



Economia Aziendale Online

Economia Aziendale Online

**Business and Management Sciences
International Quarterly Review**

**SPECIAL ISSUE
THE MULTIDIMENSIONAL CONTENT OF
ECONOMIA AZIENDALE**

**Exploring Theories and Applications
of Business Economics and Management
[3 of 3]**

**Multicriteria analysis of internal controls
in a Brazilian banking operation with focus
on accounting information systems**

Stephanie Ackermann
Joshua Onome Imoniana

Pavia, Dicembre 2019
Vol. 10 - N. 3/2019

www.ea2000.it
www.economiaaziendale.it


PaviaUniversityPress

Multicriteria analysis of internal controls in a Brazilian banking operation with focus on accounting information systems

Stephanie
Ackermann¹
Joshua Onome
Imoniana²

¹*Graduate Student*

²*Associate Professor
University of São Paulo*

*Corresponding Author:
Joshua Onome Imoniana
Ave Luciano Gualberto 908.
05508-010 São Paulo, Brazil
josh.imoniana@yahoo.com*

Cite as:

Ackermann S & Imoniana JO (2019). Multicriteria analysis of internal controls in a Brazilian banking operation with focus on accounting information systems. *Economia Aziendale Online*, Special Issue, 10(3), 483-503.

Section: *Refereed*

Received: 08 November 2018

Published: 06 December 2019

ABSTRACT

L'obiettivo di questo studio è quello di analizzare in che modo i preparatori dei sistemi di informazione contabile eleggono nel bel mezzo del flusso di procedure di controllo interno per mitigare il rischio di errori significativi nei rendiconti finanziari. In effetti, ciò che rende superflui alcuni controlli e altri prioritari, e quali impatti creano tali atteggiamenti nei risultati operativi. Pertanto, questo studio consiste in un'analisi multicriteria sull'esercizio dei controlli interni in un'operazione bancaria brasiliana con un focus sui sistemi di informazione contabile (AIS). Abbiamo intervistato sette dipendenti di diverse funzioni di un'organizzazione, che attualmente ricoprono posizioni. I risultati mostrano che l'analisi multicriteria del controllo interno che porta a relegare determinati controlli al posto secondario e ad altri prioritari sono il risultato di a) la direzione; b) la gestione; c) l'ambiente di controllo; e d) le risorse.

The objective of the present study is to understand how the preparers of accounting information systems elect in the midst of stream of internal control procedures to mitigate the risk of material misstatement in financial statements. In effect, what renders some controls unnecessary and other prioritised, and what impacts do such attitudes create in the operational results. Therefore, this study consists of a multicriteria analysis on the exercise of internal controls in a Brazilian banking operation with a focus on Accounting Information Systems (AIS). We interviewed seven employees from different functions of an organisation. Results show that the multicriteria analysis of internal control which leads to relegating certain controls to secondary place and others prioritised are as a result of a) management tone; b) management give importance to certain controls; c) the control environment; and d) resources are scarce.

Keywords: Internal Control, Multicriteria Analysis, Accounting Information Systems, Financial Statements, Banking, COSO.

Although it is the policy of this magazine to publish only original works, we thought it appropriate, given the level of the paper, to publish in this special issue, this work of Joshua Onome Imoniana and Stephanie Ackermann Presented to the 2018 15th International Conference on Information Systems & Technology Management, due to the interest of the subject and the rigor of the method of analysis.

1 - Introduction

The internal controls do have an immeasurable importance to all organisations. To the extent that, when one analyses the financial sector and the current context of financial institutions in the Brazilian scenario, the relevance even becomes greater. Inasmuch as, the nowadays business and control environments extensively show their vitality toward goal congruence by harnessing resources from technological advancement and accounting information systems.

So, the control process is an indispensable resource for success within such industry, and the more important and significant it becomes, the more it will attract attention and interest in the performance of accounting controls in order to safeguard assets. Generally, the overriding of internal controls when figured, such controls termed to have lower operational and financial risk by managers. This does occur more frequently than those considered as having greater strategic risk. The criteria used are sometimes obscure and the multicriteria analysis is a tool that could clarify this way of relative importance attributed to the controls.

The subject that refers to internal controls has been extensively discussed in literature, among which we cite: Simons (1995) levers of control, whose framework includes the beliefs systems, whose objective is "to inspire and to promote the commitment to an organisation's core values" (p.82). Young (1997); Anthony and Govindarajan (2006) stresses on the management control systems; Perera et al. (2011) and Imoniana and Gartner (2016) worked on critical remark on multi-criteria approach to corporate auditing risk assessment, to mention just a few. However, the criteria for electing internal controls and assigning control activities that effectively take resources from all departments or cost centers have not yet been discussed. It is in this context that this study intends to abridge this observed gap.

By and large the medium and large financial institutions in the banking industry do face a dynamic and pragmatic operational rules suggested by the regulators, principally as a result of global changes and this differs from what is known to other industries. The operational guidance of these organizations in the banking industry is equally relevant to be emulated in some manners, but sometimes the focus on internal controls and the quest for their effectiveness do occur in a different manner. The impact caused by the exercise or absence of internal controls in banking industry may cause significant international and/or regulatory effect that require special attention. Thus, the recognition that a study about the selectivity of internal controls practiced in banking institutions and how it occurs from the multicriteria standpoint looks indisputable. So, there highlights the concerns for a sector of such intensity and presence in Brazil as the banking sector requiring an empirical analysis on its cause of multicriterialing of internal control exercise.

The supervision and monitoring exercise of effectiveness of internal controls is the responsibility of key areas in companies that have them, such as Internal Audit, Compliance and or Operational Risk; but their implementation, execution and continuous trailing of effectiveness are attributed to the preparers in controllers department who, occasionally and for many reasons to be studied, choose not to exercise them in their completeness. The impact of such conduct deserves due attention and measurement, as well as the understanding of the reasons why such attitudes are taken. The fact that there are internal controls that are not exercised and that this is part of the reality of several companies in the financial sphere, added to the lack of research in this sector, arouses interest in understanding what are the reasons and criteria. In effect, we argue for the responsibility of effectively fulfilling the internal

controls or failing to do so or choose which ones have a greater relative importance over others, as well as to understand what evaluation is carried out leading to this conclusion. Thus, the present study intends to answer the following research question: What criteria determine the control activities exercised in detriment of the others?

1.2 - Objectives

The main objective of the present study is to understand how the preparers of accounting information systems choose in the midst of stream of internal control procedures to mitigate the risk exposures. In other words, to understand the criteria used to discard the exercise of certain internal controls and the reasons that make them seem unnecessary, as well as operational deadlocks that such attitudes may entail. In effect, the focus is to understand internal controls and the amount of the relative importance for business processes; knowing what are their real weight and their control objectives.

As a secondary objective, taxonomically map the procedures of controls of some of the main banking functions, mainly related to information systems; map the controls and their relative importance; map the control activities that mitigate the risks of their weaknesses that may result in material misstatements in the financial statements.

1.3 - Contribution of the study

The purpose of the study for the practitioners is to provide effective aid to the process of management of internal controls within the institutions regarding the prioritisation and monitoring of procedures implemented to mitigate the strategic risks. Based on the analysis of impacts caused by decisions such as not performing certain procedures required by the control process, and also in understanding which are the criteria responsible for dimensioning the significance and necessity of execution of internal controls, it is aimed at the prevention of failure within organizations.

The measurement and evidence of these factors is essential for the awareness of managers, internal auditors and other employees within private a public organisation, whether to avoid, or sticking to alerts, or better still consequences of noncompliant coming from regulatory bodies. Also, improve operational performance or even prevent failures from unusual operational activities arising from business transactions.

It is also worth mentioning, the contribution to science regarding the understanding of internal control in organizations. This also assists dismemberment of controls by relative importance in the allocation of resources with prudence and mitigation of strategic risks.

1.4 - Research context

The study was chosen because it is extremely relevant, presenting high impact issue in any organization, especially in those that are part of the banking sector that breath the monetary policy all the time. It is necessary to measure and understand what the reasons of subjugating internal controls and what reaction is triggered by this. Managers exploit their allocations by

overriding the low-risk accounts than accounts with high non-strategic risk (Bowling pp 1231, 2011). In effect, this may involve diverse apparent risk that needs to be addressed by controls. The scarcity of research and area needing exploration makes the subject even more interesting. Another context of this study rests on the interest of the Brazilian Central Bank aiming at continuous enhancement of best practice of internal controls in the institutions, given that there is also a specific resolution that requires the implementation of internal control systems (Resolution 2,554), which clearly determines the necessity and importance of the existence of this form of internal control, which is subject to verification by bodies authorized by the Central Bank and independent auditors. Although there is not just one rule of thumb to strictly comply with regulating bodies, organization should be concerned about compliance with established internal controls they are susceptible to verification.

1.4 - Research presuppositions

This study verifies the following propositions:

P1 - Certain internal controls are not evaluated repeatedly with the frequency they required by the managers for lack of understanding of their relative importance;

P2 - Certain internal controls are not evaluated and classified appropriately (low, medium, high or very high) and can therefore overestimate strategic risk accounts;

P3 - Internal controls are no longer complied with because they require excessive time and are discarded due to lack of time or negligence;

2 - Theoretical Background

2.1 - Conceptual framework of Internal Control

As a concept and attribution of what is, and for what purposes internal controls are necessary, the proposal established by the Committee of Sponsoring Organizations Tradeway Commission (COSO) that propagated Internal Control - Integrated Framework (1992) paved way for a wide acceptance as a reference of structure, implementation, conduction and evaluation of the effectiveness of internal control.

In principle, for COSO, internal control is a process consisting of five fundamental and interrelated dimensions that must be present invariably. They are:

- a) Control environment, which is directed to the behavior and desire of the organization to establish or adopt practices that contribute to its better functioning and achievement of objectives;
- b) Risk assessment and management, linked to the specification of the objectives of the institution so that it is able to identify the risks associated with those purposes, and then analyze how these risks can be mitigated.
- c) Control activity, which is the determination and development of control activities that will contribute to the reduction of risks linked to the company's performance to an acceptable level.

d) Information and communication, related to the way the organization internally communicates the objectives, responsibilities and need for the performance and functioning of internal controls. Externally, this contact is also performed to ensure confidence.

e) Monitoring, which is the development and use of processes that evaluate the effectiveness, presence and performance of established internal controls. The organization communicates the results of these evaluations with a certain frequency so that corrective measures are taken in case of deficiencies.

Among the topics described above, the analysis of the determination of control activities is a key process for this study, as well as its monitoring, since the objective is to verify the relationship between those responsible for the exercise of internal controls and the controls themselves and what are the consequences of non-exercise. So, since the defined scope is the accounting area within banking institutions, it is possible to cite as main control activities the importance of establishment and subsequent fulfillment of activities that require the definition of specific powers for the performance of activities of greater relevance and impact within the institution. In effect, this should include the implementation of internal controls through segregation of duties in information systems, signature in documents of great significance and supervision of activities; the clear description of segregation of duties about processes that should involve more than one employee of the company; and conciliation activities, always present a significant concern.

Monitoring the performance of established internal controls is sometimes the responsibility of an internal audit within organizations. For financial institutions, it is a common role for Internal Audit shared with the Compliance. When performed by external audit and regulatory agencies or agencies, such as the Central Bank of Brazil, the central bank inspectors or the external auditors work so as to verify external compliance. The identification of flaws by internal monitoring can result from the simple application of corrective measures as a response to noncompliance and this can involve the dismissal of employees. Outwardly identified failures can result from low impact scorecards to negative opinions issued by independent auditors or high penalties from regulating bodies. The actual determinant of what the results of non-performance of internal controls are is determined by assigning different levels of significance to them.

2.2 - Models and taxonomy of internal controls

According to Imoniana (2008) the symbolism, meaning or semiotics, biological characteristics and essences or abstraction are the three main aspects discussed when discussing control models. Consequently, the same author distinguishes the control models in reactive, proactive and coactive for the purpose of dialogue. This distinction is due to the granularity of the teams' involvement in the control activities, the institutional process of legitimacy and their accountability.

Taxonomy institutes a way of systematically assigning classifications, by categorising different objects of study. In this research, the association of different taxonomies to internal controls is essential, since the risks and weight of relevance regarding their fulfillment and consequences are diverse and of different magnitudes. Due to this, it is worth noting the classification of internal controls as dependent and independent. Dependent relates to those in operational processes while independent are those exercised by the management on a monitoring basis.

As put forth by Imoniana (2019) the classification of internal controls related to accounting processes can be as varied; the basic controls (internal check, reconciliation, correlation etc.) are the ones that assure consistency of accounting records, existence and monetary precision. Others are control activities of authorization, safeguarding of asset and assurance of processing.

Thus, for this study, the classification of controls is drawn upon following levels of significance regarding the inherent risk for the motive of compliance as: Low, Medium, High and Very High. This is the breakdown chosen because it is common in the financial institutions and inasmuch as the method of assigning a relative significance is directly related to the monetary value involved, quantity and frequency of transactions and what the impacts caused to the normal operation of the organization in case of interruption of certain procedures of such controls. Subsequently, the adequacy of the levels of the controls currently exercised will be analyzed forthwith in the multicriteria analysis.

2.3 - Internal controls according to Central Bank and Basel Committee

As mentioned earlier on, the high level of significance attributed to the existence and exercise of internal controls is also reflected in specific resolutions of the Central Bank of Brazil, among which one cites Resolution 2,554, dated 09/29/1998, which provides for the implementation of internal control system; Resolution 3,380, dated 06/29/2006, which provides for the implementation of an operational risk management structure; and Resolution 3,056 of December 19, 2002, which provides for the internal audit of financial institutions and other institutions authorized to operate by the Central Bank of Brazil.

The decisions of the Central Bank of Brazil are directed at all financial institutions and it is interesting to demonstrate what their main requirements consist of. Article 1 of Resolution 2,554, at the outset, establishes that:

"§ 1 The internal controls, regardless of the size of the institution, must be effective and consistent with the nature, complexity and risk of the operations performed by it.
§ 2 The following are the responsibility of the board of directors of the institution:
I - the implementation and implementation of an effective internal control structure through the definition of control activities for all levels of business of the institution;
II - the establishment of the objectives and procedures pertinent to them;
III - systematic verification of the adoption and compliance with the procedures defined in accordance with the provisions of item II. "

Also, in the same normative, the importance of the existence of accessibility of the employees to internal controls is established, so that everyone is sensitised of their functions and responsibilities. The organization, therefore, according to the Central Bank of Brazil, must be clear about its internal controls to mitigate operational risks and provide, in accordance with Article 2:

I - Which employees are responsible for the exercise of each control;

II - That there is segregation of activities with the purpose of avoiding conflict of interest among the members of the institution;

III - Ways to find and evaluate factors that present risks of negatively affecting the objectives of the company;

IV - That there are communication channels that offer employees access to relevant information related to their tasks and responsibilities;

V - Continuous assessment of risks associated with the operation of the company;

VI - Follow-up of the activities carried out to evaluate the continuous attendance of the objectives of the institution, as well as compliance with limits, laws and regulations affecting the operation, aiming also to ensure the immediate correction of identified irregularities;

VII - Periodic tests to ensure the security and proper functioning of information systems. The fulfillment of these codes of conduct and other items provided by the Central Bank is essential, given the existence of the following requirement in Article 3:
"The systematic monitoring of activities related to the internal control system shall be the subject of an annual report containing:

I - the conclusions of the examinations made;

II - the recommendations regarding possible deficiencies, with the establishment of a schedule of sanitation of the same, when applicable;

III - the manifestation of those responsible for the corresponding areas regarding the deficiencies found in previous verifications and the measures effectively adopted to remedy them.

Single paragraph. The conclusions, recommendations and manifestations referred to in items I, II and III of this article:

I - they must be submitted to the board of directors or, failing this, to the board of directors, as well as to the external audit of the institution;

II - shall remain at the disposal of the Central Bank of Brazil for a term of five (5) years. "
Although it is clear that the main agent affected by the lack of effectiveness and compliance with internal controls is the financial institution itself, the Central Bank determines some measures that can be taken in the case of the verification of low effectiveness of the controls reported in the annual report. Thus, it is also determined, by Resolution 2,554, that the company can be notified of the need to adopt additional controls, in case of identified inadequacy; greater restrictiveness of operating limits; and adoption of other measures deemed necessary by the Central Bank of Brazil.

Still in the same context, in order to emphasize the need and relevance of internal controls for financial institutions, mainly with the objective of promoting stability in the banking system, was published the Basle Committee on Banking Supervision in 1998, the Framework for Internal Control Systems in Banking Organization, which presents 13 principles for evaluating

the effectiveness of internal controls from the perspective of: management and control culture (principles 1 to 3); recognition and risk management (principle 4); activities of control and segregation of functions (principles 5 to 6); information and communication (principles 7 to 9); monitoring activities and correction of deficiencies (principles 10 to 12); and evaluation of internal control systems by supervisory authorities (principle 13).

The briefly described framework presents extreme detail and relevance for the implementation and analysis of internal controls in any institution and its knowledge is essential for a good functioning of the control system. In addition to describing how internal controls should be evaluated and conducted, it is further an incentive to have the analysis proposed by this study, since it contributes in the sense of relating how the fact of noncompliance of controls may constitute in a breach of what is the ideal established by the Basel Committee.

2.4 - Multicriteria Analysis and relative importance

According to Vincke (1989), multicriteria analysis implies a way of offering tools and information to the decision maker so that he or she is able to solve a problem where there are different and sometimes controversial points that must be taken into consideration. The elements involved in establishing a "best" form of decision-making, the criteria, used to reach that conclusion, are part of a process that can occur in a variety of ways.

In the case of an analysis directed to a goal of greater importance, sometimes there is a definite moment of thought and balance of it in all the elements involved to make the decision, that is, it is something that which demands more time and sometimes other people and resources to better analyze the options. It is interesting to highlight the different applications that this form of analysis offers, since it is applicable in all contexts that demand the need to choose and opt for one of several paths.

The multicriteria analysis, then, is not restricted to only one area of study, that is, decisions made in the business context, but in any economic sector or not. For Vincke (1989), this is a fact that drives interest in understanding and studying the application of this method, since it is something intrinsic and increasingly noticed in real-life problems, regardless of their nature. The interest in multicriteria decision-making is increasing and can be noted because the existence of an International Methodological Society, the International Society on MCDM (Multiple Criteria Decision Making), which holds biannual international symposium to discuss multicriteria issues. In this forum, papers and panels are presented aimed at understanding and applying the method in the most diverse situations and areas.

According to Saaty (1980), experiences involving different activities and different perceptions require some form of interpretation that integrates or combines them. Thus, the notion of priority and separation in levels of importance is created and applied according to the necessary analysis. In this vein, the multicriteria method was considered the most adequate and, consequently, it was selected so that the analysis of how the understatement or overstatement of transactions occurs, due to not exercising certain internal controls. The relationship between the choice of this type of conduct and the reasons that permeate the choices will be better understood through the multi-criteria analysis because of the offer of a comprehensive overview that may be extremely relevant.

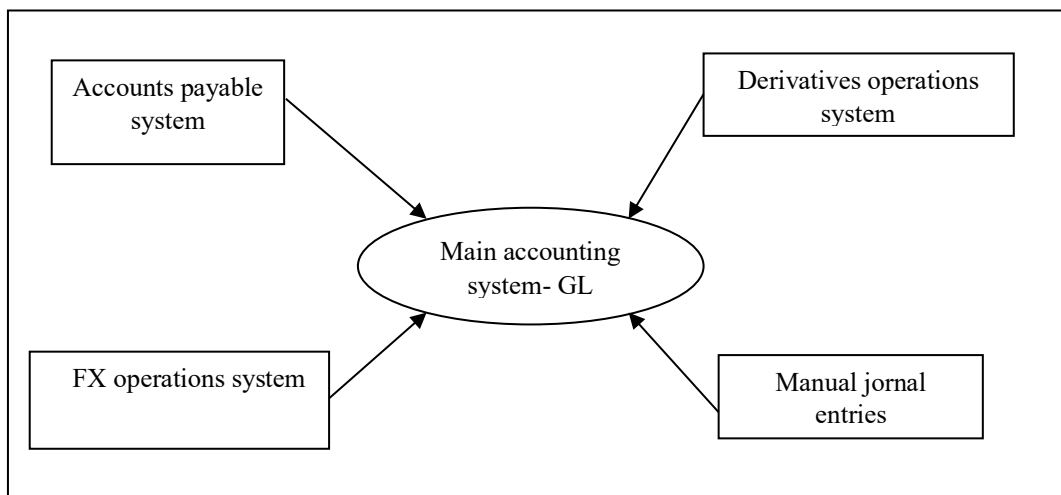
2.5 - The strategic accounting information systems and relative importance

The program software also known as systems have a series of sequence of instructions embedded in them to execute the tasks which aims at manipulation, redirecting and modifying the cause of information relating to accounting events. So the accounting information systems application is a sort of software aimed at executing a specified business tasks.

Information systems (IS) are systems responsible for storing, processing, and providing information for the purpose of supporting the functions and processes of a company. People, together with automated means (computers and communication networks) are the members of an information system (Reisswitz, 2008).

The context under this study covers the scheme depicted in Figure 2. The main accounting system (General Ledger) receives information from three other systems (accounts payable, exchange and derivatives), as well as entries computed by means of normative by journaling. Involving multiple employees to make continuous transactions and effective is one of the key factors that make the process of control over operation extremely relevant.

Figure 2 - Information systems in the context of the bank



The systems are used continuously and integrate the daily life of the institution, but they do not function independently of human intervention and the presentation of failures of various natures is, to some extent, frequent. Some of the factors that are part of the development of the study are related to the volume processed by each of the systems in question of monetary value and quantity of transactions, frequency of use of the systems, issues of system interface and integrations, frequency of update and maintenance and levels of security the transactions and the operation of the systems.

DeLone and McLean (1992) proposed a "success model" for the operation of information systems, which considers system and information quality, system utilization, user satisfaction, individual and organizational impact. It is interesting to note the importance attributed by the

authors to the processed information and the way its good use is a measure of success of the systems operation. This fact is extremely related to the importance of the exercise of internal controls to ensure that the accounting information system has good and effective performance. However, according to DeLone and McLean (2003), due to the continuous transformation of the business environment and the need for adaptability of information systems, the so-called "success model" has undergone changes that have considered the quality of service and the net benefit that information systems bring to the organization. Once again, it is relevant to mention the intrinsic relation that internal controls have in relation to their capacity to reveal the effectiveness of an information system, being able to reveal factors about its safety, applicability and use.

Thus, the assignment of relative importance, that is, the understanding that some controls are less relevant than others, to certain activities attracts analysis. The study would enable one to dialogue the methods and lines of thought that make the employees define that the impact of the option chosen in complying with some controls is less than others, making clear the multicriteria analysis behind this process.

In effect, this makes one to highlight those systems named be the strategic systems of a business. For instance: invoicing, accounts receivable and collection; purchase and accounts payable; human resources and payroll; stocks and costing systems; fixed systems; and general ledger systems. These systems generally attract the connotation of higher relative importance in the manufacturing sector. This is as a result of several criteria among which we cited the following:

The application system processes a very high volume of transactions and significantly affects the general operations without which operations could get to a hurt;

The monetary volume controlled by the operations of the system if observed as very significant could interfere in the consideration of relative importance. These attributes have greater relevance when you consider the percentage of \$ involved;

The systems interface in which this system integrates in the consecution of the business objectives; the more interrelationships the more important it becomes;

How frequent this systems is initialized, processed and generates output to other systems and interfere with the general operations of the business, the more it becomes important.

2.6 - Anchors for multicriteria of internal controls and relative importance

As mentioned in Figure 1, the criterion to be explored to perform the multicriteria analysis will be based on the identification and specification of what are the intrinsic and extrinsic factors / values that contribute so that the choices of not exercising certain controls are noted. The factors are somewhat related to the propositions to be explained further.

Intrinsic Factors (IF) are those that, by definition, are part of the essence of the work environment. These are inherent elements originated and incidents in the local activities normally internal. In the case of the study, we consider for the methodological analysis the following factors:

IF1: Absence of knowledge or the way in which internal control should be handled;

IF2: Problems of evaluation and classification of internal controls and their relation with the acceptance and attribution of relative importance by the person responsible for their exercise;

IF3: Lack of personnel specifically designated to exercise control by skills or difficulties with the segregation of duties;

IF4: Hostile and unfavorable work environment to devote to activity.

Extrinsic Factors (EF) consist of conditions of controls that are not originated in the workplace and that are part of the external environment in some way. However, they are also elements that can influence the progress of everyday functions. The methodological analysis will study the interference with and importance of the following external factors:

EF1: Time demanded to exercise internal control;

EF2: Cost to obtain resources capable of supplying the function;

EF3: Ignoring the direction of importance and supervision attributed by audits and / or regulatory bodies.

EF4: Exogenous evaluation of the control influence on the information for external users.

2.7 - Control and Risk Self Assessment

Controlling Risk Self-Assessment (CRSA) is a strategy used by at least two thirds of institutions (IIA, 2008) to provide a kind of framework capable of identifying, mapping, reviewing and managing existing controls and risks within an organization of any nature, in addition to providing ways of analysis and ways of continuous improvement through better control and vision.

For the development of a CRSA methodology it is necessary to understand the scenario in which the company is located and determine who are responsible for its establishment. In the case of the study, the area of the bank that is in charge of creating, maintaining and ensuring the effectiveness of the method is the Operational Risk area. The most relevant point to be cited is how the risk identification procedure occurs. The CRSA is fundamental for a formalization of the context of risk and control, but it is necessary to understand its construction.

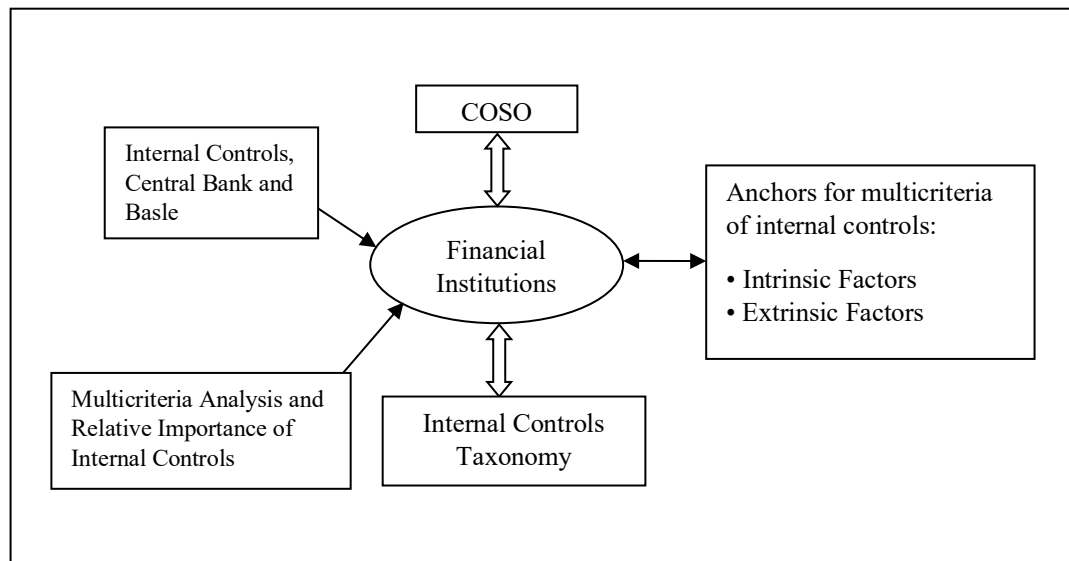
There is no standard way for the risk identification and assessment process, but there are some relevant steps that should be considered or followed explicitly, according to Tattam (2001). Some to be mentioned are: interviews with managers and operators; risk questionnaires; review of incident risk history; review of reports from internal and external audits, regulatory agents and consulting firms; analysis of external information, such as publications and news that address the operations to which the company is linked; use of suggestion or complaint portals for employees to participate in the process, identifying faults that in their opinion are relevant and lacking in attention; encourage the discussion of the subject within the work environment or meetings.

After the stage of risk identification, they are separated in a methodical manner according to their level of importance. These levels will be revealed and considered for analysis purposes within the context of the study. After classification of risks according to degree of relevance, frequency and impact, control processes, which aim to make the risk significantly less impact or eliminate it, are established as a safety mechanism.

To guide this study, we present the theoretical framework of the multicriteria of internal controls in financial institutions, which are shown in Figure 1, where correlations and causal relationships are established through dependent variables and independent variables.

Figure 1: Theoretical Framework of Multicriteria of Internal Controls in Financial

Institutions



3 - Method and procedures

The research methodology adopted a mix of descriptive and interpretative study. It involves the mapping of levels of importance and priority of internal controls in the accounting department of a medium multinational investment bank focusing on the office located in the city of São Paulo. An interview-based study of seven employees of the related areas to determine the criteria used to prioritize certain controls over others was held. The selection was done purposefully particularly at a convenience of the employees of operations, Accounts Payable, Information Technology and Finance. In order to achieve the intended descriptive analysis, multicriteria analysis is seen as the most suitable methodology used for this purpose. To proceed, at first, an in-depth analysis was made on the operations and the use of the information systems presented in Figure 2. Later there was a selection of the internal controls involved and linked to the use of the systems, by choosing the ones that are most relevant to the study. Subsequently, the operations manager of the bank was asked to assign different levels of importance to the processes.

In order to analyze the intrinsic and extrinsic factors previously described, responsiveness for the multicriteria in the choice by the exercise of internal controls was applied through a descriptive analysis by employees who currently have functions in the operations area of the bank. The reason for the choice of the sector is related to the fact that it deals directly with the accounting and operational functions of the institution and holds a larger part of the

responsibility for exercising a high volume of internal controls when using the accounting information systems.

We chose five internal control procedures among those existing in the internal control matrix of the institution that apply to the operations area, according to the employee's response to expatiate on. Below is the description of the internal control, narrating if the employee has already stopped exercising it at some point in time and how often does it occur. Then, under each control selected for the purpose of the research, the intrinsic and extrinsic factors were presented the justification elements for which a convenience response was sorted. The respondents were informed that their interview responses were anonymous to avoid that the employees feel uncomfortable or presenting responses that are not appropriate to their real experience.

Based on the format described, it was possible to relate internal controls to the respective reasons and the relative importance assigned by the organization's employees through analysis of the result using spreadsheet. The software was used to create a relationship matrix between the factors involved based on the hierarchical analysis models of Saaty (1991). Subsequently, based on the analysis of the quantitative research results, two or more employees of the organization were selected to conduct an in-depth interview to gather additional data on their personal constructed experiences in the organizational understandings about the vision that permeates the internal control environment in the bank.

3.1 - Classification of internal controls related to accounting information systems

At the outset, as described in the presentation of the methodology, internal controls were presented followed by their descriptions and their respective levels of classification according to relevance and inherent risks involved when non-compliant is considered. Levels of significance / importance are divided into Low, Medium, High and Very High and the division is determined based on several factors shown in Figure 3. It is important to emphasize that classification at a certain level of importance does not necessarily mean that all the factors described are applicable to internal control. Sometimes it happens that it is connected to only one of the characteristics.

Figure 3 – Level of Relative Importance

Importance and level	Factors
Low - 1	Low monetary volume involved (\$ 0 to \$ 50 thousand); Involves high recurrence activity; Large time space (1-2 months) between times when control should be exercised; Does not require specific knowledge to exercise; Non-compliant commits the operational activity of the institution.
Médium - 2	Medium monetary volume involved (\$ 50 to \$ 150 thousand); Involves medium recurrence activity; Medium temporal space (0-1 months) between the occasions when the control should be exercised; Requires certain specific knowledge to exercise; Non-compliant in some way compromises the operational activity of the institution.
High - 3	High monetary volume involved (R\$ 150 to R\$ 500 thousands);

		Involves low recurrence activity; Low time space (fortnightly) between times when control should be exercised; Requires specific knowledge to exercise; Non-compliant considerably compromises the operational activity of the institution.
Very high	- 4	Monetary volume involved is very high (> R\$ 500 thousands); Involves activity of rare recurrence; Low temporal space (daily) between times when control should be exercised; Requires very specific knowledge for exercise; Non-compliant totally compromises the operational activity of the institution.

The selection of the controls to be analyzed was done by consulting the internal controls matrix of the bank used as the basis of the study. This therefore considers those that are more related to the operations, accounting, IT and finance; and are more relevant when thinking about relationships with the accounting information systems that are part of the institution's business. In Figure 4 one would observe the internal control procedures, their brief explanations and the attributed relative importance by the respondents of each unit of operational functions.

Figure 4 – Internal Control procedures and associated relative importance

Internal Control	Description	Respon dents	Respon dents	Respon dents	Respon dents	Average
		Operati ons	Accts Payable	IT	Finance	
A. Access management	Check that the access granted to accounting information systems are consistent with the functions of each employee, considering the risk of misuse of systems and access to data that relate to specific skills	1	2	2	2	2
B. Transaction Accounting Monitoring / Reconciliation	Verify, through automatic reconciliation performed by a specific system, whether all operations contained in the information systems were correctly accounted for in the General Ledger system.	3	3	2	4	3
C. "Call-back" procedure	Verification of bank data prior to making payments to suppliers / customers by means of a recorded connection. Payments vary in monetary amounts and frequency.	2	1	3	2	2
D. Insertion of market data	Market data, such as currency quotes, are included daily in each of the systems and it is part of the control to verify that the information has been correctly entered so that the accounting is in accordance with the managerial control.	1	2	2	2	2

E. Transaction screening	Prior to the completion and accounting of each transaction, it is necessary to verify whether the transaction is related to a counterparty that violates any of the institution's policies or involves sanctioned countries.	3	2	2	1	2
F. Manual Journal entries	Double checking over manual transactions originated by journal entries to be posted into the general ledger system. The control consists of the involvement of management authorizing journal entries to correct some anomalies. The first one, elaborates the manual form. The second one analyzes and crosschecks whether the Debit note or Credit notes are consistent.	3	4	4	4	4
G. Segregation of duties for payment process	Control over payments to be made by the area of accounts payable and operations. The process involves employees from different levels and consists of a verification and approval of all payments made and accounted for.	2	3	2	1	2
H. Mandatory trainings	Mandatory training, whether related to the institution's policies or the use of accounting information systems, should be applied as soon as a new employee assumes a new role that involves previously unknown activities.	3	3	4	3	3
I. Suspense accounts verification	Routine of conference of suspense accounts of each product (derivatives and exchange), ensuring that they find themselves with zero balance.	1	3	2	2	2

Thus, at first sight one tries to explain why certain internal controls are not evaluated or wrongly classified (low, medium, high or very high) by failure of awareness programs. As a result one can therefore overestimate strategic risk accounts; and that certain internal controls are not evaluated and classified in the appropriate manner. In effect, training program that provides awareness must be failing. Or otherwise underestimate the lower risk accounts; it could be attributable to lack of proper interpretation of the COSO framework presented in the literature. This in itself masterminds the dimensions that particularly used the control activity to tighten approaches to their execution and monitoring.

In Figure 4, one would observe the experience of the bank institution where control is exercised. Certainly, the average of the perceptions of relative importance portrays the image of the understanding of the group towards goal congruence. As an average, this seems to respect the policies of the corporate governance and the management who implements the controls even though there are different conceptions that drive control exercise.

4 - Results and discussions

We interviewed seven different employees of the organisation, who currently hold positions in the Operations, Accounts Payable, Information Technology and Finance. Quantitative Data gathered were transcribed in a spreadsheet and qualitative data were also transcribed in textual analysis so as to observe the pattern of behavioral understanding among the employees.

At first, it is relevant to mention that only three of the seven interviewees reported that they ever failed to comply with one of the internal controls that are part of their responsibilities among the controls selected to integrate the study. This information expresses the intuitiveness present in the study about the fact that non-compliance with internal controls is as constant and deserving more reflection, since the other four employees pointed out situations in which it was not possible to reach the expectations of the internal control objective.

On the other hand, it is also interesting to note that all the affirmative answers to the fact of not complying with internal controls have always provided their justification and argument to reveal the reason behind this attitude. Likewise, employees who did not comply with internal controls also revealed certain difficulties that resulted in noncompliance of certain rules

Thus, it was decided that the analysis would be carried out by separating responses into three categories discussed under i) internal controls that are fulfilled; ii) Internal controls that face previously assumed intrinsic or extrinsic factors and, iii) Internal controls impacted by unforeseen factors.

Internal controls that are fulfilled

Among the answers it was possible to observe that the control functions on authorization of payments (medium), Mandatory Training (high) and Transaction screening (medium) accounts do not present constant or occasional obstacles to its fulfillment. Therefore, by the interviewees this is mainly because, according to the interviewees, they are activities that do not depend directly on the functionality of other systems or related to processes that do not allow interaction of various persons. For example, a payment process cannot be effectively and systematically completed without the segregation of duties on payments being exercised, since the information system involved requires control, as explained by an Accounts Payable Operator:

"The system does not allow the process to be completed without authorisation. It is required that the accountabilities and persons responsible conduct the procedures through their profiles independently so that a payment can be processed." Int2

From the points raised by Int2, one would derive some understandings from the separation of dependent controls and independent controls, Perera et al (2011). When exercised as described the dependent controls demands more internal checks whereas the independent controls by themselves are managerial and monitoring in nature.

In addition, it was mentioned that employees cannot and do not receive access to systems and functionalities without prior mandatory training.

"The fact of the mandatory continuous education is seen with extreme seriousness, and none of us has access until we have completed all the training, even if there is a period between you entering the bank and being able to use the systems. During the year we also received other compulsory training." Int3

One sees the seriousness mentioned by the Int3 as implicit to effectiveness of internal control. In effect, it is the real awareness that is being created through the training before employees

start to use the systems in order to summon the IS user acceptance indexes as per Delone and Mclean (1992).

Internal controls that face previously assumed intrinsic or extrinsic factors

There is a growing challenge as the environments change day in day out. Some of the controls no longer meet objectives or encounter obstacles related to functional factors. This is owing to information systems and technology advancements and again, for the reason of reduced resources promoted by current systems. It is as a result of this as mentioned by Pinto et al (2014) controls assessment meet internal structure and also individual interests of the monitoring procedures as such it could be prioritised by the internal audit functions (IAF) according to resources. The non-attendance to Access Management (medium) was related to IF2 and EF2, since one of the respondents demonstrated ignorance about the periodicity related to the procedure and level of relevance. The call-back procedure was pointed out as one of the controls that sometimes faces difficulties related to IF3 and EF1, even though no employee has pointed out the absence of their performance it was also mentioned how many times the controls were dribbled from the correct as planned due to the impossibility of performing it in the traditional way, which indicates that the employees sought an alternative form and understood the importance attributed by not giving in to the obstacles involved.

The controls relating to segregation of duties over manual journals (very high) was mentioned by two of the employees as one of the controls that is no longer complied with regularly. The main justifications are related to IF 3, EF1 and EF2, and also to the fact that it is understood as: "Even though of high impact, it involves recurring cases and does require the same model of mitigating controls. When it comes to a high impact, normally attracts more procedures of different kinds and involves more control." Int1

Normally, controls relating to manual journal entries have higher relative importance. This is because manual journaling paves way for fraudulent acts and the fear of fraud would attract the corporate governance policies for management overriding the controls. The top-side journal entry is most susceptible to fraud by management override (Lanza and Gilbert, 2007). That is the reason why the control turns higher impact the detection risk normally will be mitigated by assurance team. In the case commented by Int1 probably with the automation of the process the manual procedures are tracked serving as a complementary control that would relief the management of a higher concern.

On the other hand, the treatment given to implementation of high value controls and degree of complexity is different and the process of segregation of functions is exercised more frequently. Another point highlighted by the personnel responsible for Finance mentions the reduced number of employees and current structure:

"Occasionally, the organizational structure does not contemplate persons to handle certain tasks in order to abide with the rules of segregation of incompatible duties" Int7

The issue of occasionally there is not in the structure a staff earmarked for certain tasks in the rank a file of operational functions so as to meet segregation of duties seems to be common in the SMEs. As a result of this, there is no confident in controls as there is not accountability. As put forth by Perera et al (2011) identify uncertainties about information used in all spheres of a business; this no doubt creates an inconvincibility of the control environment to the internal stakeholders.

Internal controls impacted by unforeseen factors

Controls such as, Market data insertion procedure by origination (low); Operations accounting / Reconciliation of transaction (low and Operations screening (very high) have presented

obstacles / justification for non-achievement that was not previously observed. This is as a result of inobservance that they are directly associated with specific information systems functional faults; the instability or existence of technical difficulties and problems in the systems that punctually impacts the exercise of the internal control problems. Although this factor was not predicted, it is extremely relevant when considering the current context of the company and the level of importance of accounting information systems.

However, employees have stated that there are instances of noncompliance with control activities caused by system instabilities that are at least once every 4 months. According to one of the respondents, these are usually "circumvented" in some way to avoid the risk of negative impacts on operations. In this sense, an official responsible for Foreign Exchange Operations said:

"There are situations in which the internal check (Operation Screening) could not be performed at the time it was required (due to instability of the responsible system). However, the control was not stopped, since once it was possible to perform the process, this was carried out and did not present losses to the company ". Int4

Another operator, responsible for Derivatives, commented, on Operations Accounting / Reconciliation Monitoring, that

"There were situations and days when it was necessary to carry out the process manually, so the monitoring took place, however, independently of the system, which can be seen as an internal control that was performed in a different way than is expected." Int3

So, unforeseen circumstances do impact the relative importance of controls implemented. If we go by the logic that barely every process has it planning and that events are foreseeable, what comes as unforeseen becomes a control flaw on the part of the management where proactiveness is lacking. Could the management consider contingency plans for the systems or that systems breakdown avoided for a strategic reason? Therefore, one can infer that unpreparedness of the management to adequately plan their operations, impact the relative importance given to the control procedures selected to mitigate their risks.

The multicriteria analysis of internal control which leads to relegating certain controls to secondary place and others prioritised are as a result of a) management do not understand in its entirety the importance of certain controls; b) management override certain controls in order to be efficient knowing fully well that the lower relative importance controls are less important; c) the control environment masterminds controls to meet individual interests; d) resources are scarce in particular in SMEs where accounting information systems are underused so as to comply with every control procedures.

Thus contrasting the points raised so far, the position of the employee has a weight in the exercise of internal control. In effect, the powers of the implementer of internal control would definitely influence how it is executed and transferred to the control.

Noteworthy, that all the respondents emphasized the segregation of duties in order to maintain consistency if the processing of accounting information systems aiming at the preciseness of its results. Effectively, in essence of this process what matters is the derivable; if it pay-offs the management for taking the risk, the control exercise would be overridden so as to jump queue and nurture efficiency.

5 - Conclusions

The main objective of this study is to understand how the preparers of accounting information systems and other operating functions choose in the midst of stream of internal control procedures to mitigate the risk exposures.

Based on our analysis we infer that the multicriteria analysis of internal control which leads to relegating certain controls to secondary place and others prioritised are mainly as a result of a) management lack full awareness of the importance of certain controls; and b) management override certain controls in order to be efficient knowing well that the lower relative importance controls are less important.

Also, the results of the qualitative research show that the level of engagement overcomes issues such as classification problems or importance level evaluation. Despite this, the literature acknowledged provided information concerning how internal control procedures could be given relative importance to, particularly why certain controls are evaluated in view of relative importance and also to mitigate strategic risk accounts, thus helping to provide answer to propositions 1 and 2. However, rests on the preparers of the accounting information systems to define their priorities in the control matrix. There is an observable proof for proposition number 4, which, together with certain intrinsic and extrinsic factors, proved to be justifiable among the arguments supported by the living experience provided by the respondents.

Results demonstrate that the greatest impediments are in the usage of accounting information systems themselves that enables users to override controls and factors such as lack of resources. These certain show the involvement of the management to simplify the functional process.

The selection process and preference for certain controls to the detriment of the others could not be proven to be complete as a process in itself since the analysis of results showed that, despite a few exceptions, all employees showed interest and commitment to compliance with the controls assigned to them. Therefore, the degree of importance attributed to internal controls in financial institutions was seen as a necessary item not only to the requirements of the Central Bank of Brazil and Basel Committee, but also to the good functioning of the organisations based on the opinions observed during the interviews.

In short, the existence and presence of obstacles to the fulfillment of control objectives was proven as the main impediment to its realization, with emphasis on the unforeseen factors, which consists in problems involving information systems essential to the control procedures. Thus, it is possible to claim the richness of the study inasmuch as those corroborating the assumptions emanated from the procedure to be replicated, however, in the larger sample, if this being the case, considering other financial institutions and larger population, one would probably obtain a greater level of detail experiences and other significances.

The process of multicriteria analysis of internal control in organisations may not be considered in isolation since the control culture could be influenced by various variables. In the banking sector, we have the Basel, Swiss, EU, SOX, Islamic and Sharia Laws, Tax Heavens, to mention just a few that ought to be considered in their peculiar environments.

Finally, as a recommendation for future studies and continuity of the research on the subject, one proposes that investigation be engaged to respond hypothesis relating to a greater number of internal controls not evaluated and classified in the appropriate manner (low, medium, high or very high) and may therefore underestimate the lower risk accounts; and the high cost of exercising a particular control causes it to receive no appeal in relation to the benefit and not to

be executed. Also, that research in quantitative and qualitative level will be applied to a larger number of people e a larger conglomerate.

REFERENCES

- Anthony, R. N.; Govindarajan, V. (2006). *Management Control Systems*, USA: Harvard University Press.
- BANCO CENTRAL DO BRASIL. Resolução nº 3.056, de 19/12/2002. <https://www.bcb.gov.br/pre/normativos/busca/downloadNormativo.asp?arquivo=/Lists/Normativos/Attachments/46683/Res_3056_v1_O.pdf>
- BANCO CENTRAL DO BRASIL. Resolução nº 3.380, de 29/06/2006. <http://www.bcb.gov.br/pre/normativos/busca/downloadNormativo.asp?arquivo=/Lists/Normativos/Attachments/48239/Res_3380_v3_P.pdf>
- BANCO CENTRAL DO BRASIL. Resolução nº 2.554, de 24/9/1998. <http://www.bcb.gov.br/pre/normativos/busca/downloadNormativo.asp?arquivo=/Lists/Normativos/Attachments/45273/Res_2554_v3_P.pdf>
- BASLE COMMITTEE ON BANKING SUPERVISION.(1998) *Framework for Internal Control Systems in Banking Organisations*.<<http://www.bis.org/publ/bcbs40.pdf>>
- Bowlin K. (2011) *Risk-Based Auditing, Strategic Prompts, and Auditor Sensitivity to the Strategic Risk of Fraud*. *The Accounting Review* 86 (4): 1231-1253.
- Chartered Institute of Internal Auditors (IIA). (2015). <<https://www.iaa.org.uk/resources/risk-management/risk-based-internal-auditing>>
- CLÍMACO, J. (1994). *Multicriteria analysis - XIth International Conference on MCDM*, 1-6
- COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION. (2013). *Controle Interno - Estrutura Integrada*. Tradução por Instituto dos Auditores Internos do Brasil e PricewaterhouseCoopers. <http://www.iiabrasil.org.br/new/2013/downs/coso/COSO_ICIF_2013_Sumario_Executivo.pdf>
- COSO (1992). *Internal Control – Integrated Framework Principles*. <<https://www.coso.org/Documents/COSO-ICIF-11x17-Cube-Graphic.pdf>>

- Delone, W. H. ; Mclean, E. R. (2003). The Delone and Mclean Model of Information Systems Success: A ten-year update. *Journal of Management information Systems*. Vol. 19, issue 4.
- Delone, W. H.; Mclean, E. R. (1992). Information Systems Success: The quest for the dependent variable. *Information Systems Research* 3, 1.
- Flores, J. G (1994). *Análisis de datos cualitativos: aplicaciones e la investigación educativa*. Barcelona: PPU.
- IBGC - Instituto Brasileiro de Governança Corporativa. (2007). *Guia de Orientação para Gerenciamento de Riscos Corporativos* <<http://www.ibgc.org.br/userfiles/3.pdf>>
- Imoniana, J. O. (2008). *Controle de Gestão: Abordagem Sistêmica*. Rio de Janeiro: GEN-Ltc.Pg. 73 – 77.
- Imoniana, J.O., GARTNER, I.R., (2016).Critical Remark on Multi-Criteria Approach to Corporate Auditing Risk Assessment in Brazilian Context. *International Journal of Auditing Technology*. Volume 3 (2) 42-52.
- Imoniana, J. O. (2019). *Auditoria – Planejamento, Execução e Reporte*. São Paulo: GEN:Atlas.
- Perera, L. C. J. ; Silva, A. C. ; Lima, F. G. ; Imoniana, J. O.(2011). The dialectic of control culture in SMEs: a case study. *International Journal of Business Strategy*, v7, p. 45-53
- Pinto, J.; Pereira, A. C.; Imoniana, J. O.; Peters, M. R. S. (2014). Role of internal audit in managerial practice in organisations. *African Journal of Business Management* 8 (2), 68.
- PALFI, C. (2007) *Globalization - A Challenge for Internal Control and Audit in Banking System*. Faculty of Economics and Business Administration, Babeş-Bolyai University of Cluj-Napoca, Romania.<https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1117164>
- PRATES, P. M. B. B. (2006) *Avaliação dos sistemas de controles internos implantados pelas instituições financeiras no contexto da prevenção da lavagem de dinheiro*..<<http://www.bcb.gov.br/fis/supervisao/docs/PatriciaMonografiaAFMCFinal.pdf>>
- Reisswitz, F. (2008) *Análise de Sistemas Vol 1*.
- Saaty, T. L. (1991) *Método de análise hierárquica*. São Paul: McGraw Hill
- SIMONS, R. (1995). Control in an age of empowerment. *Harvard Business Review*, p. 80-88, mar. /abr.
- TATTAM, D.(2011) *A Short Guide to Operational Risk*.
- Vaassen, E.; Meuwissen, R.; Schelleman, C. (2013). *Controle interno e sistemas de informação contábil*.
- VINCKE, P. (1989). *Multicriteria decision-aid*. Belgium: Universidade de Bruxelas,
- Young, S. M. (1997), *The Control Function of Management*. Readings in Management Accounting. New Jersey: 2a. ed. Prentice Hall.
- Lanza, R. B. & Gilbert, S. (2007). *A Risk-Based Approach to Journal Entry Testing*. *Journal of Accountancy*, Available at

<https://www.journalofaccountancy.com/issues/2007/jul/ariskbasedapproachtojournalentrytesting.html>