the quality of undergraduate education, investing in postgraduate and in research and outreach activities.

The 21st Century has come and with it the crowning of the consolidation process of State University of Paraíba, represented by the expansion and achievement of the institution's financial autonomy. With the autonomy granted through Law No. 7,643, from August 6th, 2004, UEPB inaugurated a new phase in its history.

In this scenario, the improvement and revision of the internal control systems in educational institutions can cooperate to mitigate the risks of not meeting their political, economic and social objectives, including the risks of not providing quality education and scientific improvement, which brings serious socioeconomic implications.

Thus, in order to better understand the reality of internal control systems in Public Higher Education Institutions and the way managers act to minimize their own risks, the research problem was established as follows: What is the perception of managers in a State Institution of Public Higher Education, regarding the alignment level of the institutional internal control system with the recommendations contained in the COSO ERM framework regarding risk management?

## 2 Theoretical Reference

### 2.1 Internal control in the public sector

Control is characterized as an instrument utilized by management, aiming to increase the diversity of companies and their complexity, used for the purpose of achieving good performance.

Internal control is a current and relevant theme and has been influenced by factors such as the transformations occurred in both internal and external environments. Some studies have investigated controversial issues that have affected the context of organizations, such as corruption, fraud, financial scandals (Amudo & Inanga, 2009; Cohen & Sayag, 2010; Raghavan, 2011; Peleias et al., 2013).

Investigations about their own perspectives for public sector entities still need more attention addressed to research. This approach to the topic differs (even if partially) from the organizational approach in which the debate about their perspectives for public sector entities relates to risk management and governance aspects such as compliance and accountability (Bhimani, 2009). Internal controls are mechanisms used by the Public Administration to control its activities in order to prevent fraud and correct errors in the Executive, Legislative and Judiciary spheres and within the entities themselves, in order to protect their assets and having their objectives achieved (Queiroz, 2012).

Internal control within the public administration must encompass the characteristics linked to such organizations, while maintaining a balance among values such as integrity, legality, transparency, efficiency and effectiveness (Intosai, 2004a). These characteristics are addressed by Federal Law no. 4,320, from March 17th, 1964; Decree no. 200, from February 25th, 1967; Federal Constitution, from October 4th, 1988; Complementary Law no. 101, from May 4th, 2000, also known as the Fiscal Responsibility Law (LRF); Law no. 10,180, from February 6th, 2001; and CFC Resolution no. 1,135, from November 21st, 2008, and the Brazilian accounting standards currently applied to the public sector, specifically NBC T 16.8, which deals with government internal control.

In this context, Controllershship is inserted with the goal of maintaining the internal control systems protecting the organization's assets, establishing an economic-financial information system, exerting control in order to assure that objectives are achieved according to the initial planning.

Given this, there is a significant increase in the importance placed on planning and control by managers, and controllership thus plays an important role, since it provides the necessary elements for efficient management of an institution's departments.

There is another form of public management control that deserves attention: social control, which is not exercised only through laws, rules and decrees, but essentially by society itself (Matias-Pereira, 2012). Social control implies a search for transparency and good governance exercised by citizens under public managers, being considered as important as the other types of control.

According to COSO (2013), the internal control system has three categories of objectives, which allow organizations to focus on different aspects of internal control, namely: operational, disclosure and compliance.

**Operational Aspect:** These objectives relate to the effectiveness and efficiency of the entity's operations, including financial and operating performance goals and safeguarding asset losses.

**Disclosure Aspect:** These objectives relate to internal and external financial and non-financial disclosures and may cover the requirements of reliability, timeliness, transparency,

or other terms set forth by regulatory authorities, recognized regulatory bodies, or the entity's policies.

**Compliance Aspect:** These objectives relate to compliance with the laws and regulations to which the entity is subject. Problems related to failure of internal control systems have led to losses in many organizations.

In these cases, the framework proposed by Coso (2013) is based on a widely recognized methodology as one of the best for the development of integrated structures of internal control systems, and is also applicable to public sector organizations.

## 2.2 Risk and risk management

Risk management in organizations is a subject that has been attracting a lot of attention within organizations (Spira & Page, 2003; COSO, 2004, 2013; Moeller, 2004; Power, 2009). The concepts of risk and risk management began in 1990, but the theme became prominent in 2008, in face of the financial crisis and major scandals that led to the bankruptcy of many companies, such as *Enron* and *Worldcom*, *Salad Oil* (IQBAL, 2012). According to Amudo and Inanga (2009), in the public sector, a proactive and preventive approach to any problem requires a critical evaluation of existing internal control structures, just as it occurs within private organizations.

Given the uncertainty present in the organizational environment, “risks” cannot be eliminated, but managed. That is, risks must be reduced to acceptable levels by supporting a sound process for decision-making and governance of the organization.

One of the perspectives of risk management is to detect facts that affect the achievement of organizational objectives. That said, risk is linked to the uncertainty present in the decisions taken, which can generate gains or losses (Lunkes, Gasparetto & Schnorrenberger, 2010). By considering all potential events that involve uncertainties, risks can be mitigated and opportunities identified and seized in a more proactive way, as highlighted by COSO (2004).

Brazilian accounting standards currently applied to the public sector (NBC T 16.8) incorporate this idea into government internal control, underlining the importance of knowing the risks that may affect the entity's objectives; to assess their likelihood to occur and how they will be managed; as well as establishing the managerial decision to have them mitigated (Federal Accounting Council [CFC], 2008).

The establishment of internal control standards focused on risk management was consolidated in the document called Enterprise Risk Management (ERM), issued by COSO. This document is recommended by INTOSAI in its guidelines for planning, implementation and evaluation in the public sector internal control.

## 2.3 COSO ERM (*Enterprise Risk Management*) Framework

The *Committee of Sponsoring Organizations of the Treadway Commission* (COSO) was founded in 1985, with the purpose of providing thought leadership for developing comprehensive frameworks and guidelines on internal controls, corporate risk management and fraud so as to enhance organizational performance and supervision and reduce the extent of fraud in organizations. COSO is a private sector initiative sponsored and funded by: *American Accounting Association (AAA)*; *American Institute of Certified Public Accountants (AICPA)*; *Financial Executives International (FEI)*; *Institute of Management Accountants (IMA)*; *The Institute of Internal Auditor (IIA)*.

In 1992, COSO published the book *Internal Control – Integrated Framework*. This first version has gained large acceptance and has been broadly applied worldwide. It is recognized

as a model framework for developing, implementing and conducting internal control, as well as for evaluating its effectiveness.

COSO's *Internal Control – Integrated Framework* enables organizations to efficiently and effectively develop internal control systems that adapt to corporate and operational changing environments, reducing risks to acceptable levels, and supporting a sound decision-making and corporate governance process. The Framework applies to all large, medium and small, for-profit and non-profit entities, as well as government bodies (COSO, 2013).

It should be noted that according to the components of COSO ERM, an integrated conceptual framework for risk management, there is a direct relationship amidst the objectives, which are what the entity seeks to achieve, the components, which represent what is necessary to achieve the objectives, and the entity's organizational structure (operating units and legal entities, among others), its graphical representation is made through a three-dimensional cube-shaped matrix, as shown in Figure 1.



Figure 1 COSO ERM Cube

Source: COSO (2013, p. 9).

Thus, Figure 1 demonstrates the interrelationship of the proposed risk management framework components and their integration into the management process of an organization, with the end of meeting organizational objectives.

Internal control consists of five integrated components. Next, the main considerations about each component that is part of the conceptual framework proposed by COSO ERM will be highlighted (COSO, 2013).

Control Environment, as determined by COSO, among the corporate risk management components, is the one that constitutes the basis for all other components as it provides discipline and structure, which are essential for risk management within an organization. According to Elias (2010), the control environment represents the culture of the organization, serving as a basis for other components.

The control environment is a set of standards, processes, and structures that underlie the running of internal control throughout the organization. It covers integrity and ethical values of the organization; the parameters that make possible for the governance structure be compliant with its responsibilities of supervising governance itself; the organizational structure and delegation of authority and responsibility; the process of attracting, developing and retaining competent talents; and rigor around measures, incentives, and rewards for performance.

Risk assessment establishes a basis for determining how risks will be managed. Therefore, it defines risk as the possibility of an event occur and adversely affect the achievement of objectives. Risk assessment involves a dynamic and iterative process to identify and assess risks regarding the achievement of objectives. According to Martin,

Sanders and Scalan (2014), by assessing risks an organization identifies and evaluates the changes that may significantly affect the use of the internal control system.

Control Activities, as described by COSO, are performed at all levels of the entity, at various stages within corporate processes and in the technological environment. Control activities are actions implemented through policies and procedures to ensure compliance with the rules applied by management to mitigate risks regarding the achievement of objectives. For Pereira (2008), such activities are performed during the work execution process allowing the management of internal controls and, consequently, risk mitigation.

The main concern embedded in the "Information and Communication" component is the one of ensuring that all important information for decision making is gathered and publicized to enable identification, assessment and response to risks. This element becomes essential for modern organizations. Information is required for entities to comply with internal control requirements so as to achieve their objectives. Management obtains or generates and uses important and qualified information originated from both internal and external sources for the purpose of supporting the functioning of other internal control components.

Monitoring Activities can be performed through assessments that are continued, independent, or a combination of both, to certify the presence and operation of each of the five internal control components, including the effectiveness of controls on principles related to each component. Continued assessments, inserted within corporate processes at different entity levels, provide timely information. The importance of monitoring internal control is in ensuring that the organization will continue to operate effectively (Clinton; Pinello; Skaife, 2014).

According to Poltroniere (2012), there is a synergy amidst all these components, allowing for an integrated system that resists external changes, being internal control closely related to the entity's operational activities.

### 3 Methodology

The methodological procedure used in this research was the exploratory approach, given the small amount of research carried out involving the theme. Exploratory research has as its primary objective to describe the characteristics of a given population, phenomenon or certain fact, still little explored (Gil, 1999).

According to this approach, the research can be considered as qualitative and quantitative. As for its typology a case study was chosen, since this type of study, according to Santos (1999), can be characterized by selecting a restricted research object, aiming to deepen its characteristic elements. For such, a survey was conducted through a questionnaire directly to public servants of the university object of study in this research. For this research, data were collected through structured interviews, conducted through the application of the elaborated questionnaire.

The following sections indicate the population surveyed, the design of the questionnaire adopted and the statistical treatment that was applied to the data collected.

The research population was defined based on a data gathering of UEPB's civil servants who perform functions related to the institution's management. In this way, a questionnaire was applied to UEPB's public servants in the sectors of Contracts, Agreements, Purchasing, Bidding and to the civil servants of the Assistant Dean's Office for Planning – PROPLAN and Assistant Dean's Office for Finance – PROFIN. For being it characterized as an intentional non-probabilistic research in which, according to Marconi and Lakatos (2007), the researcher is not concerned with the representativeness of the population, but rather with



knowing the perception of those who perform certain functions and positions that may influence on the opinion of others.

Considering that the research sample is a “subset of the population” (Martins & Theóphilo, 2009), in this study, the sample consisted of 40 civil servants, representing 72% of the sample.

The data collection instrument used in this research (questionnaire) was adapted from Araújo (2014), which was developed based on the recommendations contained in the COSO ERM framework (integrated structure for risk management in organizations) and was structured in order to address the eight components that make up COSO ERM, namely: internal environment; setting of objectives; identification of events; risk assessment; response to risks; controlling activities; information and communication; and monitoring.

Thus, the data collection instrument had 47 questions consisted of requiring respondents to assign a grade from 1 to 10, according to the degree of concordance with the statements presented and, for some matters, five questions was also presented containing the alternatives: “Yes” or “No”.

The final version of the research questionnaire was structured in two sections:

- Section I - identification of the respondents' profile, and
- Section II - assessment of the internal control system.

Aiming to facilitate access, and seeking as many respondents as possible, the questionnaire was applied on-site at the employees' workplace.

The data collected were tabulated using the SPSS software (version 20), and the data were analyzed using descriptive statistics. The data statistical analysis considered the Mann-Whitney U Test, which, according to Martins (2006), is a non-parametric alternative to the T Test, which can be applied to ordinal variables, and the Kruskal-Wallis test.

#### 4. Description and Data Analysis

From the statistical treatment of data, the results obtained are displayed in this section.

The data obtained sought to capture the perceptions of public servants that are inserted within the organization. For that, Table 1 presents the institution's sectors of which the respondents are part, aiming to better understand the profile of the sample:

**Table 1**

*Position held by the respondents*

| Position                        | Frequency | %    |
|---------------------------------|-----------|------|
| Contracts and Agreements Sector | 6         | 15   |
| Purchasing Sector               | 4         | 10   |
| Bidding Sector                  | 6         | 15   |
| PROPLAN                         | 5         | 12,5 |
| PROFIN                          | 19        | 47,5 |
| Total                           | 40        | 100  |

**Source:** *Research data, 2018.*

As can be seen, most of the interviewees worked at the Assistant Dean's Office for Finance – PROFIN, 47.5% of the respondents. Followed by the sector of contracts and agreements and the bidding sector with 15% of respondents each.

Considering that all the civil servants who answered the questionnaire had higher education, Table 2 presents the data associated with the respondents' profile regarding gender, age and area of training.

**Table 2**  
*Profile of the respondents*

| Gender | Frequency | %   |
|--------|-----------|-----|
| Female | 20        | 50  |
| Male   | 20        | 50  |
| Total  | 40        | 100 |

  

| AGE                | Frequency | %    |
|--------------------|-----------|------|
| 20 to 32 years old | 23        | 57,5 |
| 33 to 42 years old | 11        | 27,5 |
| 44 to 53 years old | 3         | 7,5  |
| 54 to 65 years old | 3         | 7,5  |
| Total              |           | 100  |

  

| AREA OF TRAINING    | Frequency | %    |
|---------------------|-----------|------|
| Law                 | 9         | 22,5 |
| Administration      | 7         | 17,5 |
| Accounting Sciences | 8         | 20   |
| Economics           | 4         | 10   |
| Others              | 12        | 30   |
| Total               | 40        | 100  |

**Source:** Research data, 2018.

The sample is homogeneously characterized in terms of gender, consisting of men (50%) and women (50%) with a predominant age range between 20 and 32. The average age of respondents was 34.

The majority of respondents graduated in higher education are trained in the areas of Law (22.5%) and Accounting Sciences (20%). It is perceived that this result can be mainly related to two factors: the policy of incentive to training established by the institution, and/or the requirement of this title for the exercise of some administrative functions, namely: management positions; assistant deans; coordinators of graduate programs, among others. Considering the set of information obtained about the sample, a predominance of a young and well qualified profile can be noted.

Based on the objective proposed for the research, as well as the methodological procedures adopted, statistical tests were operated to identify the presence of significant differences amidst the perception patterns about the adoption of practices from the control environment among the civil servants surveyed. The results are displayed in table 3.

**Table 3**  
*Analysis on the significance of the relationships between the characteristics of the respondents and the control environment*

| CONTROL ENVIRONMENT   | Characteristics |      |      |          |
|---|-----------------|------|------|----------|
|   | Gender          | Age  | Area | Position |
| Senior managers perceive internal controls as essential to the achievement of the entity's objectives and provide adequate support for its functioning. | 0,14            | 0,48 | 0,60 | 0,53     |
| The general mechanisms of control implemented by the institution are perceived by all employees at the different levels of its structure.               | 0,26            | 0,39 | 0,26 | 0,61     |
| Human Resources practices encourage the improvement/development of skills and competencies, through training and qualifications.                        | 0,70            | 0,23 | 0,24 | 0,81     |

|   |      |      |      |      |
|---|------|------|------|------|
| Delegations of authority and competence are accompanied by clear definitions of responsibilities.   | 0,62 | 0,21 | 0,49 | 0,53 |
| The internal control system is periodically reviewed and monitors the institution's main processes. | 0,23 | 0,77 | 0,26 | 0,52 |

**Source:** *Research data, 2018.*

COSO evaluates the Control Environment as being one of the main components of its conceptual structure, in the sense of assessing internal controls, as it provides bases for its framework components (COSO, 2013).

The results indicate that the differences found in the five practices related to the control environment were not statistically significant, suggesting the absence of differences in terms of their importance, indicating the presence of isomorphism among the public servants analyzed. That is, the civil servants surveyed give importance to all items analyzed in a similar way.

Through the data collected, in relation to the control environment, a partial concordance index was found between what is recommended by COSO and what is applied in the institutional context.

In light of this, it appears that the recommendations of COSO, regarding the control culture established, is that it permeates a good part of the institution. Internal control, as a process carried out by people, is therefore affected by their actions at the different levels of an organization (COSO, 2013). Questions dealing with the managers' perception and the general control mechanisms instituted were the ones with the highest percentage of concordance. In this case, most respondents agree that the control mechanisms implemented are perceived by civil servants, as recommended by COSO for effective risk management.

Similarly, statistical procedures were adopted analyzing the significance of the relationships between the characteristics of the respondents and the component "Setting of objectives". The results obtained indicate that two out of five items analyzed "All levels of the organization (sectors/departments) have objectives related to operational efficiency and effectiveness set and communicated" ( $p = 0.04$ ) and "The objectives related to compliance (meeting legal issues) are formalized, updated and disclosed" ( $p = 0.03$ ) presented a statistically significant result when related to the item "Area of training", in Table 4.

**Table 4**

*Analysis on the significance of the relationships between the respondents' characteristics and the setting of objectives*

| SETTING OF OBJECTIVES   | Characteristics |      |             |          |
|---|-----------------|------|-------------|----------|
|   | Gender          | Age  | Area        | Position |
| The institution has its mission and objectives defined and formalized, which are understood and shared by all civil servants.                 | 0,33            | 0,11 | 0,38        | 0,85     |
| All levels of the organization (sectors/departments) have objectives related to operational efficiency and effectiveness set and communicated | 0,65            | 0,27 | <b>0,04</b> | 0,92     |
| It is the institution's practice to establish a strategic plan, containing clear objectives, which lead to the achievement of its mission.    | 0,31            | 0,01 | 0,58        | 0,95     |
| The objectives related to compliance (meeting legal issues) are formalized, updated and disclosed   | 0,94            | 0,67 | <b>0,03</b> | 0,14     |
| It is the institution's practice to measure the level of achievement of its objectives.   | 0,70            | 0,85 | 0,93        | 0,90     |

*Source: Research data, 2018.*

Thus, the results indicate that these items hold greater importance depending on the area of training of the civil servant analyzed. The other items analyzed did not obtain significant results, suggesting the absence of significant differences regarding their importance. This result also suggests the presence of mimetic isomorphism among the public servants analyzed.

According to the data obtained from the evaluation of the item "Setting of Objectives", shown in Table 4, it is possible to conclude that there was concordance on the part of the respondents as to the existence of this aspect advised by COSO in the context of the institution researched.

Always based on what is recommended by COSO, it was noticed that the institution object of the analysis has its objectives and missions formalized and defined, as it was verified that this is perceived by its civil servants.

Analyzing in general, it can be seen that COSO's recommendations regarding the setting of objectives were perceived positively by the respondents, within the institutional environment of UEPB. This aspect is a prerequisite for effective event identification, risk assessment and response to risks, components of COSO ERM that are analyzed below.

**Table 5**

*Analysis on the significance of the relationships between the respondents' characteristics and the identification of events*

| IDENTIFICATION OF EVENTS  | Characteristics |      |      |          |
|---|-----------------|------|------|----------|
|   | Gender          | Age  | Area | Position |
| There is a clear identification of critical processes that can make the institution's objectives and goals unfeasible.  | 0,49            | 0,57 | 0,10 | 0,76     |
| The importance of identifying the types of probable events that affect the institution, whether they be "risks" or "opportunities", is recognized by decision makers.   | 0,42            | 0,28 | 0,10 | 0,56     |
| The identification of internal factors (e.g., the need for preventive maintenance on equipment, occupational accidents, errors in the execution of processes) is carried out periodically by the institution. | <b>0,02</b>     | 0,18 | 0,06 | 0,70     |
| Economic, political, social and technological factors are also identified by the institution.   | 0,93            | 0,74 | 0,09 | 0,50     |

Source: Research data, 2018.

Table 5 above, evidenced the results of the criterion about identification of events. In the COSO ERM framework, identification of events implies an understanding of internal and external factors that can cause positive, negative impact or both in the implementation of an organization's strategy (COSO, 2013).

Again, statistical procedures were used analyzing the significance of the relationships between the respondents' characteristics and the component related to the identification of events. The results obtained indicate that only one of the items analyzed "The identification of internal factors is carried out periodically by the institution" ( $p = 0.02$ ) presented a statistically significant result in relation to the respondents' gender. This result indicates that this item has different perception about its adoption depending on the gender of the civil servant analyzed.

The results presented in Table 5 suggest that most of the public servants agree that the institution researched gives importance to the identification of events. Considering that the institution researched (a public institution), characterized by a strong influence of social and political factors (IFAC, 2001), the results presented so far are considered positive because they indicate that most respondents perceive the attention given by the institution to the identification of external factors that influence its performance scenario. INTOSAI (2004a) emphasizes that addressing attention to external factors (such as changes in government policies or programs) is relevant, as it may determine the need for a reconfiguration of the controls established.

**Table 6**

*Analysis on the significance of the relationships between the respondents' characteristics and risk assessment*

| RISK ASSESSMENT  | Characteristics |      |      |             |
|--|-----------------|------|------|-------------|
|  | Gender          | Age  | Area | Position    |
| It is the institution's practice to diagnose risks (of internal or external origin) involved in its strategic processes and the consequent adoption of measures to mitigate them.  | 0,25            | 0,28 | 0,89 | 0,83        |
| Risk assessment is carried out continuously, in order to identify changes in the institution's risk profile, caused by transformations in both internal and external environments. | 0,21            | 0,42 | 0,88 | 0,27        |
| The institution is concerned about anticipating future risks, by monitoring both internal and external environments.   | 0,56            | 0,45 | 0,50 | 0,52        |
| The institution's internal control system enables risk management and risk identification in the main operational processes (manual and computerized) of each sector.              | 0,96            | 0,43 | 0,67 | <b>0,03</b> |

Source: Research data, 2018.

Statistical procedures were also used considering the analysis of the respondents' characteristics significance related to the risk assessment component. From the results obtained, it can be seen that only the item “The institution's internal control system enables risk management and risk identification in the main operational processes (manual and computerized) of each sector” related to the position that the civil servant occupies, presented statistical significance ( $P = 0.03$ ), that is, there was a difference in the perception of this item according to the position that the public servant occupies. The other items analyzed did not present statistically significant results, suggesting the presence of mimetic isomorphism among the investigated civil servants about the perception of the items analyzed in relation to the risk assessment component.

The data in Table 6 is intended to show through the respondents' perception whether risk assessment is a practice in the institution investigated. The results show that the respondents showed an average percentage of agreement on the items analyzed. About this, COSO (2004) points out that there is a notable “excessive confidence bias” by decision makers, because when making estimates they do not recognize the amount of uncertainty that actually exists. Therefore, it should be taken into account that part of the respondents showed that they disagree that there is a risk assessment.

It is important to address that the risk assessment involves the identification and analysis of risks that may hinder the achievement of organizational objectives. This process serves as a basis for determining which risks can be managed (COSO, 2013).

**Table 7**

*Analysis on the significance of the relationships between the respondents' characteristics and response to risks*

| RESPONSE TO RISKS   | Characteristics |      |      |          |
|---|-----------------|------|------|----------|
|   | Gender          | Age  | Area | Position |
| The institution's attitude towards the risks identified is to develop strategies to manage or avoid them, if their impact and probability of occurrence are high. | 0,60            | 0,28 | 0,27 | 0,40     |
| The institution establishes risk tolerance levels, accepting low impact risks.  | 0,74            | 0,30 | 0,11 | 0,32     |
| The risks identified as having a high impact, but with a low probability of occurrence, are shared (eg, purchase of insurance, outsourcing of some activity).     | 0,69            | 0,24 | 0,09 | 0,55     |

Source: Research data, 2018.

From the results obtained in table 7, it can be seen that none of the items investigated presented a statistically significant result considering the characteristics of the respondents, suggesting the presence of mimetic isomorphism among the investigated civil servants on the analysis of the significance of the relationships between the characteristics of the respondents and the risk response component.

In general, there was concordance among respondents regarding the adoption of the mentioned practices. It should be noted that there was a level of dissent regarding the statement that the institution develops strategies to manage or avoid the risks identified. Taking into account the component investigated, the inference is that it was not well perceived by the respondents.

**Table 8**

*Analysis on the significance of the relationships between the respondents' characteristics and controlling procedures*

| CONTROLLING PROCEDURES   | Characteristics |      |             |          |
|--|-----------------|------|-------------|----------|
|  | Gender          | Age  | Area        | Position |
| is the institution's practice to establish policies and actions a preventive or detection nature, in response to the risks identified.   | 0,33            | 0,26 | <b>0,02</b> | 0,95     |
| the control activities adopted are appropriate and work consistently to reduce the risks identified.   | 0,73            | 0,24 | <b>0,00</b> | 0,90     |
| the institution has effective measures in place to ensure compliance with laws and regulations applicable to the public sector.  | 0,12            | 0,57 | 0,73        | 0,41     |
| the control activities practiced by the institution include procedures for: authorization, approval, segregation of actions, evaluation of processes and activities, direct supervision, physical and information security controls. | 0,71            | 0,76 | 0,07        | 0,37     |
| the existing control activities are sufficient to ensure the effective execution of responses to new risks detected.   | 0,87            | 0,03 | <b>0,00</b> | 0,27     |

Source: Research data, 2018.

It is evidenced in Table 8 the control procedures used by the institution and their significance in relation to the respondents' characteristics. Such procedures must work consistently to reduce the risks identified and new risks that may threaten the achievement of organizational objectives (INTOSAI, 2004a).

It can be observed that, among the items analyzed, three of them showed significant differences when related to the area of training of the public servant, with the following  $p$  consecutive values ( $p = 0.02$ ), ( $p = 0.00$ ) and ( $p = 0,00$ ), such items proved to be more important for civil servants who have formation in a determined area.

Therefore, in the analysis of the “controlling procedures” component, there is a level of concordance in regard to its adoption, suggesting that within the institution investigated the focus of control prevails in addressing legal issues to secure effective execution of responses to new risks, which are considered aspects that introduce a greater managerial control approach.

For INTOSAI (2004a), entities must achieve an appropriate balance between detection and prevention, when adopting procedures of control. Aligned with this, COSO (2004) states that a combination of controls is implemented to address risk-related responses; these controls can be preventive, defective, manual, computerized and administrative.

**Table 9**

*Analysis on the significance of the relationships between the respondents' characteristics and information and communication*

| INFORMATION AND COMMUNICATION   | Characteristics |             |      |          |
|---|-----------------|-------------|------|----------|
|   | Gender          | Age         | Area | Position |
| The information relevant for the institution is duly identified, documented and communicated in a timely manner to managers for decision making.    | 0,26            | 0,25        | 0,48 | 0,85     |
| The institution's civil servants receive clear messages regarding their role and the influence of their activities to achieve the objectives set.   | 0,30            | 0,35        | 0,94 | 0,71     |
| The communication of information runs through the different hierarchical levels of the institution, in all directions and throughout its structure. | 0,74            | 0,52        | 0,45 | 0,69     |
| The communication of the importance and relevance of effective risk management is transmitted by senior management to the institution's managers.   | 0,68            | <b>0,04</b> | 0,56 | 0,73     |

Source: Research data, 2018.

Table 9 evidenced the component analyzed regarding “information and communication”. Statistical procedures were also used considering the relationship of this component with the respondents' characteristics. The results obtained indicate that only one of the items analyzed “Communication of the importance and relevance of effective risk management is transmitted by senior management to the institution's managers” ( $p = 0.04$ ), presented a statistically significant result considering its relationship with the age of the respondent. This result indicates that this item has a different perception about its adoption depending on the age of the civil servant analyzed.

It is demonstrated through the results on this component that “information and communication”, compared to the others already evaluated, presented a high level of concordance among the items investigated. Considering the current conjuncture in which organizations are, information is essential for the decision-making process. It can be said that the institution investigated showed to be attentive to this matter.



**Table 10**

*Analysis on the significance of the relationships between the respondents' characteristics and monitoring*

| MONITORING  | Characteristics |      |      |          |
|---|-----------------|------|------|----------|
|   | Gender          | Age  | Area | Position |
| External and internal auditors and advisors provide periodic information to strengthen the institution's risk management.   | 0,88            | 0,51 | 0,22 | 0,67     |
| The institution's internal Control System is constantly monitored to assess its validity and quality over time.   | 0,52            | 0,87 | 0,31 | 0,26     |
| It is the practice of the institution's management to hold planning sessions and other meetings in order to obtain feedback on the effectiveness of risk management.  | 0,98            | 0,53 | 0,07 | 0,48     |
| The monitoring activity takes place through continuous management activities and specific ones (e.g., self-assessment by the team responsible for the process or by a sectorial unit for internal control). | 0,20            | 0,78 | 0,26 | 0,85     |
| The internal control system has contributed to better the institution's performance, being adequate based on the assessments undergone.   | 0,28            | 0,92 | 0,73 | 0,98     |

Source: Research data, 2018.

In this last component analyzed, it can be seen that none of the items investigated showed a statistically significant result in identifying the presence of relevant differences considering the characteristics of the respondents, emphasizing the presence of mimetic isomorphism among the investigated public servants about the analysis on the significance of the relationships between the characteristics of the respondents and the response to risks component.

The results displayed in Table 10, which demonstrated the respondents' opinion regarding matters of monitoring activities, presented a partial average concordance on the part of the respondents. The item that deals with monitoring activities occurs through continued management activities and punctual actions was the one with the highest level of concordance.

COSO (2013) considers that the changing environment reflects on the objectives of an organization and introduces new risks, and the "monitoring" activity must be conducted to ensure effectiveness on risk management (COSO, 2004).

## 5 Conclusion

The present work aimed to investigate the perception of managers in a State Institution of Higher Education regarding the alignment of the institutional internal control system to international standards proposed by COSO in the document Enterprise Risk Management – Integrated Framework. To this end, 40 questionnaires were applied to civil servants of that institution for investigating the institution's internal control system.

The research defined structures to be analyzed, which were divided into eight components to be investigated: Control Environment; Definition and Setting of Goals; Event Identification; Risk Assessment; Response to Risks; Controlling Procedures; Information and Communication; Monitoring. This structure is intended to bring an approach on risk management through a continued process that must be followed by the institution's civil

servants, while remaining compatible with the level of acceptance established by the organization; and that provides reasonable assurance for meeting the established strategic, operational, communication and compliance objectives.

The results showed that the majority of the interviewees worked at the Assistant Dean's Office for Finance – PROFIN, 47.5% of the respondents, followed by the contracts and agreements sector and the bidding sector, with 15% of respondents each. The sample is homogeneously characterized in terms of gender, consisting of men (50%) and women (50%) with a predominant age range between 20 and 32. The average age of respondents is 34. The majority of respondents graduated in higher education are trained in the areas of Law (22.5%) and Accounting Sciences (20%).

Then, from the bibliographic gathering, 35 competencies related to the components of COSO ERM were listed, an integrated conceptual framework for risk management, being 5 competencies for the control environment, 5 competencies for setting of objectives, 4 competencies for identifying events, 4 competencies for risk assessment, 3 competencies for response to risks, 5 competencies for controlling procedures, 4 competencies for information and communication and 5 competencies for monitoring activities, which were used in the survey to assess the perception of public servants regarding the adoption of the items evaluated, in order to analyze the presence of mimetic isomorphism within the list of competencies associated to the characteristics of the respondents' profiles.

The results obtained in the analyzes carried out using the Mann Whitney U and Kruskal-Wallis tests present significant evidence on the presence of mimetic isomorphism among the civil servants analyzed, since few competences, among the 35 analyzed, showed statistically significant differences.

Through the data collected, in relation to the control environment, a partial concordance rate was found between what is recommended by COSO and what is applied within the institutional context. The data obtained from the evaluation of the item setting of objectives showed that there is, on the part of the respondents, the existence of this aspect advised by COSO in the context of the institution researched.

The results indicate that the differences found in the five practices related to the control environment were not statistically significant, suggesting the absence of differences in terms of their importance, indicating the presence of isomorphism among the civil servants analyzed. That is, the public servants surveyed give importance to all items analyzed in a similar basis.

Analyzing the significance of the relationships between the characteristics of the respondents and the component "Setting of objectives", the results obtained indicate that two out of five items analyzed "All levels of the organization (sectors/departments) have objectives related to operational efficiency and effectiveness set and communicated" ( $p = 0.04$ ) and "The objectives related to compliance (meeting of legal issues) are formalized, updated and disclosed" ( $p = 0.03$ ) presented a statistically significant result when related to the item "Area of training". Thus, the results indicate that these items are of greater importance depending on the area of training of the civil servant analyzed.

From the results obtained, about the perception of the items analyzed regarding the risk assessment component, it can be seen that only the item "The institution's internal control system enables risk management and the identification of risks in the main operational processes (manual and computerized) of each sector", related to the position that the civil servant occupies, presented statistical significance ( $P = 0.03$ ), that is, a difference was found in the perception of this item according to the position that the public servant occupies. The other items analyzed did not show statistically significant results.

In the analysis of the controlling procedures used by the institution and their significance in relation to the respondents' characteristics, it can be observed that, among the

items analyzed, three of them showed significant differences when related to the area of training of the civil servant. Such items were more important for public servants who had a specific area of training. Therefore, in the analysis of the controlling activities component, there is a level of concordance in respect to their adoption, suggesting that within the institution investigated the focus on control prevails to addressing legal matters in order to ensure effective execution of responses to new risks, which are aspects that introduce a more managerial control approach.

It was demonstrated through the results from the component information and communication that, compared to the others already evaluated, it showed a high level of concordance among the items investigated.

In the last component analyzed for monitoring activities, it can be verified that none of the items investigated presented a statistically significant result in identifying the presence of relevant differences considering the characteristics of the respondents, further emphasizing the presence of mimetic isomorphism among the civil servants investigated about the analysis on the significance of the relationships between the characteristics of the respondents and the risk response component.

Through the results, it was possible to perceive the general level of alignment of UEPB's internal control system with the aspects recommended by COSO. Taking as a reference the framework studied as an interconnected structure, where each of the components of risk management represents actions necessary to achieve the organizational objectives, it can be understood that, likewise, any misaligned component can compromise the functionality of the whole.

Given this, the results of the research showed a balance between the components investigated, which according to COSO (2013), is indicated to happen. This way, it is up to the management adopting an always proactive stance in face of the weaknesses detected intending to achieve the best continued performance.

The research results contribute to the literature by consolidating risk management practices in the public sector and verifying the profile of agents in terms of their perception of risk management practices, allowing managers to have an operational view of the results found, leading to improvements in risk management.

The main limitation of the work is due to the fact that the research was applied in only one public university and it is suggested that for future research a comparative study can be carried out in different universities both at the state and federal level.

## References

- Amudo, A. & Inanga, E. L. (2009). Evaluation of internal control systems: a case study from Uganda. *International Research Journal of Finance and Economics*, v. 1, n. 27, p. 124-144.
- Andrade, A.; & Rossetti, J. P. (2004). Governança corporativa: fundamentos, desenvolvimento e tendências. In: *Governança corporativa: fundamentos, desenvolvimento e tendências*. São Paulo: Atlas.
- Araújo, F. S.; & Fernandes, M. L. C. (2012). Controles Internos – com Base no Gerenciamento de Riscos e em Estrutura de Governança. In: MACHADO, N.; HOLANDA, V. B.; Ribeiro Filho, J. F.; Lopes, J.; & Pederneiras, M (Orgs.). *GBRSP - Gestão Baseada em Resultado no Setor Público: Uma Abordagem Didática para Implementação em Prefeituras, Câmaras Municipais, Autarquias, Fundações e Unidades Organizacionais*. 1. ed. São Paulo: Atlas.

- Araújo, J. G. R. (2014). *Controle interno na perspectiva do Framework COSO ERM: um estudo na Universidade Federal da Paraíba*. Dissertação de Mestrado, Universidade de Brasília, Universidade Federal da Paraíba, Universidade Federal do Rio Grande do Norte, João Pessoa, Brasil.
- Bhimani, A. (2009). *Risk management, corporate governance and management accounting: emerging interdependencies*. *Management Accounting Research*. v. 20, n 1. p. 2-5. ISSN 1044-500.
- Clinton, S. B., Pinello, A. S., & Skaife, H. A. (2014). The implications of ineffective internal control and SOX 404 reporting for financial analysts. *Journal of Accounting and Public Policy*, 33(4), 303-327.
- Committee of Sponsoring Organizations of the Treadway Commission. (2004). *Enterprise Risk Management - Integrated Framework*. Recuperado em 20 dezembro, 2017, de [www.coso.org/documents/coso\\_erm\\_executivesummary.pdf](http://www.coso.org/documents/coso_erm_executivesummary.pdf)
- Committee of Sponsoring Organizations of the Treadway Commission. (2013). *Internal Control – Integrated Framework (Executive Summary)*. Recuperado em 27 dezembro, 2017, de <http://www.coso.org>
- Committee of Sponsoring Organizations of the Treadway Commission. (1992). *Internal Control – Integrated Framework*. Recuperado em 20 dezembro, 2017, de <http://www.coso.org/ICIntegratedFramework-summary.htm>
- Conselho Federal de Contabilidade. (2012). *Normas Brasileiras de Contabilidade Aplicadas ao Setor Público – NBCs T 16.1 a 16.11*. Brasília: Conselho Federal de Contabilidade.
- Decreto-Lei nº 200, de 25 de fevereiro de 1967*. Dispõe sobre a organização da Administração Federal, estabelece diretrizes para a Reforma Administrativa e dá outras providências. Recuperado de [http://www.planalto.gov.br/ccivil\\_03/decreto-lei/Del0200.htm](http://www.planalto.gov.br/ccivil_03/decreto-lei/Del0200.htm)
- Lei Complementar nº 101, de 4 de maio de 2000*. Estabelece normas de finanças públicas voltadas para a responsabilidade na gestão fiscal e dá outras providências. Recuperado de [http://www.planalto.gov.br/ccivil\\_03/Leis/LCP/Lcp101.htm](http://www.planalto.gov.br/ccivil_03/Leis/LCP/Lcp101.htm)
- Lei nº 4.320, de 17 de março de 1964*. Estatui Normas Gerais de Direito Financeiro para elaboração e controle dos orçamentos e balanços da União, dos Estados, dos Municípios e do Distrito Federal. Recuperado de [http://www.planalto.gov.br/Ccivil\\_03/leis/L4320.htm](http://www.planalto.gov.br/Ccivil_03/leis/L4320.htm)
- Lei nº 7.643, de 06 de agosto de 2004*. Dispõe sobre a autonomia da Universidade Estadual da Paraíba e dá outras providências. Recuperado de [file:///C:/Users/Caroline/Downloads/Lei%207.643%20-Lei%20de%20Autonomia%20\(1\).pdf](file:///C:/Users/Caroline/Downloads/Lei%207.643%20-Lei%20de%20Autonomia%20(1).pdf)
- Lei nº 10.180, de 06 de Fevereiro de 2001*. Organiza e disciplina os Sistemas de Planejamento e de Orçamento Federal, de Administração Financeira Federal, de Contabilidade Federal e de Controle Interno do Poder Executivo Federal, e dá outras providências. Recuperado de [http://www.planalto.gov.br/ccivil\\_03/Leis/LEIS\\_2001/L10180.htm](http://www.planalto.gov.br/ccivil_03/Leis/LEIS_2001/L10180.htm)

Cohen, A. & Sayag, G. (2010). The effectiveness of internal auditing: an empirical examination of its determinants in Israeli organizations. *Australian Accounting Review*, v. 20, n. 3, p. 241-255.

*Constituição da República Federativa do Brasil de 1988*. (2003). Recuperado de [http://www.planalto.gov.br/ccivil\\_03/Constituicao.htm](http://www.planalto.gov.br/ccivil_03/Constituicao.htm)

Elias, Z. S. (2010). *Controles internos em indústria plástica: estudo sobre controles internos com base na metodologia COSO*. Dissertação de Mestrado, Universidade Federal de Santa Catarina, Florianópolis, Brasil.

Gil, A. C. (1999). *Como Elaborar Projetos de Pesquisa*. São Paulo: Atlas.

International Organization of Supreme Audit Institutions. (2004). *Guidelines for Internal Controls Standards for the Public Sector*. Recuperado em 03 janeiro, 2018, de [http://www.issai.org/media/13329/intosai\\_gov\\_9100\\_e.pdf](http://www.issai.org/media/13329/intosai_gov_9100_e.pdf)

Lunkes, J. R.; Gasparetto, V.; & Schnorrenberger, D. (2010). Um estudo sobre as funções da controladoria. *Revista de Contabilidade e Organizações*, v. 4, n. 10.

Marconi, M. A.; & Lakatos, E. M. (2007). *Técnicas de Pesquisa: planejamento e execução de pesquisas, amostragens e técnicas de pesquisas, elaboração, análise e interpretação de dados*. 6. ed. 2. Reimpr. São Paulo: Atlas.

Martin, K., Sanders, E., & Scalan, G. (2014). *The potential impact of COSO internal control integrated framework revision on internal audit structured SOX work programs*. *Research in Accounting Regulation*, 26(1), 110-117.

Martins, G. A. (2006). *Estatística Geral e Aplicada*. 3ª ed. São Paulo: Atlas.

Martins, G. A.; & Theóphilo, C. R. (2009). *Metodologia da Investigação Científica para Ciências Sociais Aplicadas*. 2.ed. São Paulo: Atlas.

Matias-Pereira, J. (2012). *Finanças Públicas: Foco na Política Fiscal, no Planejamento e Orçamento Público*. 7.ed. São Paulo: Atlas.

Moeller, R. (2004). *Sarbanes-Oxley and the New Internal Auditing Rules*. EUA: John Wiley & Sons Canada, LTD.

Oliveira, M. C.; & Linconshares, J. S. (2006). A implantação de controle interno adequado às exigências da Lei Sarbanes-Oxley em empresas brasileiras: um estudo de caso. *BASE – Revista de Administração e Contabilidade da UNISINOS*, v. 4, n. 2, p. 160-70.

Peleias, Ivan R. Caetano, G.; Parisi, C.; & Pereira, A. C. (2013). Produção científica sobre controle interno e gestão de riscos no EnANPAD e Congresso USP: análise bibliométrica no período 2001-2011. *Revista Universo Contábil*, v. 9, n. 4, p. 29-49.

Pereira, E. M., Bracalente, F., Dinofre, M., & Bernardinelli, M. L. (2008). COSO-The Committee of Sponsoring Organizations of the Treadway Commission. Recuperado de: [http://www.mariolb.com.br/blog/\\_static/articles/COSO-v4.4.pdf](http://www.mariolb.com.br/blog/_static/articles/COSO-v4.4.pdf)

- Poltronieri, C. C. (2012). *Um estudo sobre controles internos em pequenas e médias empresas de TI*. Dissertação de Mestrado, Universidade Presbiteriana Mackenzie, São Paulo, Brasil.
- Power, D. J.; & Sharda, R. (2009). Decision support systems. In: *Springer handbook of automation*. Springer Berlin Heidelberg, 2009. (pp. 1539-1548).
- Queiroz, M. A. S.; Peter, M. G. A.; Machado, M. V. V.; Gomes, A. O. & Rodrigues, M. D. N. (2016). Controle interno e controladoria na Administração Pública: estudo nas universidades federais brasileiras. *Capital Intelectual*, v. 1, n. 2, p. p. 59-72.
- Raghavan, K. (2011). Municipal governments (mis)governance. *International Journal of Disclosure and Governance*, v. 8, n. 2, p. 194-207.
- Spira, L. F.; & Page, M. (2003). Risk management: The reinvention of internal control and the changing role of internal audit. *Accounting, Auditing & Accountability Journal*, v. 16, n. 4, p. 640-661, 2003.