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# Internal Audit's Involvement in Risk Management Process

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**Abstract**

***Purpose***

To add to our understanding of the relation between internal audit and ERM, the purpose of the present paper is to perform a descriptive evidence of the extent to which a sample of Tunisian companies have implemented a risk management process, having a special focus on the current role of internal audit in ERM.

***Design/methodology/approach***

Findings are drawn from a questionnaire survey conducted in 2015 and administrated to 41 companies. In association with this, Pearson's chi-square results test the dependence between ERM maturity and the presence of an internal auditor in companies.

***Findings***

The findings of this study show that an integrated ERM framework is essentially developed in credit institutions and a number of large companies; otherwise, it has not been sufficiently structured and formalized. Descriptive statistics provide evidence that ERM is a relatively new paradigm for several Tunisian companies.

On the level of current role of internal audit in ERM, it seems that involvement in areas the IIA deemed "core" activities for internal audit is moderate. However, involvement in activities that the IIA recommends should not be undertaken is relatively high. Beyond providing the assurance that the portfolio of risks is well managed, internal auditors are assuming roles relating to risk treatment.

***Practical implications***

Considering Pearson's chi-square results attesting the dependence between ERM maturity and the presence of an internal auditor in companies, there is an emerging need for the internal audit to have better involvement in risk management until a structured risk function will be developed. As recommended by the Institute of Internal Auditors (IIAS, 2011), it may be expected if an internal auditor fills roles, that may impair independence and objectivity, rather than nobody at all.

***Originality/value***

In the post-revolution context, Tunisian environment is becoming increasingly complex due to the several emerging risks. Companies are giving in present circumstances more interest to Enterprise Risk Management (ERM) but it is still in its infancy. In order to minimize the losses caused by these risks, the role of internal audit is involving into a more risk focused. Finding the right balance between internal audit objectivity and risk management remains a challenge for management.

**Keywords:** ERM, internal audit, objectivity, Tunisian context.

## INTRODUCTION

The Tunisian revolution of January 14$^{th}$ 2011 has created significant change in Tunisia resulting in new challenges and contributing to political, economic and social instability, which has been reinforced by the series of revolution that swept through the Middle East and North Africa, the movement that come to be called "the Arab spring" (Perkins, 2014). Since then, Tunisian companies face mutations and changes posing many risks at all levels. These companies are required to identify and manage their own risks, including those related to the unfavourable conditions of the country.

In this spirit, companies need the existence of two structures, one to establish a risk management process, and the other to assess the effectiveness of this process. While the first is inherent to Enterprise Risk Management (ERM), the second is a part of the missions of the internal audit.

As the role of internal audit continues to evolve into a more risk focused (Wang & Li, 2011), the main objective of this study is to ask about the ERM activities in which internal audit participates in Tunisian companies, together with the evolution of risk management in the post-revolution context. In this respect, a survey is conducted with 41 companies. Two groups of respondents were interviewed mainly internal auditors, the top and operational management.

The analysis of results indicates that companies have shown an increased interest in risk management in the post-revolution context, but the level of ERM maturity varies across companies. An integrated framework is essentially developed in credit institutions and some large companies; if not, it has not been sufficiently structured and formalized. This study provides insightful results that internal audit function is involved in risk identification and risk treatment. A minor role is played in risk analysis, cartography establishment and reviewing.

This paper proceeds as follows: section 1 describes the literature review on internal audit and risk management process, the research methodology is presented in section 2. Section 3 presents results, whereas discussion and implication are presented in section 4.

## 1. LITERATURE REVIEW

### 1.1 CURRENT TRENDS IN INTERNAL AUDIT

Historically, internal audit was focused on accounting issues and monitoring (IIA, 1991). However, this function has been redefined over the years and it has constantly complied with the changing needs of entities.

An important step was the definition of internal auditing issued by the IIA in June 1999, which clearly states that internal audit is an "independent and objective organization that gives assurance on the degree of control over its operations, brings its advice to improve and helps to create added value. It helps an organization to accomplish its objectives by bringing a systematic, disciplined approach, processes of risk management, control and corporate governance; and making proposals to enhance their effectiveness" (IIA, 1999).

More recently, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) released its integrated framework for Enterprise Risk Management (ERM) (COSO, 2004). Since then, there has been a global move towards an enterprise wide approach to risk management.

The internal audit helps an organization to accomplish its objectives by evaluating and improving the effectiveness of its processes relating to business governance, risk management and internal control (IFACI, 2011). It involves many tasks (Boudriga, 2012), including:

- The audit of all the processes, activities and operations is used to ensure compliance with the existing regulations and management procedures adopted by the organization.
- The evaluation of internal control processes and risk management of the organization aimed at promoting effectiveness and efficiency and to ensure compliance with existing regulations and internal procedures.
- The establishment of the annual audit plan according to a risk-based approach covering all processes, activities and operations of the organization. Even more, the implementation of the surveys in case of occurring problems or accidents and the achievement of consulting missions of different kinds from the entities of the organization, etc…

On the whole, internal audit has been oriented to the detection of the main risks of the entity as well as to the evaluation of its activities. In assigning to him these different missions, internal audit has direct implications on risks' minimization and on financial reporting. Moreover, internal audit, as a control function, leads to the improvement of company's performances (Caratas et Spatariu, 2014).

### 1.2 ENTERPRISE RISK MANAGEMENT

The most common definition of risk is the relationship between the probability of an incident's occurrence and the consequence of that occurrence (Singh, 2014). Examples of risks may be cited especially operational risks, financial risks, ineffective internal communication, customer related risks, political and social instability, etc. In light of those numerous risks, the organisation should set up a process allowing it to effectively understand and manage these identified risks; such is the goal of Enterprise Risk Management (Reding et al, 2011).

Enterprise Risk management is defined as "a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and to manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives"(COSO, 2004).

It emerges from this definition that risk management is, first, the case of all stakeholders of the organization. It aims then to be global and should cover all the activities, processes and assets of the organization. It consists, finally, in an approach that allows a better understanding and a greater apprehension of the risks inherent to all aspects of the organization.

In fact, this approach is based on a dynamic process defined and implemented by the organization. Following the publication of the COSO II (2004) and ISO 31000 (2009) standard, the ERM process includes a set of steps to keep the risks to an acceptable level.

**Table 1: Practices related to ERM steps**

| ERM Steps | Practices adopted |
|---|---|
| Defining the organizational framework of risk management | ▪ Define organizational goals<br>▪ Define the culture of the organization regarding the integrity, ethical values and the way that the risks are understood<br>▪ Precise responsibilities within the risk management process<br>▪ Develop of an adequate information system |
| Risk identification | ▪ Identify all internal and external events<br>▪ Distinguish between risks and opportunities<br>▪ Identify sources of risk |
| Risk analysis | ▪ Determine the level of risks and its sensitivity to preconditions<br>▪ Evaluate probability of occurrence of risks and related impacts<br>▪ Communicate analysis to decision makers<br>▪ Establish risks cartography<br>▪ Help responsible to make judgments to better manage the risks identified |
| Risk treatment | ▪ Align level of risks with risk appetence of the organization<br>▪ Determine the appropriate treatment : avoidance, reduction, sharing or acceptance |
| Monitoring and review | ▪ Assure continuous or periodic assessments<br>▪ Draw lessons from the past experience of the organization<br>▪ Ensure that treatments desired by the organization have effectively been implemented<br>▪ Verify whether the data necessary to manage risks are communicated in a format and in sufficient time for everyone<br>▪ Assure continuous improvement of the risk management process. |

Taking into consideration the monitoring and review step, ERM is not a sequential process in which a step affects only the next. It is indeed an iterative process by which any point has an immediate and direct impact on others.

Enterprise Risk Management has assumed a greater importance over the past decade; however, ERM approaches are in various stages of implementation across organizations. Some authors argue that organizations have different levels of maturity of ERM which are revealed by the ERM characteristics assumed by these entities (Beasley et al. 2015; Lotti Oliva, 2016).

Initially, Beasley et al. (2005) proposes 5 ERM stages mainly *No plans to implement ERM*, *investigating ERM but no decision yet*, *planning to implement ERM*, *partial ERM* and *complete ERM in place*. More recently, Beasley et al. (2015) proposes 5 levels called *very immature*, *developing*, *evolving*, *mature* and *robust* ERM. Lotti Oliva (2016) proposes 5 levels of maturity model called *insufficient, contingency, structured*, *participative* and *systemic* ERM.

### 1.3 INTERNAL AUDIT AND RISK MANAGEMENT

The role of the internal auditor in risk management has grown in recent years. Explicitly, internal auditors are expected to be increasingly involved in Enterprise Risk Management by providing assurance that the entity's risk exposures are well managed (Thompson, 2013). Internal auditors should be experts in risk management. They can play a range of risk management activities. The Institute of Internal Auditors (IIA, 2004 & 2011), presents and indicates which roles internal audit activities should and should not undertake.

- **Core internal auditing roles in regard to risk management:** They form part of the wider objective of giving assurance on risk management. An internal audit function can give assurance on risk management processes, and that risks are correctly evaluated. Internal audit can also evaluate risk management processes and review the management of key risks.
- **Legitimate internal auditing roles with safeguards:** They are generally considered consulting roles that can greatly enhance the value provided by internal auditing in risk management. These roles include facilitating identification and evaluation of risks, coaching management in responding to risks, coordinating the risk management activities, maintaining and developing the risk management framework, etc.
- **Roles internal auditing should not undertake:** These roles are management responsibilities that would clearly impair the internal audit activity's objectivity, particularly, setting the risk appetite, imposing risk management processes, taking decisions on risk responses, implementing risk responses on management's behalf and accountability for risk management.

Considering the risk management process, internal auditor can be responsible for certain activities related to steps defined below, mainly: defining the organizational framework of risk management, the risk identification, the risk analysis, monitoring and review. Clearly, internal audit should not assume roles relating to risk treatment. Internal audit should provide advice, challenge and support to management's decision making, as opposed to taking risk management decisions themselves (IIA, 2004).

## 2. RESEARCH METHOD

To gather information on the internal audit's involvement in risk management process, a survey was conducted in 2015 with 41 companies. The survey was pretested by three academics and four practitioners, appropriate revisions were then made.

Surveyed companies present various profiles concerning their size and field of activity (6 banks and leasing, 9 services, 5 trades, 21 manufacturing). Two groups of respondents were interviewed mainly internal auditors, the top and operational management. Over half of the sample was internal auditors.

The questionnaire comprised three sections. The first section contained some questions about the major risks that had encountered the surveyed companies (risk of insolvency of customers, staff's stress, etc…). The second section included questions related to the process of risk management those have been developed mainly based on the work of the AMF (2010) and IFACI (2009). Five steps related to ERM are involved: the definition of the organizational framework of risk management, risk identification, risk analysis, the treatment of risks and monitoring and review. Following Beasley et al. (2005), the level of ERM implementation in the respective firms is identified. The third section contained questions to indicate the current responsibility of internal auditors in ERM activities. Additional questions were asked to examine difficulties related to the realization of internal audit and internal control functions (low sensitivity of the leaders, staff resistance in case of control, etc...).

The study employed Pearson's chi-square test of independence model, considering that the variables were binary and categorical in nature. The p-value was set at 0.05. Pearson's chi-square results only give indication of dependence or independence of distribution of data but do not explain the degree of association between variables. Therefore, the study tested the independence of the observed data and the null hypotheses accepted or rejected given the p-value for each test results.

## 3. RESULTS

The present paper aims to analyse the risk management process in a sample of Tunisian companies, having a special focus on the roles of internal auditors related to ERM.

### 3.1. AN OVERVIEW OF ERM MATURITY

Tunisian revolution, combined with the events that occurred in the neighbouring countries, had various impacts on the activities of companies. While 51 percent of respondent companies have experienced a decline in their incomes, 37 percent of them had increased their earnings; only 12 percent of the companies did not reveal any impact of the revolution on their business.

To explain this decline, the respondents mentioned the existence of many internal and external risks that have disrupted activities of their enterprises, mainly the increase in costs (76 percent); the risk of client insolvency (59 percent); psychosocial problems especially personnel's stress and anxiety (51 percent); the decline in demand (37 percent) and other risks, such as the existence of parallel markets (17 percent).

To determine the appropriate treatment of these risks, some practices related to ERM are adopted, essentially:

- Define organizational goals (74 percent)
- Precise responsibilities within the risk management process (44 percent)
- Identify all internal and external events (63 percent)
- Communicate analysis risks to decision makers (49 percent)
- Evaluate probability of occurrence of risks and related impacts (22 percent)
- Establish risks cartography (22 percent)
- Draw lessons from the past experience of the organization (87 percent)
- Assure continuous or periodic assessments (38 percent)

Overall, almost all organizations in our sample are interested in ERM but it is implemented to different extent. 63 percent of companies had a partial ERM framework investigated in treating specific risks (accounting and financial risks, operational risks and fiscal risks). Companies are not aware of the global risks to which they are subject. 15 percent had an integrated view of ERM but the framework is not well formulated. The ERM process is evolving but adoption of risk management practices occurs on a non-structured manner. Only, 22 percent of respondents (nine companies) had a complete ERM which is an integrated and structured ERM framework. Five out of these nine companies are related to credit institutions (banks and leasing). Three of them developed a risk function after the revolution.

Interestingly, organizations in the present study have either adopted ERM or are making progress towards adopting it, none of the respondents indicated that ERM is rejected by their organization. Therefore, based on the above, three levels of maturity of enterprise risk management are revealed by respondents, called Partial ERM; Evolving ERM and Complete ERM.

### 3.2. INTERNAL AUDITING'S ROLE IN RISK MANAGEMENT

The analysis of the responses allows us to note that 33 out of 41 companies (80 percent) have audit services and internal control and rely in this framework on regulatory standards. From these responses, we can also find that the internal audit and control services have a tenure that exceeds in most cases the five years which is not the case for risk management.

In fact, the majority of companies have audit executives and internal control. These officials enjoy in most cases the necessary means to assure their missions and they are directly related to the General Direction (75 percent).

Nevertheless, these officials write the internal control report in an independent manner in only 45 percent of cases. As can be seen in figure 1, other problems and difficulties may be noted in this context, in particular, staff resistance to control (45 percent); the difficulty of implementation of recommendations and plans action (45 percent); the low sensitivity of executives (36 percent); the difficulty to control the higher hierarchical levels (27 percent) and frequent restructuring (13 percent).

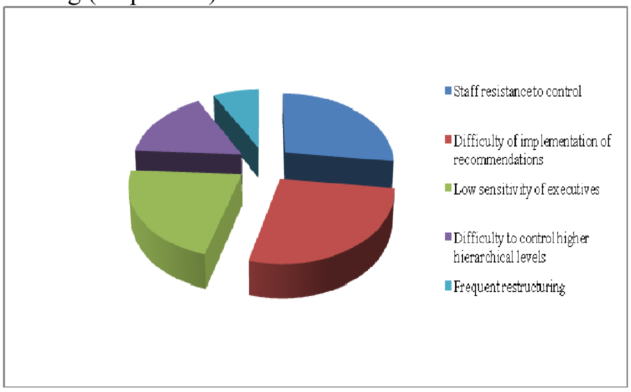


**Figure 1: Problems encountered by internal auditors**

When asking the 33 respondents to specify the roles of internal audit in risk management process, they claim that internal auditor participate in risk identification in 23 cases. 4 auditors have an active participation in risk analysis, and 8 are implicated in preparing the risk cartography. However, in 16 cases, the internal auditors are invited to participate in risk treatment. Auditors participate in reviewing and monitoring step in only 3 cases (figure 2).

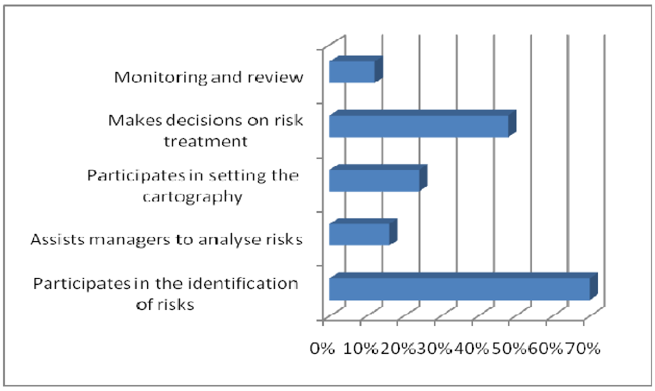


**Figure 2: Role description**

Descriptive statistics revealed that there is a high involvement of internal audit in risk management, even in risk treatment decisions which is considered as a role that internal auditing should not undertake.

However, when applying the Pearson's Chi-square test of independence model, we observe that the results reject the hypothesis of independence between the presence of an internal auditor in companies and the ERM maturity (table 2). The Chi-square value for the above test was significant (Chi-square test = 5,734, $p<0.05$). This shows that there is a significant difference in the level of ERM maturity dependent on whether there is an internal auditor.

### 4. DISCUSSION AND IMPLICATIONS

Tunisian companies are increasingly confronted with issues of risks, particularly in the post- revolution context. While some of them are specific to companies (customer insolvency, personnel's stress and anxiety, etc.), others are related to business sectors and relevant to economic, political and social conditions in the country. Some problems are even though better controlled mainly the political instability (BCT, 2014).

Indeed, since these have become more sensitive to the need for effective risk management especially that 51 percent of respondents pointed out that their income declined. For example, for tourism, the companies surveyed affirmed that the decline of their activity has exceeded 20 percent. The insecurity experienced by Tunisia during this period strained many tourists, especially Europeans, to cancel their trips. Similarly, three credit institutions out of six experienced the last years a decline in their business. This decrease can be explained by the selective policy customers adopted by these institutions following the revolution especially in presence of customer insolvency.

**Regarding the ERM maturity**, it's generally better developed within credit institutions and a number of large companies. Otherwise, it's significantly less developed. The analysis shows that a first group of these last companies have an evolving process that is integrated but still informal and by the prerogative of management. A second group of companies having a partial ERM which is disaggregated and focused on specific risks.

The fact that credit institutions are the best equipped in the management and surveillances of risk can be explained by the existence of a legal and regulatory framework. The IIA (2010) survey shows that a regulatory requirement for an internal audit activity is most prevalent in the financial services industry. Indeed, several rules of good governance that seeks to establish a prudent management of credit institutions were implemented by the Central Bank of Tunisia (BCT, 2011). Credit institutions have to establish an executive credit committee to examine the financing activity; a permanent internal audit committee in charge of ensuring that internal control mechanisms are put in place and a risk committee that helps the Board of directors to fulfill its responsibilities relative to managing and monitoring risk.

In fact, Pearson's chi-square test of independence model supports the existence of dependence between sector affiliation and ERM maturity (table 3). The findings of this study are consistent with Beasley et al. (2006) and Soltanizadeh et al. (2014) results. However, this test does not support the existence of dependence between ERM maturity and firm size (table 4). Hence, Brustbauer (2014) found numerous examples of small and medium companies that take a very proactive approach to risk management. The key to success is an awareness of firm-related risks; being aware of risks is the prerequisite for ERM activity.

**Concerning the role of internal audit in risk management**, the present paper makes obvious that the internal audit function is involved in the risk management process, which support other works conducted in Tunisian context (Oussii et Boulila, 2015). In fact, different roles are played in this context, mainly the risk identification and the risk treatment. The internal audit played a minor role related to risk analysis, cartography establishment and reviewing.

In terms of internal audit's role in risk management for conformity with the appropriate internal audit role identified by the IIA (2004, 2011), it seems that internal audit involvement in areas the IIA deemed "core" activities and legitimate with safeguards are moderate. However, involvement in areas the IIA deemed inappropriate is high.

As treatment function raises significant threats to objectivity, the IIA (2011) notes that if the organization has a significant need related to risk management and nobody else has the experience to feel that need, it may be better if an internal auditor feels that role rather than nobody at all. Adopting the standpoint of IIA, we suggest that audit officials could further integrate functions relating to risk management until a structured function will be developed. This tends to confirm that the internal audit activity's role is influenced by the companies' contexts.

To sustain the importance of internal auditor's involvement in risk management process, Pearson's chi-square test supports the existence of dependence between the level of ERM maturity and the presence of internal auditors in companies. It shows that organizations having an internal auditor are more likely to have an integrated approach of ERM (Evolving or Complete ERM) and those without internal auditors are less likely to have matured ERM.

Consistent with other studies (Sarens et De Beelde, 2006), the internal auditing profession is in a kind of "transition phase". In order to survive this transition phase, internal auditors need to assume a "teaching role" to the different management levels to make them aware of their responsibilities in risk management. After this transition period, this situation should not continue to allow internal audit to ensure fully its mission as an evaluator of the effectiveness of the risk management process (Thompson, 2013).

Whatever, some difficulties may disturb the internal auditor to play its roles, mainly staff resistance, the low sensitivity of the leaders as well as the difficulty of controlling the higher hierarchical levels. Mention also that the internal control reports are prepared by the internal audit department or internal audit in slightly less than half of cases which may compromise the objectivity of these reports. These difficulties, related to the culture of the company, illustrate the need to develop an audit charter that formally defines the duties, powers and responsibilities of the internal audit (Schick et al, 2010).

Moreover, more needs to be done to insure independence and objectivity; particularly with respect to risk management, control and governance (Al-Akra et al, 2016), even as the Middle East and North Africa (MENA) region was expected to experience the most significant changes in the regulation of internal auditing (IIA, 2010),

**SUMMARY AND CONCLUSION**

In recent times, Tunisian companies have noted a difficult situation. They are globally threatened by external risks related to economic, political and social conditions in addition to internal risks mainly the customer insolvency, the personnel's stress and the decline in demand, etc. Those companies need the existence of two structures, ERM to establish a risk management process and internal audit to assess the effectiveness of this process.

On the level of ERM maturity, an integrated framework is essentially developed in credit institutions and some large companies; otherwise, it has not been sufficiently structured and formalized. According to respondents, having an informal or a limited risk management processes can be explained by the lack of skills and appropriate management tools.

Even if, Pearson's chi-square test didn't support the existence of dependence between ERM maturity and firm size, small and medium companies need to develop their risk management process given the complexity of the organizational environment. The survival of these companies is more easily threatened because of their smaller set of financial and non-financial resources (Falkner et Hiebl, 2015).

This study provides insightful results that organizations having an internal auditor are more likely to have an integrated approach of ERM and those without internal auditors are less likely to have matured ERM. Those auditors are involved in risk management process, specifically, in risk identification and risk treatment. A minor role is played in risk analysis, cartography establishment and reviewing.

Although this involvement raises significant threats to objectivity, internal audit can help companies to manage risks that may occur until a formal ERM function will be developed. Therefore, it's essential that the roles of each function be clearly limited in order to avoid an unjustified overlapping and the conflict of interest (Ruse et al, 2014).

This paper hopefully contributes to the ongoing discussion on risk management and internal audit in Tunisia. Nonetheless, it should be noted that the generalizability of this study's findings to other companies remain limited considering the small sample size.

**REFERENCES**


- AL-AKRA M., ABDEL-QADER W. ET BILLAH M. (2016), *Internal auditing in the Middle East and North Africa: A literature review*, Journal of International Accounting, Auditing and Taxation, Volume 26, pp. 13-27.
- AUTORITÉ DES MARCHÉS FINANCIERS - AMF, (2010), *Les dispositifs de gestion du risque et du contrôle interne, cadre de référence*, 36 pages.
- BANQUE CENTRALE DE TUNISIE - BCT, (2011), *Circulaire aux établissements de crédit N°2011-06*.
- BANQUE CENTRALE DE TUNISIE - BCT, (2014), *Rapport annuel*, 2014.
- BEASLEY M., CLUNE R. ET HERMANSON D.R. (2005), *Enterprise Risk Management: An empirical analysis of factors associated with the extent of implementation*, Journal of Accounting and Public Policy, Volume 24, N°6, pp. 521-531.
- BEASLEY M.S., CLUNE R. ET HERMANSON D. (2006). *The impact of enterprise risk management on the internal audit function,* DigitalCommons@ Kennesaw State University.
- BEASLEY M., BRANSON B. ET PAGACH D. (2015), *An analysis of the maturity and strategic impact of investments in ERM*, Journal of Accounting and Public Policy, Volume 34, pp. 219-243.
- BOUDRIGA Z. (2012) *L'audit interne : organisation et pratiques*, Collection Azurite, Tunisie, 359 Pages.
- BRUSTBAUER J. (2014), *Enterprise risk management in SMEs: towards a structural model*, International Small Business Journal.
- CARATAS M.A. ET SPATARIU E.C. (2014), Contemporary Approaches in internal audit, Procedia Economics and Finance, Vol. 15, pp. 530-537.
- COMMITTEE OF SPONSORING ORGANIZATIONS OF THE TREADWAY COMMISSION (COSO) (2004), *Internal Control – Integrated Framework,* AICPA, New York.
- FALKNER E.M. ET HIEBL M.R.W. (2015), *Risk management in SMEs : a systematic review of available evidence*, The Journal of Risk Finance, Volume 16, N°2, pp. 122-144.
- INSTITUT FRANÇAIS DES AUDITEURS ET DES CONTRÔLEURS INTERNES (2011), *Manuel de contrôle interne : améliorer l'efficacité de la gouvernance, du contrôle interne et du management des risques*.
- Institute of Internal Auditors (1991), *Standards and guidelines for the professional practice of Internal Auditing*, UK.
- Institute of Internal Auditors (1999), *Definition of Internal Auditing*, Altamonte Springs, Florida.
- Institute of Internal Auditors (2000-2002), *Standards for professional practice of internal audit*,

Altamonte Springs, Florida.

- Institute of Internal Auditors (2004), *The role of Internal auditing in enterprise-wide risk management*, Altamonte Springs, Florida.
- Institute of Internal Auditors (2010), *What's next for Internal auditing*, CBOK, 2010.
- Institute of Internal Auditors (2011), *Internal auditing's role in risk management*, Oracle, 2011.
- ISO (2009), *Risk management principles and guidelines*, Norme Internationale ISO 31000.
- LOTTI OLIVA F. (2016), *A maturity model for enterprise risk management*, International Journal of Production Economics, 173, 66-79.
- OUSSII A.A. ET BOULILA N.T. (2015), *Internal Audit Function in Tunisian Listed Companies: An Explanatory Study*, Research Journal of Finance and Accounting Volume 6, N°19.
- PERKINS K. (2014), *A history of modern Tunisia*, 2ème édition, Cambridge University Press, USA.
- REDING K.F., SOBEL P.J., ANDERSON U.L., HEAD M.J., RAMAMOORTI S., SALAMASICK M. ET RIDDLE C. (2011), *Manuel d'audit interne Améliorer l'efficacité de la gouvernance, du contrôle interne et du management des risques*, édition IFACI, Paris.
- RUSE E., SUSMANSCHI G. ET DANECI-PATRAU D. (2014), *Internal audit and risk management, SEA-Practical Application of Science,* Vol.2, Issue 1 (3), pp. 525-531.
- Sarens G. et De Beelde I. (2006), *Internal auditors' perception about their role in risk management: A comparison between US and Belgian companies*, Managerial Auditing Journal, Vol. 21, N°1, pp.63 – 80.
- SCHICK P., VERA J. ET BOURROUILH-PAREGE O. (2010), *Audit interne et référentiels de risque*, édition DUNOD, Paris, 339 Pages.
- SINGH R. (2014), *Basic Concepts of Risk Management and Risk Defined,* Pipeline Integrity Handbook, pp.9-20.
- SOLTANIZADEH S., ABDUL RASID S.Z., GOLSHAN N., QUOQUAB F. ET BASIRUDDIN R. (2014), *Enterprise risk management practices among Malaysian firms*, Procedia-Social and Behavioral Sciences, 164, pp. 332-337.
- THOMPSON R.M. (2013), *A Conceptual Framework of Potential Conflicts with the Role of the Internal Auditor in Enterprise Risk Management*, Accounting and Finance Research, Vol.2, N°3.
- WANG Y. ET Li M. (2011), *The role of internal audit in Engineering Project risk management*, Procedia Engineering, 24, pp.689-694.

**APPENDIX**

**Table 2 : Chi-Square Test – ERM maturity Compared to Internal auditor**

| | | Internal auditor | | Total |
|---|---|---|---|---|
| | | No | Yes | |
| ERM | Partial ERM | 8 | 18 | 26 |
| | Evolving ERM | 0 | 6 | 6 |
| | Complete ERM | 0 | 9 | 9 |
| Total | | 8 | 33 | 41 |

Pearson Chi2 (2) = 5,734 Pr = 0,05

**Table 3 : Chi-Square Test – ERM maturity Compared to sector affiliation**

| | | Sector | | | | Total |
|---|---|---|---|---|---|---|
| | | Banks and leasing | Services | Trades | Manufacturing | |
| ERM | Partial ERM | 1 | 6 | 4 | 15 | 26 |
| | Evolving ERM | 0 | 1 | 1 | 4 | 6 |
| | Complete ERM | 5 | 2 | 0 | 2 | 9 |
| Total | | 6 | 9 | 5 | 21 | 41 |

Pearson Chi2 (2) = 16,718 Pr = 0,01

**Table 4 : Chi-Square Test – ERM maturity Compared to size of companies**

| | | Size | | | | Total |
|---|---|---|---|---|---|---|
| | | <10 | 11-49 | 50-250 | >250 | |
| ERM | Partial ERM | 1 | 9 | 8 | 8 | 26 |
| | Evolving ERM | 0 | 0 | 2 | 4 | 6 |
| | Complete ERM | 0 | 2 | 3 | 4 | 9 |
| Total | | 1 | 11 | 13 | 16 | 41 |

Pearson Chi2 (2) = 4,562 Pr = 0,601