

## REVIEW ARTICLE

# The impact of risk management on organizations: A literature review

### ABSTRACT

Events in the early years of the 21st century, such as the Enron and World-Com scandals and the financial crises, revealed significant deficiencies in existing control processes and the difficulties companies had in structuring robust risk management models. With the advent of COSO ERM, ISO 31000 and the Sarbanes Oxley Act –as the main frameworks for holistic risk management models– the aim was for organizations to improve their ability to achieve their strategic objectives through activities that manage uncertainty and, above all, create and sustain organizational value. The purpose of this paper is to review the research on the effectiveness of risk management in organizations by reviewing the literature in Scopus and Web of Science. This review shows that the research is not conclusive regarding the real impact generated by risk management systems and their contribution to value creation and increase in financial profitability. It also shows that there is an interesting gap for future research, considering that many of the studies that have been carried out have a special emphasis on the financial sector, neglecting other equally important economic sectors.

**Keywords:** Enterprise Risk Management; ERM; Risks; Internal Control; COSO.

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## **INTRODUCTION**

Risk management adds value to organizations by developing specific responses to minimize risks that could be detrimental to the achievement of strategic objectives. The Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2017) emphasizes that risk is the possibility of certain events occurring and impacting both the objectives and strategy of organizations; it also defines enterprise risk management (or ERM) as the sum of culture and practices integrated with the business strategy, with the premise of managing risks to ensure business value. Over the past decade, many organizations have faced major risk events that have significantly impacted the pursuit of strategic value. The collapse of Enron, WorldCom, Lehman Brothers, and MF Global; the 9/11 terrorist attacks; the explosion of disruptive technologies; the global geopolitical situation; cybercrime concerns; the broader economic crisis; and many other factors have encouraged the incorporation of more holistic risk management approaches to identify, assess, and respond to major events that affect business success (Arena *et al.*, 2010; Beasley *et al.*, 2015; Lundqvist, 2014; Wu and Olson, 2010). Risks are of different nature; they can be economic, environmental, geopolitical, social, technological, cybersecurity, regulatory, legal, health, and even related to environmental damage, climate change, and so on (World Economic Forum, 2021). It is a priority for organizations to implement robust risk management models that allow them to analyze and evaluate any event that poses a threat to the achievement of organizational objectives (Shad *et al.*, 2019).

Initially, risk management focused on financial institutions and insurance companies and was referred to as traditional or silo risk management. Over the years, the scope of risks has expanded beyond those related to investments, conversions, and typical foreign exchange risks to include operational, technological, and other risks that can also affect the achievement of a company's objectives. This modern or holistic view is the one developed by the main risk management frameworks, such as COSO ERM, ISO 31000 and the Sarbanes Oxley Act, which introduced guidelines to reform and strengthen risk control and priority risk

management systems by expanding the responsibilities of the different governance bodies (Arena *et al.*, 2010; Callahan and Soileau, 2017; Lundqvist, 2014; Ruiz-Canela, 2021; Shad *et al.*, 2019). It is evident that there are no conclusive studies on the impact of enterprise risk management; very little is known about the impact it has been able to cause in sectors other than the financial sector, and there are no studies on companies in countries with emerging economies (Anton and Afloarei, 2020; Callahan and Soileau, 2017; Otero *et al.*, 2020; Pagach and Warr, 2011; Ruiz-Canela, 2021; Sutton, 2006). For this reason, this paper reviews the most cited research in Scopus and Web of Science on the impact generated by risk management in organizations, thus establishing future lines of research.

## **PURPOSE OF THIS PAPER**

To conduct a literature review of the impact that risk management has had on various types of organizations.

## **ARGUMENTATIVE REVIEW**

The methodology used for the literature review was aimed at identifying scientific publications on the impact of risk management in organizations, both in the public and private sectors. In line with other reviews, the literature was searched in Scopus and Web of Science, since they are databases with high quality bibliographic information, guaranteeing the reliability of the sources used.

For the search, we used English words related to the topic in question, i.e., enterprise risk management, so the determination was as follows: ("Enterprise Risk Management" OR ERM) AND (impact\*) NOT ("enterprise resource planning"), NOT (ERP) and NOT ("Environmentally Responsible Manufacturing"). Considering that "enterprise resource planning or ERP" and "environmentally responsible manufacturing" have a similar spelling with the search for "enterprise risk management", it was decided to exclude these searches so that the results are limited only to enterprise risk management ERM. The following categories were filtered in Web of Science: "business", "business finance, management and public administration", and in Scopus the category "business, management

and accounting” was selected. The next criterion was to limit the number of papers to be studied and the option of the most cited in both databases was used as a filter because this makes it possible to identify the most influential and relevant research in a specific field, which helps to be at the forefront of scientific advances and make important decisions for this research. The most cited papers are shown in Tables 1 and 2 with the ranking of the ten most cited papers in Web of Science and Scopus, respectively. In the case of Web of Science, the papers “The value of enterprise risk management” by Hoyt and Liebenberg (2011) with 222 citations; “The risk management of nothing”, by Power (2009),

with 195 citations, and “Enterprise risk management and firm performance: a contingency perspective” by Gordon et al. (2009), with 182 citations, stand out. On the other hand, Scopus includes “Determinants and value of enterprise risk management: empirical evidence from the literature” by Gatzert and Martin (2015), with 47 citations; “Internal audit involvement in enterprise risk management” by De Zwaan *et al.* (2011), with 44 citations, and “Extended-enterprise systems impact on enterprise risk management” by Sutton (2006) with 39 citations.

It is evident that in the case of Web of Science, the most influential papers refer to the value, culture, importance and criticism of

**Table 1**

*Most cited papers on Web of Science*

Title	No of citations
“El valor de la gestión de riesgos empresariales” by Hoyt and Liebenberg, 2011.	222
“La gestión de riesgos de la nada” by Power, 2009.	195
“La gestión de riesgos y el desarrollo de las empresas” by Gordon <i>et al.</i> , 2009.	182
“El riesgo empresarial y la cultura” by Mikes, 2009.	167
“El valor de la información no financiera en la gestión de riesgos de la pequeña y mediana empresa” by Altman <i>et al.</i> , 2010.	161
“La dinámica organizativa de la gestión de riesgos empresariales” by Arena <i>et al.</i> , 2010.	148
“Crítica y revisión de la gestión de riesgos empresariales” by Bromiley <i>et al.</i> , 2015.	132
“Las características de las empresas que contratan a ejecutivos de riesgos” by Pagach and Warr, 2011.	125
“Gestión de riesgos empresariales y la experiencia en un banco grande” by Wu and Olson, 2010.	101
“Convergencia de los mercados financieros y de seguros” by Cummins and Weiss, 2009.	95

Note. Prepared by the author, 2023.

**Table 2**

*Most cited papers in Scopus*

Title	No of citations
“Los determinantes y valor de la gestión del riesgo empresarial: evidencia empírica de la literatura” by Gatzert y Martin, 2015.	47
“Participación de la auditoría interna en la gestión de riesgos empresariales” by De Zwaan <i>et al.</i> , 2011.	44
“El impacto de los sistemas empresariales extendidos en la gestión de riesgos empresariales” by Sutton, 2006.	39
“Gestión de riesgos empresariales y el proceso de presentación de informes financieros” by Cohen <i>et al.</i> , 2017.	37
“Un estudio exploratorio de los pilares de la gestión de riesgos empresariales” by Lundqvist, 2014.	37
“Integrar los informes de sostenibilidad en gestión de riesgos empresariales y su relación con el desempeño empresarial” by Shad <i>et al.</i> , 2019.	35
“¿La gestión de riesgos empresariales mejora el desempeño operativo?” by Callahan and Soileau, 2017.	34
“El papel de la gestión estratégica de riesgos empresariales y la flexibilidad organizativa para facilitar el nuevo cumplimiento normativo” by Arnold <i>et al.</i> , 2011.	29
“Aprovechar los sistemas de información integrados para mejorar la flexibilidad y el rendimiento estratégico” by Arnold <i>et al.</i> , 2015.	23
“Un análisis de la madurez y el impacto estratégico de las inversiones en ERM” by Beasley <i>et al.</i> , 2015.	23

Note. Own preparation, 2023.

risk management models; on the other hand, in Scopus, the most influential papers are circumscribed to the value, process and pillars of risk management. The content analysis of these carefully selected papers is presented in the following section.

### **Literature review**

Power (2009) points out that since 1990, in light of concerns about fraudulent financial reporting in the mid-1980s and with the introduction of the COSO methodology, enterprise risk management (ERM) has taken center stage as a correction to the limitations of the silo model, promoting more efficient use of capital in predominantly financial and insurance companies. The development of enterprise-wide holistic risk management (ERM) has begun to unite – under a single approach – insurance risks, commodity risks, foreign exchange risks, interest rate risks, and other risks (Beasley *et al.*, 2015; Bromiley *et al.*, 2015; Gatzert and Martin, 2015; Gordon *et al.*, 2009; Hoyt and Liebenberg, 2011; Mikes, 2009; Shad *et al.*, 2019). Similarly, Arena *et al.* (2010) explain that the ERM approach is the main form adopted by firms to manage uncertainty, which “exploded” in the 1990s. This approach seeks to link risk management with business and the establishment of strategies and objectives. The need for the adoption of such methodologies was born as a requirement of professional associations, regulatory bodies and rating companies, although their implementation - as the authors point out - is still poorly integrated; for example, in the United Kingdom, new codes of practice and regulations have been issued, such as the Cadbury Code (1992), the Hampel Report or the Turnbull Report. For the first time, these new practices explicitly linked internal controls to risk management and went beyond the financial sector (traditionally a “well served” sector in classical risk management), putting pressure on companies to include a wider range of risks in their analysis. Like the United Kingdom, the United States of America (hereafter referred to as the United States) also established its own standards and codes, reinforced by the second wave of financial scandals that affected companies in several countries from 2000 onwards, with some serious consequences, such as the collapse of Enron, which led to the enactment of the

Sarbanes-Oxley Act (2002), and which in practice - as Power (2009) points out - only served to exacerbate a risk management obsessed with “everything” (Arena *et al.*, 2010). Bromiley *et al.* (2015) point out that the difficulties experienced by some companies during the 2008 financial crisis called into question the effectiveness of ERM. The ERM process begins with the identification of the totality of risks faced by a company, and continues with the assessment of the consequences of these risks and the controls in place to respond to the risks. Management then decides whether to tolerate or mitigate a risk. While this process is consistent with traditional risk management, such as interest rate risk, ERM differs in that it attempts to manage all risks in a more holistic manner, including operational and reputational risks that are typically not hedged. It is this comprehensive or holistic view that distinguishes ERM from traditional silo-based risk management and involves a model for i) identifying events and circumstances relevant to the achievement of goals and objectives; ii) assessing these events in terms of probability and impact; iii) determining a strategy to respond to the identified threat or opportunity; and iv) monitoring the evolution and impact of these (Arnold *et al.*, 2011; Pagach and Warr, 2011).

Hoyt and Liebenberg (2011) conducted a study using Tobin’s Q to measure the extent to which selected firms have implemented enterprise risk management (ERM) programs, and to assess their effectiveness. The selected sample included insurers listed on the American Stock Exchange and corresponds to the period 2000-2005. It should be noted that the maximum likelihood treatment effects model is used to estimate the determinants of a risk management model and its relationship with firm value. The authors highlight that there is a positive relationship between firm value and the use of enterprise risk management. The benefits of its application are i) the reduction of the volatility of profits and stock price, ii) the reduction of the cost of capital, and iii) the creation of synergies between different activities (Hoyt and Liebenberg, 2011). Mikes (2009) highlights that there are two types of ERM models: one related to shareholder value (ERM by the numbers) and the other corresponding to the requirements of the risk-based internal

control imperative (holistic ERM). In addition, this author conceptualizes the four existing types of risk management: i) silo risk management, which traditionally deals with risk management by type (credit, insurance, market, and operational); ii) integrated risk management, which proposes that there is a common denominator, which is economic capital; iii) risk-based management, which uses risk-based internal capital allocations to measure and control performance; and iv) holistic risk management, which links risks to the achievement of the firm's strategic goals or objectives. The holistic vision outlined by Mikes (2009) is further developed by Gordon *et al.* (2009), who elaborate on this vision by pointing out that ERM consists of a discipline by which a company assesses, controls, exploits, finances, and monitors risks in order to ensure the achievement of its objectives and thus create value for its various stakeholders. The authors propose a way to validate the effectiveness of a risk model by limiting it to five variables: i) environment and uncertainty, ii) industry competition, iii) company size, iv) company complexity, and v) board oversight.

For the first time, as Gordon *et al.* (2009) point out, a way to validate the effective implementation of risk management models is proposed, considering that there is little information in the literature on the impact of ERM in organizations (Gordon *et al.*, 2009; Hoyt and Liebenberg, 2011; Power, 2009; Sutton, 2006). Gordon *et al.* (2009) developed the Enterprise Risk Management Index (ERMI), which is based on the four objectives outlined in the COSO framework: i) Strategy: high-level goals that are aligned with those of the organization and supported by the mission; ii) Operations: effective, orderly, and efficient use of organizational resources; iii) Reporting: reliability of the organization's reporting system; and iv) Compliance: organizational compliance with applicable laws and regulations. The sample was based on 112 U.S. companies listed on the American Stock Exchange, and the main conclusion was the predominant role of boards of directors in overseeing risk management. In the same vein, Beasley *et al.* (2015) found that ERM maturity is positively associated with boards that have developed a risk appetite statement that articulates how risk should be considered in the formulation of strategic plans. Through an exploratory

study conducted in banks, Wu and Olson (2010) demonstrate the validation of model risk in ERM at a large bank using scorecard models to assess account solvency. The authors find that larger firms, which are more leveraged, have more volatile operating cash flows, and are more likely to initiate an ERM program. Pagach and Warr (2011)—in contrast to Hoyt and Liebenberg (2011), who used Tobin's Q, and Gordon *et al.* (2009), who used the Enterprise Risk Management Index (ERMI)—argued that an analysis of the presence of chief risk officers (CROs) could be used to measure the effectiveness of ERM models. Given the limited evidence, they based their research on whether companies had a chief risk officer on staff. Pagach and Warr's (2011) study focused on 138 announcements of chief risk officer appointments (from publicly traded companies) between 1992 and 2005. The results showed a strong relationship between the presence of a risk management executive and the strengthening of the cultural aspects of the ERM approach, although, as the authors point out, it is not possible to generalize, let alone extrapolate to other realities.

An interesting issue to understand within risk management approaches is their link to internal audit. In this sense, de Zwaan *et al.* (2011) conducted a study to validate the contribution of audit areas in risk management; the results reinforced the need for organizations to follow the recommendations of the Institute of Internal Auditors Global and ensure that internal auditors do not play an inappropriate role in ERM. They also highlighted the dangers of internal auditors taking on advisory roles that could compromise their objectivity. A few years earlier, Sutton (2006) also linked audit work, albeit limited to the information technology (IT) domain, noting that there was an urgent need for visibility of risks, but especially those inherited from supply chain partners; in particular, he highlighted the merits of IT governance and control frameworks. However, Power (2009) was highly critical of linking risk management to audit and accounting; he was highly critical of the COSO framework, noting that ERM is flawed at the design level in three ways: (i) the "enterprise-wide" view and risk appetite (misleading and weak view); (ii) the close relationship between ERM and audit/accounting, which is heavily influenced by

standards and evidence, leading to highly biased analysis; and (iii) the failure to articulate and understand critical risks. Regarding the ways to study the contribution of the effectiveness of risk management models, there are two main methodological ways to identify and measure the implementation of ERM in companies: on the one hand, researchers seek publicly available information, and on the other hand, they use surveys to obtain the information directly from the company (Lundqvist, 2014). Lundqvist (2014) argues that empirical studies in risk management are inconclusive in terms of value creation. This can be seen in the work of Gordon *et al.* (2009), Hoyt and Liebenberg (2011), and Pagach and Warr (2011), as their research does not reach generalizable conclusions. This may be due to the fact that ERM processes are plagued by uncertainty and inconsistencies regarding whether ERM adds value to organizations, an idea that is partly due to the lack of agreement on the frameworks to be used, particularly the one proposed by COSO (Lundqvist, 2014). Lundqvist (2014) conducted an exploratory study of 150 companies listed on the major Nordic stock exchanges and headquartered in a Nordic country (Sweden, Norway, Finland or Denmark). The study found that companies often used more than one framework (or, in some cases, internally developed frameworks) to guide ERM implementation, suggesting a degree of uncertainty about the methodologies at the time. The study concluded that in order to validate the effectiveness of a risk management framework, it is necessary to establish four pillars: i) internal environment and goal setting, ii) general control and reporting activities, iii) communication and comprehensive ERM organization, and iv) specific risk assessment and identification activities.

To better understand the role of ERM in facilitating or hindering performance, Arnold *et al.* (2015) developed and tested a theory of the impact of ERM on two aspects of organizational performance: strategic flexibility and supply chain performance. The theory is developed through three emerging theoretical perspectives related to ERM orientation: information technology integration, flexibility for performance that provides information about interrelationships, and supply chain performance. They used partial least squares (PLS)

analysis and the results showed that a broad strategic approach to ERM improves flexibility and strengthens the relationship between flexibility and performance. An interesting contribution related to ERM in terms of research forms is proposed by Bromiley *et al.* (2015), who point out that the tools offered in financial and accounting research are generally complex, especially for most managers, and often have an extremely limited view beyond finance. The authors emphasize that regulators are putting pressure on firms to integrate risk management into corporate governance, which has led to the creation of new categories and the use of vague terms such as “risk culture” and “risk appetite,” thus agreeing with Power (2009), who coined the phrase “risk management of everything” and then moved on to “risk management of nothing.” Bromiley *et al.* (2015) believe that there is a financial accounting bias in the interpretation of risk management, so they urge management practitioners to conduct research using qualitative and survey approaches to understand how decision makers and managers think about risk.

Gatzert and Martin (2015) summarize the various studies that have been conducted to measure the impact of ERM on organizations. Of the eight studies that empirically examined the impact of ERM on firms and shareholder value while providing statistical evidence (using a linear regression model), five studies focused on the impact of ERM on shareholder value (using Tobin's Q), while three studies examined the impact on firm (financial) performance—usually expressed in terms of stock market returns or other financial variables—using the five-factor model proposed by Gordon *et al.* (2009). This literature review by Gatzert and Martin (2015) shows that in most empirical studies, firm size and institutional ownership have a positive and significant relationship with ERM implementation, and further that ERM usually has a positive (significant) impact on firm value and performance (to varying degrees and depending on the study focus); however, geographic or industry limitations limit the generalizability of these findings. The findings of Gatzert and Martin (2015) are consistent with the conclusions of Beasley *et al.* (2015) regarding the increasingly recognized importance of boards of directors as overseers

of risk management; there is an apparent positive relationship between the implementation of an ERM system and shareholder value or performance, but to different extents and depending on the objective. In particular, it is assumed that companies with an ERM system benefit from the holistic perspective and better coordination between the different risk management departments, as well as from the exploitation of natural hedges within the company (Gatzert and Martin, 2015). Finally, it can be stated that ERM plays a transcendental role in the sustainable development of organizations through the identification, calculation and management of risks, including those related to sustainability. In addition, organizational sustainability improves economic efficiency and strengthens investor confidence (Shad *et al.*, 2019).

As a result of the literature review of the 20 most cited papers, inconclusive results on the effects of risk management systems at the organizational level are evident; although there is a wealth of literature in favor of risk management, there is no standard or measurement parameters that allow assessing risk management in organizations in a homogeneous manner. These results are consistent with other literature reviews, such as those conducted by Lundqvist (2014), Gordon *et al.* (2009), Hoyt and Liebenberg (2011), and Pagach and Warr (2011), which failed to obtain generalizable results.

## CONCLUSIONS

This literature review focused on identifying the theories and empirical advances in the adoption and implications of risk management, using the information available in Web of Science and Scopus of the twenty most cited papers (ten for each search engine) to find the main theoretical sources. It is evident that the research on risk management is still inconclusive and represents an interesting gap for future research, especially since there is no evidence of studies limited to Latin America or even at the sectoral level. In addition, much of the literature focuses on the financial sector, leaving other equally important economic sectors unexplored.

This study contributes to the theoretical understanding and complements other reviews on the implementation and impact of integrated

risk management in companies, providing a more complete and comprehensive view of risk management and highlighting areas for future research (such as those related to non-financial sectors, government entities, non-profit organizations, among others) that can help improve the understanding and practice of risk management.

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#### Conflicts of interest

The author has no conflicts of interest to declare.

#### Author contributions

Renzo Martin Collins Estrada (lead author): conceptualization, data curation, research, methodology, resources, writing (original draft, review and editing).