

An Enterprise Risk Management Frameworks: A Critical Review

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ABSTRACT

Modern business environment is becoming more complex due to competition, continuous technological advancements and changing in customer's behaviours. As a result of these changes, business organizations have realized the significance of integrating risk management into their strategies. The research reviewed many Enterprise Risk Management (ERM) frameworks such as Casualty Actuarial Society Framework (CAS, 2003), Committee of Sponsoring Organization (COSO, 2004), Assets Supervision and Administration Commission (SASAC, 2006), Committee of Sponsoring Organization (COSO, 2017), The International Risk Management Standard (2009) Framework, Global Association of Risk Professional (GARP, 2017) Framework, International Risk Management Standard (ISO, 31 000:2018) Framework, Control Objectives for Information and related Technology (COBIT 5 :2018) Framework, Integrated ERM Practice Framework (2017) e.t.c to help practitioners to select the best risk management framework comparing the strength and weakness of their entities. The review reveal that the existing frameworks are little integrated with the corporate control systems, including strategic planning and management control.

KEYWORDS: CAS, COSO, ISO 31 000, Enterprise Risk Management.

1. INTRODUCTION

The complexity of the modern business environment is embroiled with business risks which can hurt an enterprise's existence and success (Smith, 2005; Horvey and Ankamah, 2020). Business risk arises as a result of changes in external and internal factors such as economic crises, high competition, disruptive technologies, changes in leadership, local and foreign competitions, pandemics, cost, time, scope, quality, strategy and management disputes (Shadid, 2017; Wubet, 2020). Construction business, like any other type of business, is very risky (El-Sayegh, 2008) this may not be unconnected to the characteristics of the construction industry, such as the complexity of construction works, rapid technological changes and extreme competitiveness, procurement, fabrication, construction, and commissioning (Shadid, 2017; Mokhtariani, Sebt and Davoudpour, 2017; Li, Fang, & Sun, 2015). Beasley (2016) suggested that, for an enterprise to stay in business risk has to be managed.

Researchers defined Risk Management in different ways, depending on the context, for instance, the Project Management Institute (PMI, 2000) defined Risk Management as a systematic process of identifying, analyzing and responding to project risk. For this study, business risk has been defined as the threats to the ability of the enterprise to execute business processes and create customer value through strategic objectives (Baloi and Price, 2003; Akintoye and MacLead, 1997). It is based on these definitions, researchers observed that construction enterprises had largely concentrated more on risk management at the project level than risk management at the enterprise level (Adibi, 2017; Avens, 2006). Risk management in enterprises emphasizes more on risk at the project level and focuses on project objectives such as time, cost, quality and safety objectives (Zhao, Hwang and Low, 2014). In addition, enterprises are exposed to risks outside the projects with an impact on both project objectives and corporate objectives (Agarwal, 2019). The literature emphasizes that the concept of

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risk and its management should not cover only project risks, but also the risks encountered by being a business enterprise (Zhi, 1995; Schaufelberger, 2009). Thus, projects concurrently managed by an enterprise may fail at the same time as a result of failure in risk management at the enterprise level (Lin et al., 2013). This indicates that the traditional risk management system adopted by organizations cannot fully realize the urgent and multifaceted needs of risk management in the global markets. Researchers in this area generally agree that a new approach to risk management in construction should be developed to enhance construction success (Korytarova & Hromadka, 2021; Guan, et al., 2020; Liu *et al*, 2017).

It is based on this that enterprise risk Management (ERM) in construction came into existence and treats each risk as part of an enterprise's entire risk portfolio rather than a discrete one, thus, considered a holistic and integrated risk management approach. The aim of the research is to analyse ERM frameworks as identified in the literature.

2. Definition of Enterprise Risk

Enterprise risk can have defined as an extent to which the outcomes from the corporate strategy of a company may differ from those specified in its corporate objectives, or the extent to which they fail to meet those objectives (Dickinson, 2001). Both the external and internal factors can cause the outcomes of a company's activities to depart from those set down in its corporate objectives. Those external factors are new entrance in to the market, new product development, changes in economy, changes in capital and financial market condition, and changes in the political, legal, technological, demographic and other environment (Aven, 2016). The external factors are beyond the control of the management but ERM provide the required systems in place for a company to be more resilient and adaptable to major changes. Similarly, internal factors are human error, fraud, system failure, disruption of production and so on, which represent major parts in operational risks.

Therefore, the dynamic changes arising from volatility in today's business environment has exposed more limitations to the effectiveness of Traditional Risk Management approach (Zhao, Hwang & Low, 2017; Chen, Chuang, Huang & Shih, 2019). These results to massive paradigm shift from such TRM approach which necessitate a rise in expectations for improvements on board and senior management approach in the management of risks (Zhao et al., 2014; Gatzert & Martin, 2015). Furthermore, the increasing calls for an integrated, holistic and enterprise-wide approach to managing risks (Beasley, Branson & Hancock, 2009; Wubet,

2020; Kurniwati, et al., 2023), due the growing complexity of risks interactions in organizations while deciding on risk management tools and techniques had also demands more needs of ERM approach.

The concept of Enterprise Risk Management (ERM) expresses a holistic, integrated, comprehensive, consolidated, coordinated and interactive approach to managing risks across all levels, departments and functional units within an organization (Cormican, 2014; Lin, Wen & Yu, 2012; Liu, Zou & Gong, 2013; Grace, Leverty, Phillips & Shimpi, 2015; Wubet, 2020). Dafikpaku, (2011) and Renault et al., (2016) emphasizes the need to embed ERM into the organizational system and culture to ensure its alignment with organizational strategy as this will promotes attainment of defined objectives and organizational success through the enhancement of consistent risk informed and evidence based strategic decision-making process. Organizational culture and system is an important influencer of ERM, described as a "robust tool" (Adeleke et al., 2016). The proactive/or offensive and strategic approach in the management of risks as an attribute of ERM implementation which supersedes the isolated and defensive silo-based approach (Renault et al, 2016; Gatzert & Martin, 2015).

3. ERM FRAMEWORK

A framework serves as a guide, an outline or overview of interlinked items (activities) to facilitate an approach towards achieving a specific goal. An ERM framework is described as a specific set of functional activities and the associated definitions that define the ERM system in an organization and its relationship with the organizational system (Dafikpaku, 2011).

However, Pundervolt, (2017) and Vollmer, (2015) pointed out that, the choice of the suitable framework is determined by experience and knowledge of top management that have gained from both internal and external control system. Also the principles and guidelines governing the both selection and effective implementation of suitable ERM frameworks are available as follows:

3.1. CASUALITY ACTUARIAL SOCIETY FRAMEWORK (CAS, 2003)

Sithipolvanichgul (2016), identify that CAS framework recommends the establishment of an independent risk management structure for implementing ERM practices into an organization. CAS formed an ERM committee and summarized the ERM process in 2003, taking the Australian/ New Zealand risk management standards (AS/NZS 4360) as the guide lines.

The CAS (2003) conceptualized ERM are along two dimensions as types of risk and risk management process. Some risk management process steps apply

to each risk type individually, while others apply to all the risk types in the aggregate as in figure 2.

CAS ERM FRAMEWORK

Risk Management process	Types of Risk			
	Hazard	Financial	Operational	Strategic
Establish Context				
Identify Risks				
Analyze/Quantify Risks				
Integrate Risks				
Assess/Prioritize Risks				
Treat/Exploit Risks				
Monitor & Review				

Source: CAS (2003)

The objectives of the CAS framework are similar to the objectives of the COSO (2004) framework and ISO 31 000 frameworks as the major focus of all these frameworks is the maximization of the firm value through achieving the set objectives

3.2. ENTERPRISE RISK MANAGEMENT- INTEGRATED FRAMEWORK (COSO, 2004)

The Committee of Sponsoring Organization (COSO) of the Tread-way Commission of USA developed the framework through updating their two previous version of Internal Control-Integrated Frameworks 1994 and 2001.

In this framework, ERM implementation covers eight interrelated components: internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication, and monitoring. These components comprise the “component dimension”. Meanwhile, the four categories of objectives (i.e. strategic, operations, reporting, and compliance) share a depiction at the top of the cube, representing the “objective dimension”. In addition, ERM should be implemented across an enterprise, at the four levels including: subsidiary, business units, division, and entity-level. This is the “hierarchy dimension” of the ERM cube. This dimension varies by the size and type of the entity that adopts this framework (Cendrowski and Mair, 2009).

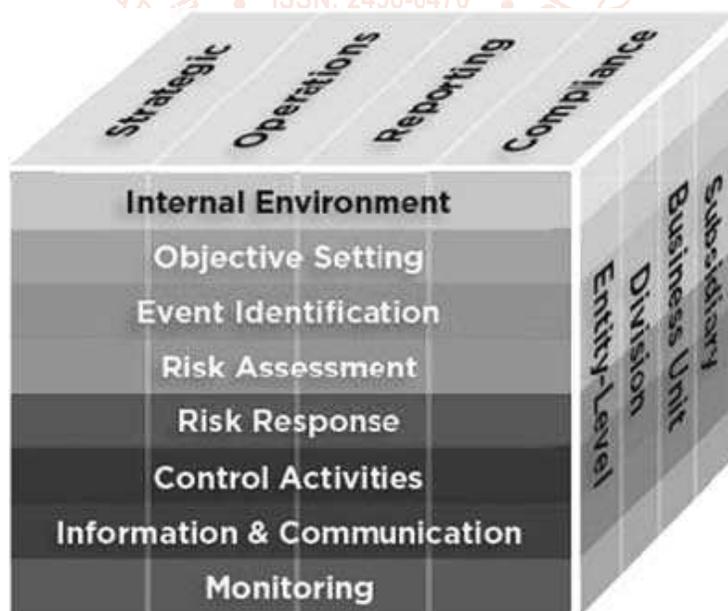


Figure 2.1: COSO ERM framework Source: COSO (2004)

Sithipolvanichgul (2016) identify that COSO-2004 framework is the mostly accepted ERM framework by enterprises especially in the accounting literature. But Gjerdrum et al., as cited in Sithipolvanichgul (2016) pointed out some of the limitation of COSO-2004 framework as complex, multi-layered and a complicated framework that many organizations found it difficult to understand. To provide solution to identified limitation of COSO-2004, the Committee of Sponsoring Organizations updated the COSO-2004 framework in 2017.

3.3. SASAC (2006) ERM FRAMEWORK

In 2006, the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council of China issued the Guidance on Enterprise Risk Management for Central Enterprises to drive ERM implementation in central enterprises following the massive losses by China Aviation Oil (Singapore) in futures investments (Ockenden, 2004). The term “central enterprise” is defined as state-owned enterprises whose investor is the SASAC with the authority vested by China’s State Council, namely the enterprises owned by China’s central government. Some of the leading CCFs are central enterprises, such as China Railway Construction Corp. Ltd., China Railway Group Ltd., China Communications Construction Group (Ltd.), China State Construction Engineering Corp., and China Metallurgical Group Corp. Similar to ISO 31000: 2009, the SASAC defines risk as “effects of uncertainty on enterprise business objectives” (SASAC, 2006).

3.4. ERM- INTEGRATED WITH STRATEGY AND PERFORMANCE BY COSO (2017) -

COSO (2017), was developed as a result of the limitation of COSO (2014) identified by the researchers (Gjerdrum et al as cited in Sithipolvanichgul, 2016). COSO (2017), provides more explanations to the management, the board of directors, supervisory boards, board of trustees, partners and owners about the use of enterprise risk management in selecting and refining the suitable strategy for an enterprise to examine the alternative strategies. COSO (2017), provide a major emphasis on how enterprise risk management informs the strategy and its performance and provides the framework for the board and the senior management of enterprise in all sizes. The COSO (2017), framework comprised of five components covering twenty principles which demonstrate how the ERM implementation can accelerate the growth and boom the performance of an enterprise. Similarly, the risk oversight role of the board in terms of reviewing, challenging and concurring with the management is clearly explained in establishing suitable strategies and risk appetite for enterprise, aligning the strategies with business objectives, mission and vision of the enterprise, making decisions including mergers, acquisitions, funding and divided-distribution decisions. Other advantages of COSO (2017) over COSO (2004) is the ability of the framework to respond to significant fluctuations in firm performance through responding from deviations from core values, approving management incentives and remuneration and maintaining investors/ or stakeholder relationship.

3.5. ISO 31 000 (2009) – The International Risk Management Standard (2009) Framework.

ISO (International Organization for Standards) with membership from 160 national standard bodies. ISO 31 000 is an independent and non-governmental organization established with the aim of bringing up the expert together to share knowledge and develop international standards to encourage innovations and to provide solution to global problems. ISO 31 000(2009) was developed by the technical committee of ISO on risk management to provide the guidelines and principles for the decision makers by revising the Australian/New Zealand risk management standards (AS/NZS 4360) (Javaid & Iqbal, 2017) for used by organizations of all sizes, types and locations to manage risks of all types.

Furthermore, ISO 31 000 provide direction to identify both negative consequences and positive opportunities involved with risk and provides the foundation for making effective, accurate and timely decisions in the resource’s allocation process. The main goal of ISO 31 000 framework is to develop a risk management culture where all the stake holders of an enterprise are fully aware of the critical importance of monitoring and managing risk (Perera, 2019), and also to developed an approach with the ability to identify risk owner for accountability, proper communication and training implementation programmes throughout the organization (ISO 31 000:2009). The framework provided an open-principal based system where organizations will apply these principals and standards matching with the context of the enterprise (Perera, 2019).

3.6. GARP (2017) Framework

Global Association of Risk Professionals (GARP) defines a four-dimensional ERM system as a combination and fusion of strategy, procedure, infrastructure and environment (www.grap.com 2017). Globally, many financial and non-financial companies have practiced this ERM system. Based on this framework, GARP concludes ERM tasks as follows: combining trading strategies and risk management strategies; building a standard risk management procedure; reasonable arrangement among personnel, directions and risk behaviours; rational and dynamic risk identification and classification; building a risk measuring and quantifying system; creating and strengthening organizational risk awareness and emphasizing valuable sustainability. GARP distributes the above six tasks into the four dimensions of ERM framework and charged by different departments.

3.7. ISO 31 000(2018) Framework:

The framework is a revised version of ISO 31 000:2009 published by the Institute of Risk Management (IRM) considering the present-day challenges faced by enterprises. The framework is flexible to all industries, all

disciplines and all public and private sector and also for profit and non-profit organization across the globe (IRM, 2018). ISO 31 000:2018 emphasize more involvement of senior management with clear strategic direction and integrating risk management system in the enterprise decision making process. The framework encourages the development of a policy document which clarify the role and responsibility of all parties involves in risk management process. The framework also expresses the important of embedding the risk management process in to the organizational structure, processes, objectives, strategy and daily operation of an enterprise. However, the limitation of ISO 31 000: 2018 framework does not provide step-by-step checklist for enterprises on ERM implementation on which all professionals have to adopt their own approach in implementing the ERM into their organizations (IRM, 2018).

3.8. COBIT 5 (2018) FRAMEWORK:

Control Objectives for Information and related Technology (COBIT), as international recognised IT management framework which contains a set of best practice for IT management developed by Information Systems Audit & Control Association (ISACA) to help IT businesses to develop, organize and implement strategies around information management and governance.

White (2019), pointed-out that COBIT 5 framework is extracted from COBIT 3:2000, COBIT 4: 2005 and COBIT 4.1:2007 due to present day globalization. The Information Technology (IT) plays a major role in operations, management and the development of an enterprise, through shaping the existing strategy and open-up new business opportunities for organizations while exposing enterprises into new set of threats such as cybercrimes, errors and various vulnerabilities in business processes and technology awareness of people. However, the existing frameworks cannot be used in the construction industry due to their segmentations, the complex and dynamic nature of the industry and the environment in which the construction projects are developed which generates high levels of uncertainties (Gonzalez-Fajardo, et al., 2018). Considering the nature of the construction industry, Liu et al. (2017) and Agarwal (2019) concluded that contractors cannot adopt these frameworks and researches further developed an Integrated ERM practice framework for construction specific, which comprises the **ERM Process, ERM Operation and ERM Control Environment** and buttress that construction businesses need ERM to provide a holistic and integrated approach to manage risk in construction.

3.9. INTEGRATED ERM PRACTICE FRAMEWORK (2017):

ERM process as the static and primary level of ERM practices aiming at how an enterprise responds to specific risks. However, it is far from sufficient to implement ERM only with basic ERM processes which are directed against individual risks. The problem can be solved by establishing and operating an ERM system throughout the organization. Therefore, it is essential to integrate risk management and enterprise business operations, which develops into a more iterative, dynamic, effective and systematic ERM practice, named by ERM operations, representing the second group elements. Furthermore, in order to imprint the importance of risk management into everyone's mind, enterprises tend to cultivate a specific ERM control environment which represents the highest level of ERM practices.

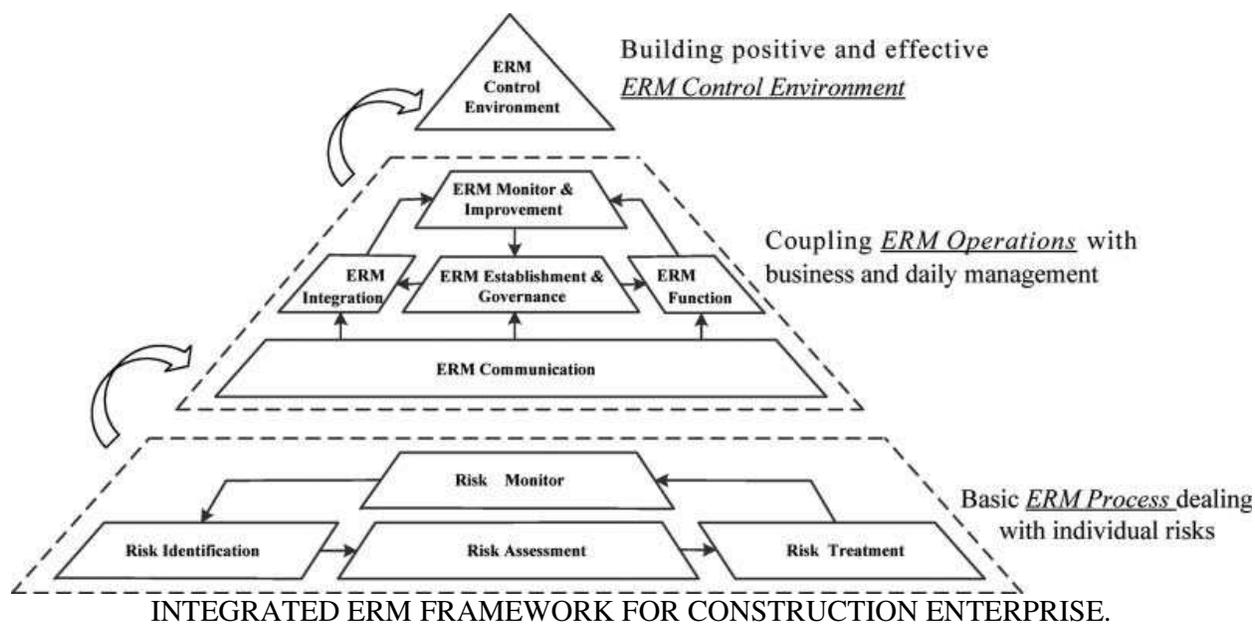


Figure 2.3: Adopted from Liu et al., (2017)

Conclusion

There is a number of frameworks which were developed by researchers in order to fulfil the need of having consistent and compatible guidelines for organizations to implement effective ERM systems. It is however, many of these frameworks have had some criticism from practitioners and from academics in terms of complexity and impracticality. Therefore, most of the international standard organizations tend to revise the framework periodically to overcome the limitations of the earlier versions and to include new strategies to combat new challenges upcoming in the market place. As a result, Committee of Sponsoring Organizations (COSO) has now developed two versions of their framework with the latest in 2017. International Standard Organization (ISO) has published the latest version of ISO 31000: 2018 adding new set of instructions and guidelines for organizations. Information Systems Audit & Control Association (ISACA) revised the COBIT 5 version in 2019 as a framework for customizing and right-sizing enterprise governance of IT considering the new trends, technologies and security needs into the framework. COBIT 2019 framework helps aligning business goals through linking IT with other functions of the business organization. Mikes and Kaplan, Agrawal and Ansell as cited by Rubino (2018) stated that, despite the updates of the frameworks covering the current risk factors, still there is a need for better frameworks in order to implement an effective and accurate risk management process as the existing frameworks are little integrated with the corporate control systems, including strategic planning and management control.

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