Creative Construction Conference 2016

Drivers for and Obstacles to Enterprise Risk Management in Construction Firms: A Literature Review

Berenger Y. Renault*, Justus N. Agumba and O. A. Balogun

Dept of Construction Management & Quantity Surveying, University of Johannesburg, Cnr Siemert & Beit Streets, Doornfonterin, 2028, Johannesburg, South Africa

Abstract

Regardless of the increased number of studies on Risk Management (RM) in several industries, limited studies have strived to reveal the components are driving and obstructing ERM implementation in construction firms. These firms are constantly exposed to business risks, thus requiring not only project risk management (PRM) but also a more integrated, comprehensive focused risk management approach to managing risks on an enterprise basis defined as enterprise risk management (ERM). Therefore, this study aims to identity the drivers and obstacles to ERM implementation. The work methodology included a comprehensive literature search relating to ERM. The review spanned a decade and lustrum between January 2000 and December 2015 and was based on a combination keyword search in three databases namely; Science Direct, Taylor and Francis Online, and Emerald and in Google. Thirty-one quantitative and mixed methods research were justified to be relevant in this study. The study revealed that empirical studies have identified various important drivers for ERM implementation namely; legal and regulatory compliance requirements, non-mandatory reports, credits rating agencies' requirements, reduced earnings volatility, reduced cost and losses, increased profitability and earnings. The study further revealed that lack of support from top management, management priorities, reluctance to discuss sensitive information, difficulties in quantifying the risks, lack of common risk language, lack of quality data and limited access to data were key obstacles to ERM. The identification of the obstacles enables the management to be clear about the challenges encountered by the ERM program and take corrective actions to reduce their undesirable effect. Furthermore, construction firms can use the drivers and obstacles revealed in this treatise to prepare their customized list of drivers and obstacles. The findings of this study contribute to global knowledge relating to ERM and allow the management to overcome the challenges posed by the significant obstacles.

Keyword: Construction Firms, Drivers, Entreprise Risk Management (ERM), Obstacles.

1. Introduction

In recent years, changes in the business landscape have occurred in the way firms perceive risk management (RM), and the trend has moved toward a more integrated, comprehensive RM discipline, defined as ERM [1], [2]. The Committee of Sponsoring Organisations of the Treadway Commission (COSO) [3] attached a definition to ERM 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 manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives". The definition is adopted in this study as it applies to various industries, including the construction industry (CI). Also, it reflects that ERM should be implemented at all levels across an enterprise and applied in strategy setting to assure the achievement of corporate objectives.

ERM allows firms to shift the focus of the RM function from primarily defensive to increasingly offensive and strategic [4] and offers a new approach to enhance project risk management (PRM) in the CI [5]. Therefore, ERM has been advocated in the CI and construction firms have been seen as prime candidates for ERM adoption [6], [7].

* Corresponding author. Tel.: +27 73 101 6707; fax+27 11 559 6630.
*E-mail address:*renault08@yahoo.fr

However, various factors influence the successful implementation of ERM. Some of them drive ERM implementation while others act as obstacles. Regardless of the increased number of studies on Enterprise Risk Management (ERM) in several industries, limited studies have strived to reveal the components are driving and obstructing ERM implementation in construction firms. Faced by these obstacles, firms in many industries tend to find it hard to implement fully ERM and the percentage of firms adopting or implementing ERM is often low [8]. In a study conducted by Beasley et al. [9], it was found that 46 percent of the global respondents had a formal ERM process while only 11 percent of American respondents possessed a complete ERM process. Similarly, Zhao et al. [10] studies showed that none of the Chinese construction firms had high-level ERM implementation, hence making it essential to investigate the obstacles confronted by these firms. Therefore, this study aims to identity via a desktop literature review drivers and obstacles to ERM implementation. An understanding of the drivers for ERM implementation enables the management to acquire necessary support for the ERM program and reinforce the positive influence of the drivers. The identification of the obstacles enables the management to be clear about the challenges encountered by the ERM program and take corrective actions to reduce their undesirable effect and overwhelm them. Furthermore, the drivers and obstacles revealed in this treatise can be used as a base for future research relating to ERM in construction firms. Hence, this study significantly contributes to global knowledge relating to ERM and allows the management to overcome the challenges posed by the significant obstacles.

The following discusses the drivers for ERM and obstacles affecting the adoption or implementation of ERM identified by literature. Some advocated solutions to the obstacles of ERM implementation are also suggested followed by methodological approach adopted and discussions of the findings and implications of the study. The final section concludes the study.

2. Literature Review

Some studies have reported the drivers for and obstacles affecting the adoption and implementation of ERM in several industries, including the CI. In this study, thirty-one (31) quantitative and mixed method approaches were reviewed and relevant for this particular study. The papers are tabulated in Table 1 and Table 2.

2.1. *Drivers for ERM Implementation*

ERM implementation has been, according to literature in various industries compelled by a series of legal compliance and corporate governance requirements [4], [11]. The majority of them are legal and regulatory compliance requirements, such as the Sarbanes-Oxley Act and New York Stock Exchange corporate governance rules in the USA, and the non-mandatory reports or standards that created public pressures and benchmarks for sound management practices, such as the COSO ERM framework. Embracing ERM has been considered as a good strategy to comply with these new risk-based governance requirements [12]. Furthermore, because ERM can increase firms' value, the three main rating agencies (Moody's, S&P and Fitch), have included a firm's ERM system as an element in their rating methodology in various industries [13]. Thus, credit rating agencies' requirements could drive ERM implementation.

While compliance and corporate governance requirements have driven firms to adopt ERM, firms in many industries conduct ERM for benefits [14]. An overall perspective of the literature is that ERM implementation can ameliorate firm performance [1]. Some of the benefits that can be derived from the implementation of ERM include, but are not limited to: reduce costs and losses, reduced earnings volatility, improved decision making, increased profitability and earnings, better risk reporting and communication, better resource allocation, increased management accountability; greater management consensus; competitive advantages, improved owners' satisfaction and improved control of an enterprise on its projects [15], [16], [17], [11], [18], [19], [20].

Moreover, a diversity of risks drives firms to adopt ERM as well. Liebenberg and Hoyt (2003) affirmed that the risks originating from the globalization and market drove firms to adopt ERM. At the same time, Pagach and Warr [14] studies concluded that firms with more volatile operating cash flows and riskier stock returns were more probable to adopt ERM.

Furthermore, the use of advanced information technology (IT) was perceived as a key external driver (Liebenberg and Hoyt, 2003) as ERM requires much computing power [21]. This breakthrough has enabled firms to collect improved records for certain risks, model complex risks, measure risks more accurately, and improved understanding of the interdependencies across a firm [22]. The improved accessibility of outsourcing possibilities for advanced IT modeling activities has made ERM available to firms that are in need of specialized risk related knowledge. Nevertheless, new studies evidence suggests that the implementation of ERM is slowed down by firms' perceived lack of technological tools [4].

Additionally, the external driving influences would require the board as well as senior management to request for ERM implementation. Kleffner et al. [15] studies reported that 51 percent of Canadian firms viewed the encouragement from the board as the fundamental element underlying their ERM implementation.

Simultaneously, Narvaez [19] asserted that top management should drive ERM implementation as ERM necessitates the commitment of the entire enterprise.

Table 1: Drivers for ERM-Literature review

Authors, Year	Objective	Methods
Liebenberg & Hoyt (2003)	To identify the critical determinants of ERM adoption	Questionnaire, statistical analysis
Manab et al., (2010)	To measure the extent to which specific firms have implemented ERM programs	Questionnaire
Wu & Olson (2009)	To explain the value of business scorecards as a means to monitor organisational performance with respect to ERM.	Review of literature
Beasley et al., (2008)	To examines equity market reactions to announcements of appointments of senior executive officers overseeing the ERM processes	Questionnaire, regression analysis
Pagach & Warr (2011)	To identify parameters that can explain variation in the "ERM mix" adopted by firms.	Interviews
Gordon et al., (2009)	To examine the relationship between Enterprise Risk Management (ERM) information content and firm performance	Reviewed drivers for ERM
Kleffner et al., (2003)	To determine the effect of ERM on business performance	Questionnaire
KPMG (2010)	To investigate the critical drivers for ERM implementation	Questionnaire
Liu et al., (2011)	To investigate the influence of the drivers in the key areas of activities of an ERM program.	statistical analysis
Muralidhar (2010)	To identify significant factors driven by ERM movement.	Questionnaire
Narvaez (2011)	To identify the critical drivers for enterprise risk management (ERM) implementation	Questionnaire survey
Nocco & Stulz (2006)	To determine the drivers for ERM program	Questionnaire survey
Segal (2001)	To understand the link between the ERM implementation drivers with the RM practices	Interviews
Jablonowski (2001)	To develop an ERM framework for construction firms	Review of Literature

2.2. *Obstacles to ERM Implementation*

Embracing an ERM approach brings about firm culture changes that, to ensure success, necessitates support from executive management, including the board [23], [24]. It is, therefore, the duty of the board to determine the risk appetite and develop the RM policy of the firm in guiding the firm's risk activities. Nevertheless, the board's insufficient RM knowledge and its compromising attitude [25], [24] may be a significant obstacle to ERM as it obstructs comprehensive and open risk discussions.

Another potential obstacle to ERM could be management's priorities [26], in addition to its reluctance to discuss sensitive information in different firm units [27], [15]. To deal with these obstacles, executive management should assume ownership of the ERM process by having a visible ERM champion who actively supports the process in order to ensure buy-in from lower level employees and to foster a 'positive tone' at the top regarding RM. This positive risk mentality should filter down through the firm and create a strong and positive RM culture in support of the risk management process [28], [24]. However, if employees agree the assigned RM responsibilities are deemed to impact adversely on them if issues are experienced, they would be predisposed to be less open and honest about potential weaknesses [29].

A further obstacle to EMR activities originates from the uncertainty about how ERM adds value to a firm [15]. To overcome this, robust support for RM activities, along with clearly defined and communicated expectations of the value the firm aims to derive from the ERM process, is important in establishing a strong risk culture [30], [23]

Successful RM is underpinned by an unchanging and foreseeable reporting structure, where risk responsibilities are clearly defined and assigned to suitable personnel [31]. However, modern firms with a 'flatter' firm design hold a challenge to RM, in that such structures are incompatible with the 'tight', hierarchical reporting systems required by ERM [32].

A further requirement to ERM success is that executive management must assume primary responsibility for RM in its corresponding areas [33]. Nonetheless, the complex nature of RM requires expertise that is best utilised if placed in one firm unit that is responsible for supervising the process. This will ensure continuity of RM actions, as well as consistency in application [34]. In practice, this is hard to implement as specialized knowledge, skills and experience are required for such a unit [24], as well as a more active organisational role that goes beyond traditional consultation activities, which may be contrary to the existing firm culture [24].

To be successful, ERM should be aligned to the management teams in the different units as this alignment helps in enhancing their understanding of the business functions they support [33]. Further key components for ensuring ERM success is the alignment of the RM strategy with the firm's overall business strategy, and the integration of RM into the organisational processes, as risks, are the best managed as close as possible to the source of the risk [35].

Each employee interprets and understands business risks differently, which imposes the formulation of a common risk language to ensure that risk is seen in a consistent and comparable way by all parties in the organisation [35]. The main obstacle in ERM implementation is the lack of a common risk language, which supports discussions around risks, both holistically and departmentally, and RM methods [36].

Barrese and Scordis [23], and Schrøder [24] indicated that RM concepts, applications, and capabilities must be imbedded into the firm's corporate training curriculum. The importance of training and learning is stressed by Weinstein et al. [25], who declared that firm and individual learning should support the ERM process.

Further obstacles highlighted by various authors to effective ERM implementation are:

- Difficulties in quantifying the risks, the wide span of the risk universe and managers' inability to understand simple risk tools [15], [37].
- The lack of quality data, limited access to data due to inadequate integration between systems, lack of data mapping and risk modeling tools, which some authors regard as the largest obstacles in effective ERM application [30], [38].
- The segmental approach towards different types of risks that still prevails in firms [39].

Table 2: Obstacles to ERM-literature review

Authors, Year	Objective	Methods
Merkley (2001)	To explore the implications of ERM for the management of strategic risks.	Questionnaire, descriptive statistics
Smiechewicz (2001)	To investigate the drivers for and hindrance to ERM	Review of literature
Chapman (2003)	To identify the critical success factors for effective ERM	Review of literature
Truslow (2003)	To uncover challenges and critical success factors for ERM	Qualitative approach
Barrese & Scordis (2003)	To provide Concepts and methods of ERM implementation	Review of literature
Schrøder (2006)	To address the deficit on integrated ERM practices.	Qualitative approach
Weinstein et al., (2003)	To identify drivers for and hindrances to enterprise risk management (ERM)	Review of literature
Funston (2003)	To evaluate the influence of drivers for and obstacles to ERM	Questionnaire, statistical analysis
Kleffner et al., (2003)	To determine the effect of ERM on business performance	Questionnaire, statistical analysis
Chapman (2001)	To identify what obstacles companies face in implementing ERM in Canada	Questionnaire survey
Skinner & Spira (2003)	To evaluate the impact of hindrances to ERM performance.	Questionnaire, statistical analysis
Prince (2000)	To evaluate factors hindering ERM implementation in construction firms	Questionnaire survey
DeLoach (2000)	To determine how the application of knowledge management processes can improve the implementation of ERM	Questionnaire survey
Weinstein (2002)	To analyze the potential barriers to implementing ERM at U.S. firms	Questionnaire, statistical analysis
Nielson et al., (2005)	To evaluate the relationship between drivers for and hindrances to ERM performance.	Questionnaire, descriptive statistics Chi-square analyses
Bologa (2003)	To analyze the potential benefits of ERM)	Questionnaire, statistical analysis,
Levine (2004)	To provide solutions to overcome barriers to ERM implementation	Questionnaire, statistical analysis

3. Methodology

The work methodology included a literature search. The study was conducted with reference to existing theoretical literature, published and unpublished literature. This study is mainly a literature review and looks at the literature relating to ERM. This is because ERM has attracted much worldwide attention in recent years [40]. The literature search spanning a decade and lustrum between January 2000 and December 2015 was conducted. This was based on systematic keyword combination search three databases namely; Science Direct, Taylor and Francis Online, and Emerald. The authors used advanced search for the database engines and basic search for Google. The keywords used for the data search were; "drivers for ERM" AND "obstacles to ERM". The basic search used was "drivers for and obstacles to risk management in construction firms". The search in the databases retrieved 3754 articles. However, after filtering the articles only fourteen (14) were relevant for obstacles to ERM and eleven (11) drivers for ERM and were all used in this study. Google search retrieved 4860 000 articles and reports. Six (6) relevant articles comprising of three on drivers for and three obstacles to ERM which were not duplicates with those obtained from Taylor and Francis online, Science direct and emerald search were used. The criteria for including the article or report were; the article/report should be peer-reviewed, be written in English, it should indicate the objective of the study, the method employed; report the results to the objective of this literature and a conclusion. This methodology is related to the study of Gildberg et al., [41]. To identify the drivers and obstacles

to ERM in construction firms, twenty-nine articles, and two reports met the requirements. The articles and reports were read several times to obtain a sense of the content.

4. Lessons Learned from Literature Review

The study revealed the factors driving and obstructing ERM implementation in construction firms. Literature review revealed that various empirical studies have identified some important drivers for ERM implementation which include; legal and regulatory compliance requirements, non-mandatory reports, credits rating agencies' requirements, reduced earnings volatility, reduced cost and losses, increased profitability and earnings. The study further revealed various obstacles affecting the adoption of ERM implementation namely; the lack of support from top management, management priorities, reluctance to discuss sensitive information, difficulties in quantifying the risks, lack of common risk language, lack of quality data and limited access to data. Thus, an understanding of the drivers for ERM implementation allows the management to acquire adequate support for the ERM program and reinforce the positive influence of the drivers. The identification of the obstacles allows the management to be aware of the challenges encountered by the ERM program and take correctives actions to reduce their adverse effect and overwhelm them.

5. Conclusion

This study has examined literature related to ERM in construction firms. Through the comprehensive literature review, drivers for and obstacles to ERM implementation were identified. The treatise starts with the drivers for enterprise risk management implementation. Literature review identified a number a drivers for ERM namely; legal and regulatory compliance requirement, non-mandatory reports or standards, reduced earnings volatility, reduced cost and losses, improved decision making, increased profitability and earnings, competitive advantages, improved control of en enterprise over its projects, advances in IT, better resources allocation, encouragement from top management.

Literature further identified various obstacles affecting the adoption of ERM implementation that is; the lack of support from top management, management priorities, and reluctance to discuss sensitive information, difficulties in quantifying the risks, lack of common risk language, lack of quality data and limited access to data, insufficient resources, lack of perceived value or benefits, lack of qualified personnel to implement ERM, inadequate training on ERM, lack of the board or senior management leadership, lack of internal knowledge, skills and expertise.

Regardless of the achievement of the study objectives, there are boundaries to the conclusions. The drivers and obstacles identified in this study may not be extensive or continue to hold true with the passage of time. Moreover, as the findings were investigated in the context of construction firms as a whole, there may be geographical boundaries on the identification of the critical drivers for and obstacles to ERM implementation.

Nonetheless, the implication of this study is not restricted to construction firms because other firms can use the drivers and obstacles identified in this study to prepare their customized list of drivers and obstacles. In the meantime, the findings of this study can be used as a base for future research on ERM in the CI. Therefore, this study contributes to global knowledge relating to ERM and allows the management to overcome the challenges posed by the significant obstacles.

References

[1] Gordon, L.A., Loeb, M.P., and Tseng, C.Y. (2009). Enterprise risk management and firm performance: a contingency perspective, *Journal of Accounting and Public Policy*, 28(4):301-327.

[2] Smit, Y. (2012).A structured approach to risk management for South African SMEs. Cape Peninsula, University of Technology: Cape Town, South Africa.

[3] COSO (2004). Enterprise Risk Management – Integrated Framework: Executive Summary & Framework, Committee of Sponsoring Organizations of the Tread way Commission, Jersey City, NJ

[4] Liebenberg, A.P. and Hoyt, R.E. (2003). The determinants of enterprise risk management: evidence from the appointment of chief risk officers, *Risk Management and Insurance Review*, 6 (1):37-52.

[5] Liu, J.Y., Zou, P.X.W. and Gong, W. (2013).Managing project risk at enterprise level: exploratory case studies in China, *Journal of Construction Engineering and Management*, 139 (9):1268-1274.

[6] Druml,D.(2009).Contractors:areyouadopting ERM or still stuck in the mud?", available at: www.druml.com/about/articles2009/04/contractors-enterprise-risk-management-adoptionconstruction- risk-management/ (accessed February 3, 2016).

[7] Zhao, X., Hwang, B.G. and Low, S.P. (2013a).Critical success factors for enterprise risk management in Chinese construction companies, *Construction Management and Economics*, 31(12):1199-1214.

[8] Zhao, X., Gang Hwang, B.G., & Low, L.S. (2015).Enterprise risk management in international construction firms: drivers and hindrances, *Engineering, Construction and Architectural Management*, 22(3):347-366

[9] Beasley, M.S., Branson, B.C. and Hancock, B.V. (2010). Report on the Current State of Enterprise Risk Oversight, The ERM Initiative at North Carolina State University, Raleigh, NC.

[10] Zhao, X., Hwang, B.G. and Low, S.P. (2014a).Investigating enterprise risk management maturity in construction firms, *Journal of Construction Engineering and Managemen*t, 140 (8):05014006-1-05014006-10, available at: http://ascelibrary.org/doi/abs/10.1061/(ASCE) CO.1943-7862.0000873
[11] Manab, N.A., Kassim, I. and Hussin, M.R. (2010).Enterprise-wide risk management (EWRM) practices: between corporate governance compliance and value creation, *International Review of Business Research Papers*, 6 (2):239-252.
[12] Wu, D. and Olson, D.L. (2009). Enterprise risk management: small business scorecard analysis, *Production Planning & Control*, 20 (4):362-369.
[13] Beasley, M.S., Pagach, D.P. and Warr, R.S. (2008).Information conveyed in hiring announcements of senior executives overseeing enterprise-wide risk management processes, *Journal of Accounting, Auditing and Finance*, 23 (3):311-332.
[14] Pagach, D.P. and Warr, R.S. (2011).The characteristics of firms that hire chief risk officers, *Journal of Risk and Insurance*, 78 (1):185-211.
[15] Kleffner, A.E., Lee, R.B. and McGannon, B. (2003). The effect of corporate governance on the use of enterprise risk management: evidence from Canada, *Risk Management and Insurance Review*, 6(1):53-73.
[16] KPMG (2010).Charting a Safe and Sustainable Growth Journey: Singapore Enterprise Risk Management Survey 2010, KPMG in Singapore, Singapore.
[17] Liu, J.Y., Low, S.P. and He, X. (2011).Current practices and challenges of implementing enterprise risk management (ERM) in Chinese construction enterprises, *International Journal of Construction Management*, 11 (4):49-63.
[18] Muralidhar, K. (2010).Enterprise risk management in the Middle East oil industry: an empirical investigation across GCC countries, *International Journal of Energy Sector Management*, 4 (1):59-86.
[19] Narvaez, K. (2011).Success Stories: Public Entities Adopt ERM Best Practices, Public Entity Risk Institute, Fairfax, VA.
[20] Nocco, B.W. and Stulz, R.M. (2006).Enterprise risks management: theory and practice, *Journal of Applied Corporate Finance*, 18 (4):8-20.
[21] Segal, S. (2011), Corporate Value of Enterprise Risk Management, John Wiley & Sons, Hoboken, NJ.
[22] Jablonowski, M. (2001).Thinking in numbers, *Risk Management*, 48 (2):30-35.
[23] Barrese, J. & Scordis, N. (2003). Corporate Risk Management, *Review of Business*, 24(3):26-29.
[24] Schrøder, P.W. (2006). Impediments to Effective Risk Management. Perspectives on Strategic Risk Management. [*In*: Andersen, T.J. (ed.). Perspectives on Strategic Risk Management. Denmark: Copenhagen Business School Press].
[25] Weinstein, B., Blacker, K. & Mills, R. (2003). *Risk management for nonexecutive directors: creating a culture of cautious innovation*. Henley Discussion Paper no. 2. [Online]. http://www.henleymc.ac.uk/henleyres03.nsf/pages/hcvi [10/02/2016]
[26] Merkley, B.W. (2001). Does enterprise risk management count? *Risk Management*, 48 (4):25-28.
[27] Funston, R. (2003). Creating a Risk-intelligent Organization, *Internal Auditor*, 60(2):59-63.
[28] Chapman, R.J. (2001). The controlling influences on effective risk identification and assessment for construction design management. *International Journal of Project Management*, 19(3):147-160.
[29] Skinner, D. & Spira, L.F. (2003). Trust and control -a symbiotic relationship? *Corporate Governance*, 3(4):28-35.
[30] Prince, M. (2000). Enterprise risk management: RMIS requires corporate cultural transformation. *Business Insurance*, 34(49):21-23.
[31] DeLoach, J.W. (2000). Enterprise-Wide Risk Management. Strategies for linking risk and opportunity. London: Financial Times Prentice Hall.
[32] Weinstein, B. (2002). Risk Management versus the Loose Organisation. Working Paper, Henley Management College. [Online].http://www.henley.reading.ac.uk/henleyres03.nsf/pages/hcvi_reading_risk management/ [10/02/2016]
[33] Truslow, D.K. (2003). Operational Risk Management: It's Everyone's Job, *The RMA Journal*, 85(5):34-37.
[34] Nakada, P. & Tange, C. (2003). The Risk Management of War versus Decentralized Control, *The RMA Journal*, 85(6):30-31.
[35] Smiechewicz, W. (2001). Case Study: Implementing Enterprise Risk Management. *Bank Accounting & Finance*, 14(4):21-27.
[36] Nielson, N.L., Kleffner, A.E. and Lee, R.B. (2005).The evolution of the role of risk communication in effective risk management", *Risk Management and Insurance Review*, 8(2):279-289
[37] Bologa, J. (2003). Focus on Risk Management. *Internal Auditor*, 60(4):9.
[38] Chapman, C. (2003). Bringing ERM into Focus. *Internal Auditor*, 60(3):30-35.
[39] Levine, R. (2004). Risk Management Systems: Understanding the need, *Information Systems Management*, 21(2):31-37.
[40] McGeorge, D. and Zou, P.X.W. (2013).Construction Management: New Directions, Willey-Blackwell, Chichester.