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Enterprise Risk Management and Risk Culture in Construction Public Listed Companies

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Abstract: Inadequate risk management and lack of risk culture can expose a company to unexpected risk events, which can negatively affect its performance. However, there are inconsistencies in suitable dimensions to measure the enterprise risk management (ERM) construct, as well as insufficient embedding strategies for risk culture. This study aims to identify the ERM practices and risk culture dimensions among the Malaysian construction public listed companies (PLCs). The roles of top management and chief risk officer/risk manager in influencing ERM and risk culture are also explored. A total of 46 annual reports and 10 interviews of industry practitioners were analysed using content analysis. The analysis of the annual reports found that risk policy and risk appetite/tolerance, monitoring key risk and accountability are the three dimensions of risk culture. In addition, based on the interviews, reward and recognition and internal relationships were identified as the two dimensions of risk. Top management and risk manager were found to be the primary drivers of ERM programme and risk culture in construction PLCs. The results of this study are used to formulate a survey instrument for the subsequent data collection to test the proposed theoretical model.

Keywords: Enterprise risk management, Risk culture, Top management, Risk manager, Construction public listed companies

INTRODUCTION

Nowadays, unprecedented levels of business complexity and changing geopolitical threats make risks abound. The traditional risk management system in a company lacks in terms of total integration, whereas enterprise risk management (ERM) focuses on managing all types of risks in a holistic manner (McShane, Anil and Rustambekov, 2011; Sprčić, Kožul and Pecina, 2017). Weakness in risk culture and inadequate risk management are partly responsible for the losses experienced by some companies (Ashby, Palermo and Power, 2013; De Jonghe, Edelsten and Xavier, 2013; Ingram, Underwood and Thompson, 2014; McConnell, 2013; Ring et al., 2016).

There is a measure of inconsistency in ERM construct, as well as there is a lack of clarity over risk culture and embedding strategies (Protiviti and RMA [Risk Management Association], 2014). In addition, the presence of top management and chief risk officer (CRO)/risk manager in ERM implementation and embedding of risk culture still remains unclear due to scarcity of literature. Therefore, an empirical

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study conducted on top management and CRO/risk manager relationship between risk culture and ERM can add to the plethora of knowledge.

In the era of globalisation, the construction industry, one of the most dynamic, challenging and risky businesses, is facing great challenges due to its nature of activities (Akintoye and MacLeod, 1997; Mills, 2001). Construction companies need to manage risks holistically in a strategic setting to ensure their survival and growth through ERM. Nevertheless, there are very few studies that examine how a specific industry, including the construction industry, implements ERM (Paape and Speklé, 2012; Zhao, Hwang and Low, 2013).

In addition to assessing the current ERM practice in the Malaysian construction public listed companies (PLCs), we explored the dimensions of risk culture and the role of top management and CRO/risk manager in the implementation and risk culture. The following sections start with the literature review on ERM implementation and risk culture. The influence of top management and CRO/risk manager in embedding risk culture for ERM implementation are also discussed. It is followed by research methodology and findings from annual reports and interviews. Finally, discussion on the findings and conclusion are presented.

ERM Process

According to Gatzert and Martin (2013), ERM is a process which combines the entire risk management activities into a single integrated and holistic framework to achieve a company's strategy. Lundqvist (2014) identified four discrete pillars as ERM dimensions: (1) Internal environment, (2) Control activities, (3) Holistic organisation risk management and (4) Specific risk identification. To measure the implementation of ERM, some studies used 4-, 5- and 6-point ordinal scales (Soltanizadeh et al., 2014; Saudah, Ng and McManus, 2014).

Because there is no consensus on the components of ERM and its measurement, Kimbrough (2006) highlighted the set of questions designed on ERM implementation as those that are dependent on the researcher's interest. Therefore, in this study, we looked into the available ERM/risk management frameworks/standards and consolidated them according to the similar process as the ERM dimensions. There are five ERM/risk management frameworks/standards available: (1) COSO (Committee of Sponsoring Organizations of the Treadway Commission) (2004a), (2) AS/NZS (Australia/New Zealand Standard) (2009), (3) ISO (International Standards Organizations) 31000 (2009), (4) IRM (Institute of Risk Management), AIRMIC (Association of Insurance and Risk Manager) and ALARM (Public Risk Management Association) (2002) and (5) CSA (Committee of Casualty Actuarial Society) (2003).

The 2004 COSO ERM-Integrating Framework provides a background to the more recent 2017 COSO ERM-Integrating Strategy and Performance Framework. There are five components in the 2017 framework, whereas there are eight components in the 2004 framework (IRM, 2019a). The 2017 COSO framework introduced 20 principles which focus on the integration and decision-making. It also emphasises values and links to strategy and performance. ISO 31000 has been updated in February 2018, but the overall version remains similar to the original version published in 2009 (IRM, 2019b). These frameworks/standards provide guidance to their implementation, as well as a benchmark for a good ERM system. The broad process in these frameworks are recognised and employed by companies throughout the world (CSA, 2003). There are five processes that are

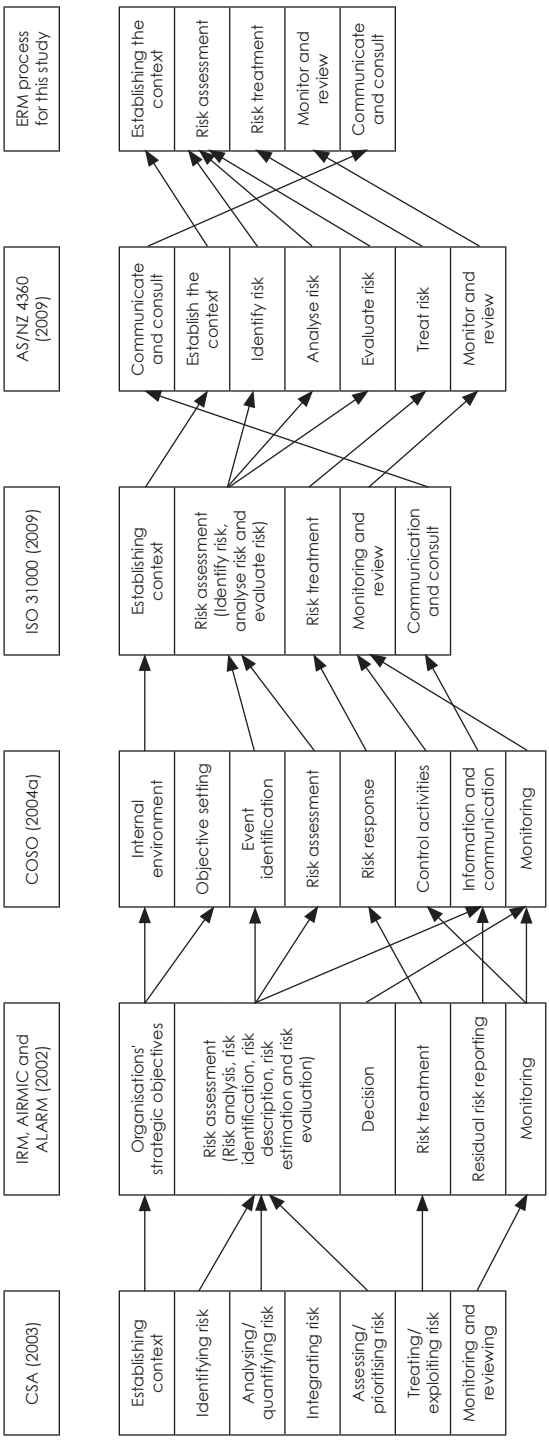

Figure 1. The risk management process in standards/frameworks

alike among the standards: (1) Establish the context, (2) Risk assessment, (3) Risk treatment, (4) Monitoring and review, and (5) Communication and consult (as shown in Figure 1).

Risk assessment involves three main processes: (1) Risk identification, (2) Risk analysis and (3) Risk evaluation (ISO, 2009). Identifying events take into account external and internal conditions, which could affect the achievement of the organisation's objectives (AS/NZS, 2009; ISO, 2009). The identified risk is assessed from likelihood and impact perspectives to determine the level of risk (AS/NZS, 2009; COSO, 2004b; ISO, 2009). Based on the outcome of risk analysis, risks that require treatment and priority of treatment implementation are decided in risk evaluation (AS/NZS, 2009; ISO, 2009).

Decisions on the selected treatment are also based on technical, financial, social and other criteria depending on the organisation's goals and objectives. Several treatment options include avoiding, reducing, sharing and retaining the risk. Consistent monitoring is important to ensure changes in the internal and external contexts and are incorporated in risk assessments and treatments (ISO, 2009).

Monitoring helps to determine the effectiveness based on the proposed and implemented risk treatment. Communication seeks to improve the understanding of risk and its procedure by the members of the organisation (AS/NZS, 2009). Engaging employees from different areas of expertise in risk assessment and treatment can ensure accountability, appreciation and support on the risk treatment plan.

Culture is one of the fundamentals of "Establish the context" process in the framework. Risk culture is formed from ERM implementation due to the changing business complexity and new regulations from external environment (Liebenberg and Hoyt, 2003; Norlida, Isahak and Mohd, 2010; Schein, 2004). Hence, the elements from "Establish the context" are identified as risk culture, which is discussed in the following section.

Risk Culture Dimensions

Culture is formed when issues of adaptation to its external environment and integration of its internal processes are tackled along the way as a group grows and develops into an organisation (Schein, 2004). Similarly, risk culture is formed with the repeated behaviour of its members on ERM implementation, which is subject to self-reinforcement cycles or changes from internal and external changes in the organisation (Hardy, 2015; Taylor, 2014). Risk culture encompasses the general awareness, attitudes and behaviours of individuals and groups within an organisation towards risk (Deloitte, 2012).

In relation to organisational culture, the risk culture dimensions identified for this study are risk policy and risk appetite/tolerance, accountability, key risk indicators, reward and recognition, risk language and internal relationships (as shown in Table 1). It is critical to link between strategy execution and ERM through the determination of risk appetite level (COSO, 2004b; Smart and Creelman, 2013). Risk appetite is the amount of risk that an organisation is willing to take in strategic decision (Banks, 2012; Levy et al., 2015; McGing and Brown, 2014; Smart and Creelman, 2013), whereas risk policy is the statement of the overall intentions and direction of an organisation related to risk management (ISO, 2009).

Table 1. The risk culture dimensions in relation to organisation culture

No.	Culture Elements (Schein, 2004)	Risk Culture Dimensions	Description
1.	Mission, goals and strategy	Risk policy and risk appetite/ tolerance	Declaring the ERM initiative as part of organisation's vision and mission statements.
2.	Measurement: Error detection and correction systems	Key risk indicator	Aligning performance assessment with compensation and monitoring to track and report progress.
3.	The nature of human relationship	Accountability	Defining the roles and responsibilities on risk management need to be formally documented and communicated throughout the organisation.
4.	Allocation of rewards and status	Reward and recognition	Based on key risk indicators, risk-based incentives can be defined for risk owners of all hierarchical levels.
5.	Common language and concepts	Risk language	Create a natural risk habitat that dictates enterprise wide involvement.
6.	The nature of human relationship	Internal relationships	Internal environment with relationship between colleagues and supervisor.

As companies execute the chosen strategic initiatives, top management needs to identify and monitor the key risk indicators (KRIs). KRI is developed in concert with individual departments and incorporated acceptable deviations from plan that fall within the overall risk appetite. Reward and recognition coupled with KRI not only contribute to the monitoring of achievement of organisational objectives but also improve their accountability (Aureli and Salvatori, 2012; Jackson, 2015; Tapestry Networks Inc., 2014). Risk is owned by the ones closest to its occurrence usually through bottom-up steps that build on existing functional capabilities (Financial Stability Board, 2014).

An ERM mind-set creates a natural risk habitat, which together dictates everyone's enterprise wide involvement (Althonayan, Killackey and Keith, 2012). It is important for organisations to communicate through a common risk language to ensure that everyone is "on the same page" (Althonayan, Killackey and Keith, 2012; Boultwood and Dominus, 2014). In addition to creating an intimidation-free atmosphere, continual performance improvement with consistent risk information can be shared across different departments (Hallowell, Molenaar and Fortunato, 2013).

Relationships between management and employees with coordination among departments on ERM implementation can develop risk culture in organisations (Gupta, 2011). Lloyd-walker, Mills and Walker (2014) and Mikes and Kaplan (2014) found that top management support in creating a no-blame culture can encourage employees to speak up and discuss risk issues they worry about. To gain commitment of the employees by involvement, building risk culture can be complemented with a more social and opinion sharing meeting (Dafikpaku, 2011). Thus, an environment of open and constructive manner can stimulate

positive attitude of employees on ERM (De Jonghe, Edelsten and Xavier, 2013; Protiviti, 2014a).

Drivers of Risk Culture and ERM

Top management, one of the primary drivers of ERM programme, through the risk committee has the ultimate oversight responsibility for ERM (Beasley, Pagach and Warr, 2008; Tao and Hutchinson, 2013; Teoh and Muthuveloo, 2015). Their responsibilities are moving beyond the traditional approval and supervisory roles to a significant player in the risk appetite process (EY [Ernst & Young Global Limited], 2013). Risk committee meets regularly and receives reports on the overview of company's ERM (Grace et al., 2014). This kind of communication can enhance ERM as a central consideration in setting strategy. Some companies also institutionalise ERM through internal restructure by streamlining and integrating the existing department such as internal audit or risk management (EY, 2014). However, some companies are adding a new ERM specific function led by CRO/ Risk Manager (EY, 2014).

CRO/risk manager or risk management department coordinates the process across the organisation to oversee the ERM programme (Mikes, 2014). In addition, they ensure that risks are identified and managed effectively at the department's level. CRO/Risk Manager or risk management department also communicates and escalates the risk information for top management to assess the overall achievement of the corporate goals by paying attention to high risk areas (Deloitte, 2017; Gatzert and Martin, 2013; Sayilir and Farhan, 2017). Moreover, they also improve on the collection and analysis of organisation's current and emerging risks. In addition, an adequately resourced risk management department can assist in embedding risk skills and knowledge across the organisation (IRM, 2012; Protiviti, 2014a).

RESEARCH METHODOLOGY

Due to its challenging nature, the construction industry must implement ERM to successfully manage the various types of risks. In this study, we focus on PLCs because they are typically large companies with huge operations and more likely to have the resources to implement ERM. According to Golshan and Siti Zaleha (2012), Hoyt and Liebenberg (2011) and Izah and Ahmad (2011), the size of the company is associated with the extent of ERM adoption.

In Malaysia, the Statement of Risk Management and Internal Control (SRMIC) 2012 and Malaysian Code on Corporate Governance (MCCG) 2017 are regulatory compliances on risk management for PLCs, which is similar to ERM approach at the highest level linked to strategy. The board must actively identify, assess and monitor key business risks to safeguard their shareholders' investments and the company's assets (Securities Commission Malaysia, 2017). They also need to disclose the primary features of the risk management framework (RMF) or they provide statement of risk management in their company's annual report in pursuant to Paragraph 15.26(b) of the Listing Requirements by Bursa Malaysia (Bursa Malaysia, 2012; Securities Commission Malaysia, 2017).

This study adopted qualitative method by reviewing annual reports and conducting semi-structured interviews in construction PLCs. The data collection started with content analysis of annual reports of 46 construction PLCs which were retrieved from Bursa Malaysia website in June 2016. Annual report was chosen as a source of data, similar to previous ERM studies from Bertinetti, Cavezzali and Gardenal (2013), Hoyt and Liebenberg (2011), Majid, Dildar and Waqar (2016) and Sprčić, Kožul and Pecina (2017). Moreover, it is more likely to observe public disclosure of ERM implementation among PLCs, similar to the studies published by Kommunuri et al. (2016) on Hanoi Stock Exchange, Sayilir and Farhan (2017) on Istanbul Stock Exchange and Florio and Leoni (2017) on Milan Stock Exchange.

Table 2 shows a general profile of the 46 Malaysian construction PLCs in terms of year of listing in the main board and total assets. The participated PLCs have years listed in Malaysian stock exchange ranging from 1 to 5 years (9%), 6 to 10 years (11%), 11 to 15 years (24%), 16 to 20 years (20%), 21 to 25 years (30%) and more than 25 years (6%). Meanwhile, the majority of the construction PLCs have total assets ranging from MYR1,000,000,001 to MYR5 billion (35%), MYR500,000,001 to MYR1 billion (28%) and MYR50,000,001 to MYR500 million (26%).

Table 2. Profile of the 46 construction PLCs in 2016

Years of Listing in Main Board	Frequency	%	Total Assets (MYR)	Frequency	%
1 to 5	4	9	< 50 million	2	5
6 to 10	5	11	50,000,001 to 500 million	12	26
11 to 15	11	24	500,000,001 to 1 billion	13	28
16 to 20	9	20	1,000,000,001 to 5 billion	16	35
21 to 25	14	30	> 5,000,000,001	3	6
> 25	3	6			
Total	46	100	Total	46	100

Annual reports of Malaysian construction PLCs were scanned for keywords within the paragraphs which indicated ERM implementation following some studies conducted by Bertinetti, Cavezzali and Gardenal (2013), Gatzert and Martin (2013) and Majid, Dildar and Waqar (2016). The keywords were based on RMF as required by MCCG 2017. Table 3 shows the components of RMF based on ISO 31000 standards with comparison between SRMIC 2012 and MCCG 2017. The sentences that contained the keywords were read to get a better sense of whether the ERM concept was actually being implemented by the Malaysian construction PLCs.

A disclosure index was constructed to measure the level of disclosure based on the ratio of indicators disclosed and the number of indicators applicable to each company. A dichotomous score was given a score of 1 if the information was disclosed and 0 otherwise (Botosan, 1997; Meek, Roberts and Gray, 1995). Each item was unweighted as it was assumed that each information was equally important.

Table 3. The comparison of risk management framework components

No.	RMF Components	ISO 31000 (2009)	SRMIC 2012	MCCG 2017
1.	Mandate and commitment (risk committee)	√	√	√
2.	Risk policy or risk appetite/tolerance	√	√	√
3.	Accountability	√	√	√
4.	Risk management process integrated into organisation's processes	√	√	√
5.	Appropriate resources (skills and competence; documented procedures and training)	√	√	√
6.	Communication and reporting mechanisms	√	√	X

However, documents in the form of company's annual report may not be an accurate representation of how different organisational members perceive the situations in which they are involved (Bryman and Bell, 2011). Therefore, semi-structured interviews were conducted with industry practitioners. In this study, we collected additional data from the industry players who had experience in the field of ERM implementation in construction PLCs. The interviews were conducted between August and October 2016 for nearly an hour to one and a half hour. The interview transcriptions were analysed using content analysis to establish themes, and the findings were reported accordingly.

We conducted in-depth face-to-face interviews with 10 industry practitioners, consisting of executive director (10%), risk manager (30%), manager (40%) and executive (20%), to obtain their rich and different opinion on their live experience. There were four interviewees with 13 to 33 years and the balance six interviewees with 2 to 9 years of construction experience. In terms of ERM experience, it is an equal five interviewees each with 7 to 14 years and 2 to 4 years.

RESULTS

The findings from the content analysis of construction PLCs' annual report and interviews are discussed separately in the following section. The results include the ERM implementation, the concept risk culture and top management with CRO/risk manager influence in embedding risk culture from both methods.

Findings from Annual Reports of 2016

There were 30 construction PLCs with either ERM/risk management framework in their companies. Of them, 11 construction PLCs (24%) had established ERM framework in their companies. Meanwhile, 19 construction PLCs (41%) had RMF in place to identify principal risks and implement appropriate controls to manage risk. As for risk management committee is concerned, 26 construction PLCs had set up the committee to oversee and monitor the overall risk impacting the company. In addition, there were 4 construction PLCs with combined risk and audit committee to ensure effectiveness of an integrated risk management function within the organisation.

The number of construction PLCs with approved risk policy were 16, and 19 construction PLCs had determined the risk appetite/tolerance in their companies. Meanwhile, 85% of the construction PLCs took responsibility and were accountable for all risks assumed under their respective areas of responsibility. Moreover, 16 construction PLCs were mentioned on integrating ERM in the management systems of the companies.

The risk manager together with the risk management department played an important role in ensuring the successful establishment and implementation of the ERM for 11 construction PLCs. In order to create risk awareness among employees, only 7 PLCs had various training courses, seminars and workshops on risk management.

All construction PLCs had the processes in place to identify, evaluate and manage significant risks. Furthermore, 32 construction PLCs mentioned that key risks relating to the company's strategic operations were deliberated and monitored in meetings. As for risk documentation, 32 construction PLCs had reported process in the form of risk register, risk profile, risk management report and risk assessment report. Table 4 presents information regarding risk disclosure.

Table 4. The risk disclosure from construction PLCs' annual report

RMF Keywords	Year 2016		RMF Keywords	Year 2016	
	No. of PLCs	%		No. of PLCs	%
ERM framework	11	24	Integrated into systems	18	39
RMF	19	41	Risk manager/ risk management department	11	24
Risk management committee	26	57	Process	46	100
Combined audit/ risk committee	4	9	Training	7	15
Risk policy	17	37	Meeting	32	70
Risk appetite/ tolerances	19	41	Documentation	32	70
Accountability	39	85			

Findings from Interviewees' Perspectives

In terms of ERM implementation, there were formalised processes for identifying, evaluating, treating, monitoring and communicating risk in the construction PLCs. Employees identify, analyse and evaluate risk affecting each of their departments in accordance to the company's objectives. Afterwards, head of department (HOD) monitors and reports the significant risks through document such as risk register, risk management plan and risk profile. These reports are escalated and presented to risk committee or the board.

Some interviewees narrated the approval of top management on formalised risk policy including risk appetite/tolerance and procedures. This indicated the seriousness of ERM implementation. There were monitoring systems such as dashboard to track key risk performance. Some interviewees mentioned key performance indicator helped the company to manage main risks in more effective and focused manner. The findings from interviews indicated that HODs with their employees were responsible to identify, assess and treat risk relative to the department's objectives. Each HOD was accountable for the management of risks including implementing treatment strategies and maintenance of risk controls. They also communicated and reported the risks to the top management.

Reward and recognition for managing risk can involve financial and non-financial incentives. Some interviewees explained recognition in the effort of managing risk was in the form of giving awards to employees. In addition, there was also financial incentives in the form of bonus based on the performance of employees who took part in managing risks. Sometimes, an employee could also be promoted to a senior position or given an opportunity to handle project of a bigger scale in the future as recognition of their efforts. Some interviewees agreed that reward and recognition were important to instil the desired risk culture in ERM implementation.

Some interviewees also emphasised about having an open discussion which helped to stimulate positive attitude of employees regarding ERM. This could also foster better coordination in managing risks between departments. Hence, risk culture could be developed with good internal relationships among employees in the company. Some interviewees explained that the company was a learning organisation whereby senior management with diverse backgrounds shared their experiences to ensure risks were properly and effectively managed. Moreover, they also narrated that top management did not play the blame game but instead encouraged sharing of knowledge and learning from mistakes.

DISCUSSIONS

Based on the findings from the annual reports and semi-structured interviews, there are some similarities on ERM implementation, role of top management, Risk Manager or risk management department influence and risk culture in the construction PLCs. Table 5 shows the comparison of findings.

Enterprise Risk Management Implementation

ERM/risk management framework is a set of components which provides the foundation for designing, implementing, monitoring, reviewing and continually improving ERM throughout the organisation (ISO, 2009). The framework provides guidance to employees in applying comprehensive ERM. Although only 30 construction PLCs had ERM/risk management framework, all had an ongoing process for identifying, evaluating and managing significant risks in the context of their business objectives and strategies. This was parallel to the findings from interviewees, the ERM implementation included identifying, evaluating, treating, monitoring and communicating risks in their companies.

Table 5. Comparison of research dimension between different sources

No.	Dimensions	Literature Review	Annual Reports	Semi-Structured Interviews
1.	ERM implementation			
(a)	Risk assessment	√	√	√
(b)	Risk treatment	√	√	√
(c)	Monitor and review	√	√	√
(d)	Communicate and consult	√	√	√
2.	Top management support	√	√	√
3.	Risk manager/department	√	√	√
4.	Risk culture			
(a)	Risk policy and risk appetite/tolerance	√	√	√
(b)	Key risk indicator	√	√	√
(c)	Accountability	√	√	√
(d)	Reward and recognition	√	–	√
(e)	Risk language	√	–	–
(f)	Internal relationships	√	–	√

Top Management Support

Based on findings from the annual reports, 30 construction PLCs' risk committees not only demonstrated the commitment from top management in managing risk but also provided a better oversight of the company's ERM activities (Beasley, Pagach and Warr, 2008; Tao and Hutchinson, 2013; Teoh and Muthuveloo, 2015).

The findings from the annual reports and interviewees also emphasised the role of top management through risk committee in formulating, implementing and reviewing risk policy, risk appetite/tolerance, framework and procedures for ERM. Risk committee approves and reviews risk policies, framework and risk appetite/tolerance from time-to-time (Bugalla et al., 2012; Ng, Chong and Ismail, 2012). Consistent support and encouragement from the top management through leading by example, as well as sharing knowledge, can help to create a conducive environment for employees to roll out ERM.

Mistakes were acknowledged to improve risk mitigation actions according to some interviewees. Subsequently, they can strengthen the risk culture in the organisation (Deloitte, 2015; EY, 2013; Keith, 2014). Top management also must communicate ERM strategy, policy, procedures and responsibilities to shareholders and all employees. In addition, decisions and expected operation performance targets set by the top management are communicated and understood by the HODs. Risk culture is cultivated when risk is emphasised in top management decisions, which are informed back to employees consistently (De Jonghe, Edelsten and Xavier, 2013; Hallowell, Molenaar and Fortunato, 2013; Protiviti and RMA, 2014). The channels of communication are either through risk committee meeting, knowledge sharing sessions or risk workshops.

Changes to current or emerging risks and mitigation actions are reported in a timely manner to the risk committee or the board. Top management also periodically monitors top 10 risks or risk profiles in construction PLCs. Monitoring risk performance ensures the organisation as a whole to be more vigilant against risks and increases the level of risk awareness (Zhao, Hwang and Low, 2012; 2014a). This is to ensure that the board has an understanding of the risk profile and engage in strategic, risk-informed decision-making process which is appropriate to its leadership role. Meanwhile, ERM is integrated into construction PLCs management systems whereby the structured approaches in identifying, evaluating and managing key risks are conducted by employees. Risk culture is developed when top management integrates ERM into its corporate strategy within multiple functions across the organisation (Gatzert and Martin, 2013; Zhao, Hwang and Low, 2014b).

Most interviewees believed training for employees could enhance their competence and knowledge in ERM. Once employees knew how to apply ERM, its application could come naturally in their day-to-day work. However, most construction PLCs did not mention regarding conducting risk awareness programme, session or workshop in their annual reports. Regular training on ERM is part of continuous learning mechanisms that can create risk culture in an organisation (De Jonghe, Edelsten and Xavier, 2013; Hallowell, Molenaar and Fortunato, 2013; Zhao, Hwang and Low, 2014a).

Risk Culture

According to the findings from the annual reports and interviews, the risk policy incorporated a structured process for identifying, evaluating and prioritising risk, as well as clearly defining the risk responsibilities and escalation process. The policy also explained the objectives of risk management functions, agreed risk appetite and acceptable level of risk for the construction company. Risk culture is closely linked to risk policy as it provides a clear direction on its implementation with risk appetite/tolerance as formal representation of the implicit limits that an organisation is willing to take on (AS/NZS, 2009; COSO, 2004a; Dafikpaku, 2011; De Jonghe, Edelsten and Xavier, 2013; ISO, 2009). When employees use risk policy and risk appetite/tolerance in their daily operation, it is a positive indicator of risk culture (Protiviti and RMA, 2014).

Findings from the annual reports and interviews also indicated some construction PLCs had a well-defined structure with clearly delineated lines of accountability, authority and responsibility to the board, its committees and departments on ERM. While accountability for managing strategic risk rested with the top management including the board, accountability for managing operational risk rested specifically with the HODs.

Risk culture is created as top management employees across the organisations are held accountable for the ownership of risk within their areas of responsibility (EY, 2014; Gatzert and Schmit, 2015). Key risks related to the construction PLCs operations were deliberated at the departments' level as indicated in the annual reports and interviews. Then, these key risks and the appropriate mitigation actions were documented and circulated to the risk committee or board. They reviewed the key risks and planned actions to ascertain if those risks were mitigated and managed appropriately. Although key risk indicator was not mentioned specifically, the process of monitoring key risk was frequently narrated in the annual reports and interviews. Risk culture can develop as organisations determine the critical

risk areas that need to be monitored through the alignment of key risk indicators (Althonayan, Killackey and Keith, 2012; Hallowell, Molenaar and Fortunato, 2013; Tapestry Networks Inc., 2012).

Reward and recognition with internal relationships were the two risk culture dimensions narrated by interviewees, but they were not found in the annual reports. Reward is a monetary reward compensation or recognition such as promotion or appreciation given to an employee for the specific action undertaken to manage risks (Aureli and Salvatori, 2012). When ERM is incorporated into a comprehensive programme that aligns performance expectations, responsibilities and compensation structures to appropriate risk-taking behaviours, this reinforces critical aspects of the desired risk culture for employees (Dafikpaku, 2011; Protiviti, 2014b).

Relationships between management and employees with coordination of different departments on ERM implementation can develop risk culture in organisations (Gupta, 2011). An open and constructive environment can stimulate positive attitude of employees on risk management (De Jonghe, Edelsten and Xavier, 2013; Protiviti, 2014a). A no-blame approach encourages open communication, sharing of knowledge and learning from mistakes (De Jonghe, Edelsten and Xavier, 2013; Lloyd-Walker, Mills and Walker, 2014; Protiviti, 2012; Roeschmann, 2014).

Risk Manager or Risk Management Department

There was no CRO position mentioned in the annual reports or interviews. However, some construction PLCs appointed risk manager or established a stand-alone risk management department.

The findings from the annual reports and interviews indicated risk manager or risk management department coordinated with different departments to identify, evaluate, manage and monitor significant risks that the construction PLCs faced in their operations. The facilitation included to challenge and deliberate on risk identified, emerging risk, risk rating and mitigation plans with HODs. Some interviewees narrated that the risk manager or risk management department helped different departments to put the risk in the right perspective based on their risk appetite/tolerance. They also reviewed the risk status to authenticate the action plans carried out by risk owners through meetings. Afterwards, information on the key risks and the progress of action plans were collected and reported by the risk manager or risk management department to the risk committee or the board.

Some risk managers or risk management departments also championed risk awareness through training to strengthen and enforce the importance of ERM practices among top management and employees. However, non-existence of risk manager or dedicated risk management department does not mean the construction PLCs are not implementing ERM (Callahan and Soileau, 2017). Some construction PLCs had their risk function combined with internal audits or designated the responsibility to CFO.

CONCLUSION AND RECOMMENDATIONS

The information from literature review, annual reports and interviews highlighted similar results on ERM implementation which consisted of the following four process: risk assessment (identify risk, analyse risk and evaluate risk), risk treatment, monitor

and review and communicate and consult. Although, only selected construction PLCs appointed risk manager or established risk management findings, their presence in facilitating ERM implementation and embedding risk culture were acknowledged.

The literature review captured the following six risk culture dimensions: risk policy and risk appetite/tolerance, key risk indicator, accountability, reward and recognition, risk language and internal relationships. However, there were only three dimensions discovered from annual reports, which were risk policy and risk appetite/tolerance, monitoring key risks and accountability. These three risk culture dimensions were also mentioned by the interviewees with addition of another two dimensions, namely reward and recognition with internal relationships.

The next phase of this study is to determine the relationships among the variables (ERM implementation, top management support, risk culture and CRO/ Risk Manager) in the proposed theoretical model (as shown in Figure 2). Hence, the results derived from the content analysis of annual report and semi-structured interviews were utilised in formulating the survey instrument for subsequent data collection.

This study has some limitations. First, the sampling was focused only on large-sized company and PLCs and risk culture dimensions which concentrated only on organisational culture. Some of the future research areas of ERM that can be explored are strategic management between ERM and organisation's performance, critical success factor and maturity level of ERM.

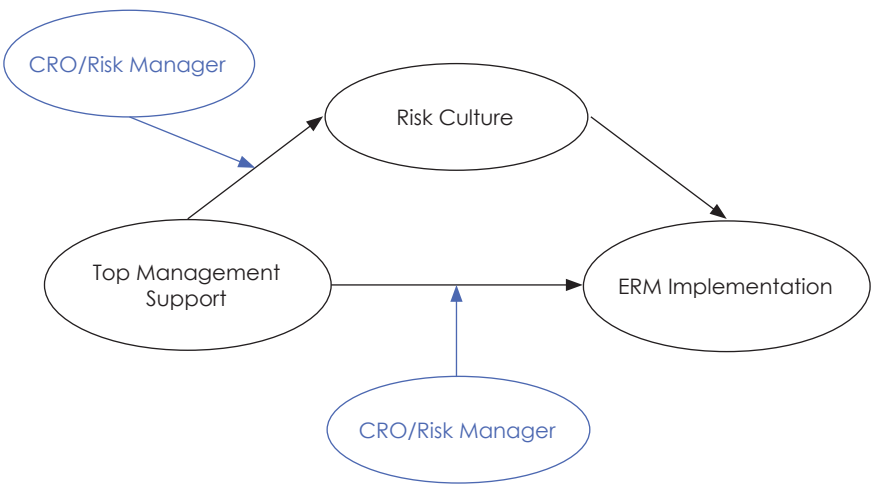

Figure 2. The proposed theoretical model

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