OPERATIONALISING ENTERPRISE RISK MANAGEMENT (ERM) EFFECTIVENESS

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Abstracts

Studies on ERM effectiveness appear to suffer from the same catastrophic dilemma as that of organizational effectiveness. To the best of the author's knowledge, very little research has been done on the effectiveness of ERM in managing risks. Based on the guidance from the COSO (2004) framework and the existing literature coupled with the insights gathered from semi-structured interviews, the current article aims to demarcate a workable model, and, thereafter, an instrument to be operationalized in ERM effectiveness studies. The findings suggest that the COSO framework is still relevant for ERM and that to improve the robustness of the effectiveness instrument, a multidimensional approach is key. This paper suggests a multiple model approach comprising a process model, system resource model and outcome model for measuring ERM effectiveness. Additionally, the perspectives from various ERM stakeholders of the risk, including the risk function itself, such as from the internal audit and finance or other members of the management team, may enhance the assessment of the effectiveness of ERM in managing risks. It is hoped that the model and instrument developed in this paper will encourage more studies to be conducted on the effectiveness of ERM in particular. From the practical standpoint, with some modifications to the fit, the instrument can also be applied to evaluate the effectiveness of ERM implementation in the respective organisations.

Keywords: Enterprise Risk Management, ERM, effectiveness, research instrument
JEL Classification: G32, L25

1. Introduction

Organisational effectiveness is vital for organisational survival and has been given a prominent place in both the corporate and academic domains. Cameron (1986), in his paper on consensus and conflicts in organisational effectiveness, suggests a few common research trends. First of all, he states that despite the ambiguity and confusion surrounding organisational effectiveness, it remains central to organisational science and cannot be ignored in theory and research. Secondly, according to him, scholars agree that consensus on the most appropriate set of indicators for effectiveness is non-existent. Thirdly, Cameron suggests that the criteria for effectiveness are based on the values and preferences of individuals with no specific construct boundaries, with different

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models to measure effectiveness to suit different circumstances, which fits well within the scope, purpose and constraints of the study. Finally, and possibly the most fundamental, there is no single theory for effectiveness or a standard model or criteria for organisational effectiveness (Cameron, 1986).

Scholarship on effectiveness is dominated by conceptual and theoretical works, and rarely includes empirical work (Lecy, Schmitz, and Swedlund, 2012). This lack of studies on effectiveness is echoed in the area of ERM (Hoyt and Liebenberg, 2011; Kasim, Abdul Aziz and Kasim, 2011), and, as such, the effectiveness of ERM in managing risks remains as an underexplored 'black box' with only a handful of ERM studies examining this aspect of ERM. Despite the consensus that ERM adds value to the firm (Hoyt and Liebenberg, 2011; Waweru and Kisaka, 2013), and that it aids decision-making and improves business performance (Gates, Nicolas, and Walker, 2012), its effectiveness in managing risks remains a subject of interest to businesses, at large, and academics, in particular. Empirically supported studies on ERM effectiveness are scarce, and, ironically, would be an added reinforcement and motivation towards ERM adoption in organisations. Indeed, firms, due to regulatory compliance, seem to invest resources (Curkovic, Scannell, Wagner, and Vitek, 2013) in implementing ERM but do not put in place processes to review the effectiveness of the risk management programme (Crawford and Stein, 2004).

In the context of ERM effectiveness, previous research has shown that there is no conclusive evidence concerning whether ERM is effective in managing risks. To the best of the author's knowledge, very little research has been done on the effectiveness of ERM in managing risks. The work of Papae and Speckle (2012), Jalal, Albayati and Albuainain (2011), Arnold, Benford, Canada and Sutton (2011), Gordon, Loeb and Tseng (2009), and Collier, Berry and Burke (2007) are among the very few studies on the effective implementation of an ERM programme in an organisation.

The lack of studies on ERM effectiveness in managing risks suggests that this field of research also suffers from the same catastrophic dilemma as its counterpart in organizational effectiveness studies. Notwithstanding the lack of consensus among academics, in practice, business practitioners are required, on a regular basis, to evaluate the effectiveness of any projects undertaken by the organisation. The lack of an appropriate tool to measure organizational effectiveness, in general, and ERM effectiveness, in particular, is not an excuse for not evaluating whether or not a particular programme or strategy is effective.

Based on the guidance from the COSO (2004) framework and the existing literature, coupled with the insights gathered from semi-structured interviews, the current article aims to demarcate a workable model, and, thereafter, an instrument that can be operationalized in ERM effectiveness studies.

The following section describes the methodology adopted in the current study followed by a discussion on the common models contained within the literature on organization effectiveness. Thereafter, the pertinent themes gathered from the COSO (2004) framework, literature review and the semi-structured

interviews are discussed. The multiple insights from the foregoing discussion are then used as a basis to develop the model and instrument to operationalize the effectiveness of ERM in managing risks in the subsequent section. The next section discusses the academic and practical implications of the current study. The paper concludes with the limitations and directions for future research.

2. Research methodology and scope

Data were collected through semi-structured interviews conducted with a group of Chief Risk Officers (CROs), Chief Internal Auditors (CIAs) and Chief Financial Officers (CFOs) to gain a practical understanding of ERM effectiveness, in particular. This group of seven senior officers comprising three CROs, two CIAs and two CFOs were selected from five (5) organisations of varying levels of ERM adoption (See Table 1 below). For reasons of anonymity, each of the respondents is identified using letters in sequential order from A to G, and the companies they represent are disguised.

The data collection took three weeks to complete from 28 February to 21 March 2014. An interview guide was used during the interviews. Prior to the interviews, the risk management statement in the annual report of the respondent's organisations was reviewed to assess the level of ERM implementation and to gain a better understanding of the ERM implementation in the organisations under study. During the interviews, the interviewees were presented with the eight components of ERM based on the COSO framework. To assist the understanding of what each component means, a sample of measurement items was included in the interview guide. Their views were then sought on the appropriateness of those components in measuring the ERM effectiveness. In addition, the interviewees were also asked to propose any other approach to measure the effectiveness of ERM.

The views from the respondents with different roles in ERM implementation were obtained to gain an enriched perspective on ERM effectiveness. CROs are normally the person driving and coordinating ERM implementation (Aabo, Fraser, and Simkins, 2005; Wan Daud, Yazid and Hussin, 2010), while the CIAs oversee the risk function in some smaller organisations, as well as enforce the internal controls, which is a very important part of ERM (Boyle and Boyle, 2013; de Zwaan, Stewart and Subramaniam, 2011). In addition, the CFOs are normally the risk owners, who, due to their legal and fiduciary duties, generally place higher priority on risk management compared to the other members of the senior management team. The CFO plays an increasingly pivotal role in ERM and a strategic role in ERM implementation (Bloxham and Borge, 2006).

For the purpose of this paper, ERM effectiveness is defined based on the COSO (2004) ERM framework developed by the Committee of Sponsoring

Organisations of the Treadway Commission[2] (COSO), which is one of the most widely discussed and familiar ERM frameworks (Power, 2007). Although ERM has numerous frameworks and standards guiding the concept, the findings from the "2008 ERM Benchmarking Survey" conducted by the Institute of Internal Auditors (IIA's) and IIA Research Foundation's Global Audit Information Network suggests that the COSO's Enterprise Risk Management-Integrated Framework is the most commonly used framework to guide ERM processes. Due to the limited literature on ERM effectiveness, guidance from effectiveness studies in other multidisciplinary areas was sought.

Based on the feedback from the interviewees coupled with guidance from COSO (2004) and the literature review, a model and an instrument to operationalise the effectiveness of ERM in managing risks were developed. Subsequently, a pre-test exercise was carried out to improve the content and face validity of the instrument. Thereafter, an online pilot test was performed to check the internal consistency of the instrument. The internal consistency of the instrument; namely, Cronbach's alpha, was computed based on the pilot data using a statistical tool; namely, SPSS.

The current article limits its scope to a workable research instrument to operationalize ERM effectiveness in managing risks. That stated, empirical studies to address the question of ERM effectiveness in managing risks is not intended and certainly not within the scope of this paper.

Table 1
Background of respondents and the organisations they represent

No.	Respondents	Industry	Level of ERM adoption
1	Mr A (CRO), Mr B (CIA) and Ms C (CFO) of Company Sun A Malaysian public listed company	Oil and gas	Fully adopted ERM
2	Mr D (CRO) of Company Star A Government linked company	Trading and services	Fully adopted ERM
3	Mr E (CIA) of Company Sky A Malaysian public listed company	Oil and gas	Planning to adopt ERM
4	Mr F (CRO) of Company Moon A Malaysian public listed company	Financial services	Fully implemented and embedded ERM
5	Mr G (CFO) of Company Earth A German multi-national Industry	Financial services	Fully implemented and embedded ERM

3. Common models in organisational effectiveness studies

Due to the breadth in the scope of interest of scholars and practitioners alike, a single model of organisational effectiveness is non-existent. The only consensus on organisational effectiveness is that there is no consensus (Lecy, Schmitz, and Swedlund, 2012). The definition of organisational effectiveness in the literature varies to fit the scope and subject of the respective study. This section illustrates the common models used to measure effectiveness in selected management

[2] COSO is a voluntary private sector organization, led by the Institute of Management Accountants, the Institute of Internal Auditors Inc., Financial Executives International, the American Accounting Association, and the American Institute of Public Accountants.

fields. Table 2 below describes the eight common models for organisational effectiveness research according to Cameron (1984).

Internal audit effectiveness is defined as the adequacy of the internal audit function to accomplish its purpose and or 'risk based goal-attainment' concept that helps the organisation to achieve its objectives. One study suggests that, traditionally, internal audit effectiveness can be determined by assessing the quality of the internal audit procedures, which is also known as the Process Approach (Dittenhofer, 2001). More recently, Mihret and Yismaw (2007) suggest that internal audit quality, which is determined by the internal audit department's capability to provide useful findings and recommendations, is central to audit effectiveness. The study further emphasizes that quality audit findings and recommendations would not be of value unless management support is present, which is reflected in its commitment to execute and implement them (Mihret and Yismaw, 2007).

The common approaches to measure internal audit effectiveness can be divided into three main sets: process measures, output measures and outcome measures (Arena and Azzone, 2009). The details of the approaches are summarized in Table 3.

On the other hand, the two common models to measure the effectiveness of any management information system (MIS) consist of the MIS usage approach and the user perceived effectiveness approach. Whilst the MIS usage approach uses behavioural indicators as surrogates for MIS effectiveness, such as the number of reports generated, the number of changes made to a file and connect time, the perceived effectiveness approach uses measures of effectiveness as perceived by users of the system, such as user satisfaction and perceived system quality (Srinivasan, 1985).

The effectiveness of the audit committee (AC) is, however, configured based on the reflective acts upon the processes and activities in audit committee meetings. The analysis of interview evidence indicates that attendees' configurations of meaning regarding AC effectiveness are constructed through four categories: the background of AC members; ceremonial features of AC meetings; reflective interpretations of substantive practices and activities taking place during AC meetings, as well as reflective understandings of the informal practices taking place outside meetings (Gendron and Bédard, 2006).

Table 2
Summary of eight (8) common models in measuring organisational effectiveness.

Model	Definition	When Useful
Goal Models	Effectiveness is measured based on the extent of accomplishing the stated goals.	Goals are clear, consensual, time-bound and measurable.
System Resource Model	Effectiveness is measured based on the extent it acquires the needed resources. It can be assessed by checking internal consistency, ability to exploit resources from the environment, and the like.	A clear relationship exists between inputs and performance.

Table 2 *(Continued)*

Model	Definition	When Useful
Internal Process Model	Effectiveness is measured based on the extent that there is no internal strain which can hinder smooth internal functioning.	A clear relationship exists between processes and performance.
Strategic Constituencies Model	Effectiveness is measured based on the extent to which the strategic constituencies are at least minimally satisfied.	Constituencies have a powerful influence on the organisation, and it has to respond to demands.
Competing Values Model	Effectiveness is measured based on the criteria in the four quadrants to meet constituency preferences.	The organisation is unclear about its own criteria, or there is emphasis on a change in criteria over time.
Legitimacy Model	Effectiveness is measured based on its survival as a result of engaging in legitimate activity.	There is emphasis on survival or decline and demise among organisations.
Fault-driven Model	Effectiveness is measured based on the absence of faults or traits of effectiveness.	Mistakes are fatal and criteria of effectiveness are unclear, or strategies for improvement are needed.
High Performing Systems Model	Effectiveness is measured based on excellence relative to its peers.	Comparisons among similar organisations are desired.

Table 3

Common approaches to measure internal audit effectiveness

Approach	Description	Strengths	Limitations
Process	Effectiveness is measured by evaluating the quality of procedures/ processes	Easy and less costly to measure	Does not consider the stakeholders' satisfaction
Output	Effectiveness is measured using: Customer satisfaction 2. Percentage of recommendations that are being implemented	Considers stakeholders' satisfaction Takes into account the relevance of value-added activities in shaping performance indicators	Hard to measure because Stakeholders' satisfaction requires a representative sampling size
Outcome	Effectiveness is measured based on the outcome or the achievements of objectives it is set to fulfil.	Addresses a wider range of aspects, i.e. all the elements on which audit activities have an impact. These include both the efficiency and effectiveness of the audited processes and corporate results	Hard to measure due to the time delay when an audit action is taken and when its impact is measurable. Furthermore, the contribution of each item (i.e. internal audit intervention) may not be easily isolated.

Source: Arena and Azzone (2009)

4. ERM effectiveness: discussion and analysis

4.1. ERM effectiveness according to COSO

> According to COSO's ERM Framework (COSO, 2004) page 2:
> "*Enterprise risk management is a process, affected 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 the risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.*"

The effectiveness of ERM in managing risks is the crux of the COSO 2004 Framework and is described by COSO as 'a state or condition at a point in time'. The framework further emphasizes that the effectiveness of ERM is a subjective matter and suggests that the effectiveness of ERM can be measured by assessing the presence and proper functioning of the eight (8) interrelated components of ERM: internal environment, objective setting, event identification, risk assessment, risk response, control activities, information and communication and monitoring (see Table 4). The components are interrelated and do not operate in isolation or follow any particular sequence. They apply to all entities regardless of size, although it is recognized that the methodology for each component is likely to be less formal and less structured in smaller organisations (Ballou and Heitger, 2005).

Table 4
Components of ERM according to the COSO Framework 2004

Component	Description
Internal Environment	The internal environment reflects the entity's ERM philosophy, risk appetite, board oversight, commitment to ethical values, competence and development of people, and assignment of authority and responsibility.
Objective Setting	Objective setting is the precondition to effective event identification, risk assessment and risk response. Objectives should also be aligned with the entity's risk appetite, which drives risk tolerance levels for the entity's activities.
Event Identification	Management identifies potential events that may positively or negatively affect an entity's ability to implement its strategy and achieve its objectives and performance goals.
Risk Assessment	Risk assessment allows an entity to consider the extent to which potential events might have an impact on the achievement of the objectives.
Risk Response	Once the relevant risk event has been assessed, management determines how it will respond to the event when it occurs, while taking into account the costs and benefits. Responses include risk avoidance, reduction, sharing and acceptance.
Control Activities	Control activities are the policies and procedures that help ensure that management's risk responses are carried out. They include a range of activities, such as approvals, authorisations, verifications, reconciliations and reviews of operating performance, security of assets and segregation of duties.

Table 4 *(Continued)*

Component	Description
Information and Communication	The organisation identifies, captures and communicates pertinent information from internal and external sources in a form and timeframe that enables personnel to carry out their responsibilities. Effective communication also flows down, across and up the organisation. Reporting is vital to risk management and this component delivers it.
Monitoring	Monitoring involves ongoing activities and/or separate evaluations assess both the presence and functioning of enterprise risk management components and the quality of their performance over time.

4.2. ERM effectiveness according to the literature

Chambers (1992) defines effectiveness as "doing the right thing". According to oxforddictionaries.com, effectiveness is the "degree to which something is successful in producing a desired result", whilst Dictionary.com defines effectiveness as the "capability of producing a desired result". Although seemingly different, in essence, the definitions refer to the same thing –the ability to produce the desired results – which is not just about the ratio of input to output, but instead relates to the extent to which a measurable result is obtained (Ciocoiu and Dobrea, 2010). According to dictionaries.com, when something is deemed effective, it means it has an intended or expected outcome, or produces a deep, vivid impression. Conversely, an ineffective programme, simply means that it does not achieve the objectives it was set to fulfil in the first place (Rainer, 2013).

There are also other definitions offered in the literature. Simons (1987) and Merchant (1985) define effectiveness as financial performance, however, one may argue that this is not always an appropriate definition. For example, a company that focuses on product innovation (prospector) may not consider (short-term) profit to be a good measure of the effectiveness of their strategy as financially-oriented forms do not consider return on investment to be a good indicator (Dearden, 1987). Miller and Friesen (1982) used innovation to measure effectiveness, and, considering the nature of the entrepreneurs and conservative classification, this seems a reasonable measure of strategic performance. Govindarajan (1988), and Govindarajan and Fisher (1990) operationalise effectiveness using 10 or 12 dimensions, which respondents weighted to reflect the relative importance to their business. According to the satisfaction of a group of system users with the perceived quality of information, the output provided by the accounting system has been suggested as being an important measure of its effectiveness (Kim, 1989; Nicolaou, 2000). Ultimately, effectiveness is appropriately measured by the objectives of the subject for which effectiveness is being measured.

Guidance from existing studies on how ERM effectiveness can be best measured is almost non-existent owing to the handful of studies on ERM effectiveness in managing risks, empirical or otherwise. The work by Collier et al. (2007), Gordon et al. (2009), Jalal et al. (2011) Laisasikorn and Rompho (2014), and Paape and Speklé (2012) are among the very few studies on the effective implementation of an ERM programme in an organisation. While

these studies shed light on what constitutes effective ERM implementation, each deploy their own technique to measure the effectiveness of ERM processes, further highlighting the lack of consensus on an appropriate instrument.

For example, Collier et al. (2007) examine risk management practices at a high level of aggregation, using broad categories of practice as independent variables, rather than specific instruments and techniques. The study, which investigates the effectiveness of risk management guidance issued for the local authorities in UK, uses the dimensions of structure of the RM function, and the risk management processes of risk identification, risk register, reporting and independent review to measure effectiveness. Respondents were also asked to map their organisations as fatalists or risk sceptical, hierarchists, individualists or entrepreneurs, or egalitarians or risk aware. The study reveals that the will to implement an effective risk management can be developed if the concepts are sufficiently embedded in the operational procedures. In this respect, knowledge management is an important element in managing risks.

Paape and Speklé (2012) narrow the scope of their study by looking at the relationship between specific risk management design choices and their effect on perceived risk management effectiveness measured ERM effectiveness by asking respondents to score the quality of their risk management on a 10-point scale. The broadness and openness of such a single-item survey only captures respondents' subjective assessment of the contribution of the risk management system to the attainment of the organisation's (implicit or explicit) risk management objectives and suffers from the lack of definition of a risk management system, and the dimensions that should be included in the quality assessment.

On the other hand, the study by Arnold et al. (2011) subscribe to the participants' assessment using a five-point rating scale on the effectiveness of their firm's ERM procedures at a strategic level. Five (5) statements describing the ERM process were developed for this purpose as follows: 1. Our organization performs a thorough enterprise-wide risk assessment at least once a year; 2. The strength of our internal control system enhances our organization's ability to identity events that may affect the achievement of our objectives; 3. Our organization regularly evaluates the effectiveness of internal controls to mitigate identified risks; 4. Management has effective processes to respond to identified risks; 5. Our risk management procedures provide the necessary information top management needs to monitor changes that could impact our organization's well-being.

Another study, by Jalal et al. (2011), used four (4) out of the eight (8) components of COSO 2004 as the antecedents for a good ERM programme (COSO, 2004). The results show that there is no relationship between risk assessment and ERM, communication and ERM, monitoring and ERM, but that there is a relationship between control and ERM, although they consider each risk assessment, control, monitoring and communication while implementing ERM.

Laisasikorn and Rompho (2014), in their investigation on the relationship among a successful ERM system, a performance measurement system and the financial performance of Thai listed companies, suggest that the success of an ERM system can be operationalized based on 4 (four) components consisting of culture, processes, structure and infrastructure. Each respondent was asked to rate the overall ERM system success score based on the number of statements related to the components of a successful ERM system using a scale of 1–5, where 5 means the most successful and 1 means the least successful

While the above studies opted for non-financial measures of ERM effectiveness, Gordon et al. (2009) developed an index to measure ERM effectiveness. In the study, they came up with what they termed an ERM Index (ERMI) based on ERM's ability to achieve its objectives (based on COSO 2004) relative to strategy. According to COSO (2004), an organisation's ERM system should be geared towards achieving the following four objectives: (1) Strategy: high-level goals, aligned with and supporting the organisation's mission. (2) Operations: effective and efficient use of the organisation's resources. (3) Reporting: reliability of the organisation's reporting system. (4) Compliance: organisational compliance with applicable laws and regulations. Two proxies are used for measuring the achievement of each objective. For example, one measure of whether or not a firm has a successful strategy is taken as the number of standard deviations its sales deviates from the industry sales. For the operational dimension, the turnover of assets, defined as sales divided by total assets, is used as one of the indicators to measure its operating efficiency (Gordon et al., 2009).

Notwithstanding the above, there is some form of consensus achieved among the researchers, and it might enlightening to note that most of these studies concur that the alignment among ERM COSO 2004 components are the antecedents for an effective and successful ERM programme.

4.3. ERM effectiveness according to practice

Based on the findings from the semi-structured interviews, it was concluded that all the CROs are aware of the COSO Framework and the components of ERM effectiveness. They also concur that in the absence of a more quantitative approach to measure effectiveness, the components that represent the ERM processes constitute the next best alternative. A number of the interviewees shared how ERM effectiveness is measured in their organization (see Appendix 1 for more details of the interview findings). For example, Mr D who is the CRO of a local conglomerate, described in detail how he evaluates the achievement of ERM related key performance indicators. On the other hand, Mr F who is the CRO of a local bank, implemented a very systematic and methodical assessment of ERM activities in the organisation. This approach, which is quantitative in nature, addresses the concerns of the subjectivity of the whole assessment exercise. Based on the interview evidence, there is consensus

that the process approach is one of the better approaches to measure effectiveness.

Other approaches, such as the goal/outcome and system resource approach, may also be appropriate but need to be modified to fit the dynamics and complexity of the business. Mr D and Mr E, for instance, believe that support from the top, which represents the system or environment in which ERM operates, is a key element for an effective ERM.

5. Proposed model and instrument

One of the key findings in the literature on the effectiveness is the need to measure effectiveness at multiple levels of analysis (Mandell and Keast, 2008; Provan and Milward, 1995). For example, Cameron and Whetten (1996), in a paper on the second generation of organisation effectiveness, suggest that to remain relevant, organisational effectiveness studies should include processes, outcomes and effects instead of focusing solely on outcomes.

Built upon this premise, this paper suggests a multi-model approach comprising a process model, system resource model and outcome model to measure ERM effectiveness in managing risks (See Figure 1). The choice of the models is based on the themes collected from the COSO (2004) ERM framework, literature review and the interview feedback. Specifically, these models of choice are also justified by their prominence in the management accounting and information system literature.

Given the emphasis placed by most of the respondents on eight (8) components of ERM, which, according to the COSO Framework, need to be implemented and integrated to provide effective ERM, these components are the facets of the proposed model in the current study. The six components of ERM – event identification, risk assessment, risk response, control activities, risk information and communication, and monitoring – describe the key processes in the ERM programme Process Model. According to Cameron (1984), the remaining two components of Objective setting and Internal Environment are used as constructs for the System Resource Model.

Finally, the user perceived effectiveness is proposed to operationalise the outcome model in the absence of a more defined quantitative outcome.

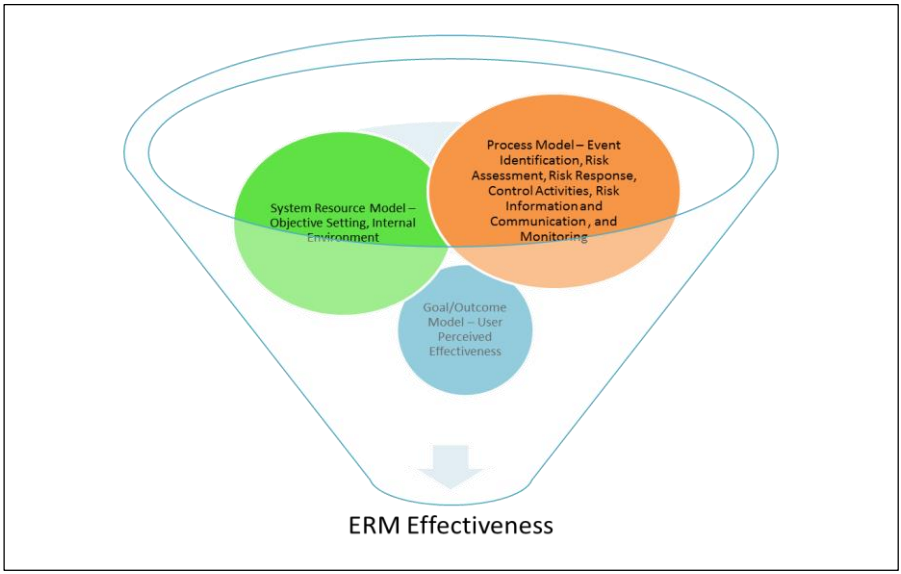

Figure 1: Proposed multi-model approach to measure ERM effectiveness

Once the model is developed, the instrument is then crafted. Due to the lack of guidance from the same field, the current study sought references from other fields of a similar nature. Using the study by Jokipii (2010), which investigates the contingency factors influencing the effectiveness of internal control systems as an anchor, the research instruments were developed. The foregoing article was adapted due to its two prevalent approaches in measuring effectiveness that fit the theme of the current paper. First of all, Jokipii (2010) uses the COSO internal control framework as a basis to operationalize the dependent variable in the study. Secondly, the study uses the observed effectiveness approach or self-assessment approach.

The newly developed instruments can be broken down into two (2) distinct sections. The first section asks respondents to give their opinions of the COSO (2004) eight (8) components for an effective ERM with three (3) items to measure each component. For each item statement, the respondents were asked to rate on a scale of 1 to 7 (1 strongly disagree and 7 strongly agree). To further improve the robustness of the instruments with the multidimensional approach (Cameron, 1986; Quinn and Rohrbaugh, 1983), the second section of the instrument was developed to measure ERM effectiveness in terms of its ability to achieve the ERM objectives. According to the COSO (2004) definition of ERM, the objective for implementing ERM is twofold; namely, "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 respondents were asked to rate on a scale of 1 to 7 (1 being entirely ineffective and 7 being entirely effective) in terms of the organisational

ability in achieving five (5) identified ERM objectives. See Table 5 below for the complete list of instrument items.

Where most appropriate financial indices or other quantitative measures for the effectiveness of ERM are hard to obtain or simply non-existent (Reimann, 1974), the use of perception to measure effectiveness has been the most common alternative. Therefore, the current study uses the control self-assessment (CSA) method to measure ERM effectiveness (Bollen, 1998; Jokipii, 2010). Such an approach is supported by Govindarajan (1988) and Govindarajan and Fisher (1990) who argue that due to the numerous possible performance dimensions that are critical in measuring the success of a firm, a subjective approach is the best approach for measuring effectiveness. As such, the current paper proposes user perceived effectiveness, which uses behavioural indicators as surrogates for effectiveness as the alternative suggested in studies on system effectiveness (Srinivasan, 1985). Furthermore, an evaluation model in much harder and meaningful terms is frequently hampered by objectives and measures that more often than not have been inadequately defined (Hamilton and Chervany, 1981).

The developed questionnaire was tested for validity and reliability. The face and content of the instrument were validated through a pre-test by seven experts in the relevant fields, two professionals from the field of audit and finance as well as one audit consultants – each with more than 15 years' experience in their respective area of specialty. Pre-testers were asked about the readability of the instrument, clarity of instructions and/or any other feedback to improve the face and content validity of the questionnaire. They were asked whether or not the questions were clear and measured what they were intended to measure. The feedback therefrom was addressed, and, where necessary, incorporated in the questionnaire, which was reflected in modifications to the wording and presentation of the questionnaire.

Table 5

Instrument to measure perceived ERM effectiveness in managing risks

Section 1: *COSO-based instruments using the eight (8) components of an effective risk management according to the COSO 2004 Framework.*
1. Event Identification
i. My organisation identifies potential events affecting the entity's ability to successfully achieve its objectives.
ii. My organisation distinguishes risk events into two categories: (i) risks – which can potentially have a negative impact (ii) opportunity – which can potentially have a positive impact, on the organisation
iii. My organisation performs the event identification process on a regular basis.
2. Risk Assessment
i. For each risk event, my organisation analyses the likelihood of its occurrence.
ii. For each risk event, my organisation determines and quantifies the potential impact on the organisation had the event occurred.
iii. My organisation performs a formalised risk assessment process on a regular basis.

Table 5 *(Continued)*

3. Risk Response
    i. For each risk event, my organisation determines the appropriate risk response options of avoiding, reducing, sharing or accepting the risks.
    ii. The risk response is recommended by the risk owners and approved by the relevant authority or board committee.
    iii. My organisation reviews and updates the risk response on a regular basis.
4. Control Activities
    i. My organisation establishes policies and procedures to ensure that risk responses are carried out effectively.
    ii. The control activities in my organisation include actions to be implemented in addressing the risks faced by the organisation.
    iii. In my organisation, there is a dedicated team (from the risk/audit or any other department) who performs a regular surveillance of all risk activities.
5. Information and Communication
    i. In my organisation, there is a process to record, update and communicate pertinent risk information in the most appropriate form and timeframe.
    ii. In my organisation, there is a process to enable the risk owners and the employees to report risk events that may have occurred or have occurred in their area of responsibility.
    iii. Risk-related information and activities are made available and accessible to the relevant employees in the organisation.
6. Monitoring
    i. In my organisation, there is a formalised monitoring process to assess the presence and functioning of risk activities – identifying, assessing and responding to the potential risk events.
    ii. Ongoing monitoring of all the risk activities is performed on a regular basis.
    iii. The ongoing monitoring of all the risk activities reacts dynamically to changing conditions of the organisations and the environment in which it operates.
7. Internal environment
    i. The internal environment in my organisation provides an appropriate foundation for ERM.
    ii. The 'tone from the top' sends an appropriate level of emphasis on the importance of ERM in my organisation.
    iii. The board of directors or committee of the board in my organisation is actively involved in the risk management activities.
8. Objective Setting
    i. My organisation aligns its objectives with the entity's risk appetite, which, in turn, drives the risk tolerance levels of the entity.
    ii. My organisation establishes and communicates explicitly corporate-wide risk policies and risk appetite.
    iii. My organisation establishes and communicates explicitly risk tolerance levels or limits for all major risk categories.

Section 2: *Objective-based instruments based on the organisation ability to achieve the objectives set for ERM*

1. ERM enhances my organisation's ability to identify and assess risk events effectively.
2. ERM enhances my organisation's ability to manage risks within its risk appetite and risk tolerance level.
3. ERM enhances my organisation's ability regarding the achievement of entity objectives.
4. ERM enhances my organisation's ability to minimise unfavourable surprises and losses.
5. ERM enhances my organisation's ability to optimise the potential upside effects from the opportunities arising from the uncertainties.

Next, the modified questionnaire underwent a pilot test involving 30 respondents from the industry holding senior positions in the risk, finance or audit departments. Based on the reliability analysis, Cronbach's alpha was well above the appropriate range of 0.8 indicating that the questionnaire is reliable

and usable for research purposes. More specifically, the Cronbach's alpha coefficient for the COSO-based instruments and Objective-based instruments was calculated to be 0.992 and 0.991, respectively.

6. Academic and practical implications

The model and instrument developed in this study seek to first shed some light on the state of research in respect of the effectiveness of ERM in managing risks. Second, the study aims to further feed the interest to address the question of whether ERM is a boon or a bane by proposing a reliable and workable instrument. Third, from the practical standpoint, with some modifications to fit, the instrument can also be applied to evaluate the effectiveness of ERM implementation in the respective organisation.

In essence, the study seeks to narrow the gap between the practitioners and academics or the industry and knowledge by marrying the insights from both domains and use them as a basis for developing an instrument applicable to both worlds.

7. Limitations and directions for future research

Clearly, this study is not the end but the beginning of a journey into more research on ERM effectiveness. The interviews and pilot tests were conducted on a small group of professionals, hence, limiting the generalization of the findings from the study. Not to mention the limited number of organisations and industries represented by the respondents.

The specific nature of certain industries also posed a limitation in the current paper. Not all the industry insights from the interviews can be transformed into a workable instrument. Due to the lack of hard data and diverse industries and practices, some of the measures that may be ideal for one organisation and not another were not considered in our models. For example, unlike oil and gas companies, project accounting is not common in other industries, and, therefore, a post mortem upon the completion of each project, as suggested by Ms C, is deemed not feasible and therefore was not considered in developing the instrument. Additionally, the lack of common risk related KPIs deterred us from identifying KPIs as part of the tool to measure effectiveness.

Unless administered in a proper survey campaign condition, the instrument developed in this paper is merely a skeleton without meat. The next question therefore, which is to be addressed in future research, obviously lies in the usability of the instrument. To further solidify the workability of the instrument and finally put the skeleton and flesh into life, this study mainly calls for future empirical study to be conducted using the instrument.

Additionally, scholars suggest that the criteria for effectiveness are based on individuals' values and preferences with no specific construct boundaries (Cameron, 1986; Jenkins and Ricketts, 1979). In order to address the bias from the subjective perception of individuals, our second recommendation is to

conduct the ERM effectiveness studies with not just one unit of analysis, but with multiple units (Rainer, 2013). We therefore suggest that perspectives from the various ERM stakeholders, such as the CRO, CIA and CFO or other members of the senior management team, should be collected, thereby enriching and enhancing the empirical findings.

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A summary of the responses of the interviewees
According to **Mr A (CRO)**, the mere fact that the CEO and CFO are required to disclose in the annual report that the company implements sound risk management processes and practices is a testimonial that a review of the processes is an effective means for measuring ERM effectiveness. He further suggests that there should be a formalized and structured approach to manage risks in the entity. He believes that if the risk mindset culture is embedded in every staff, they will be conscientious of the fact that, whenever they encounter potential risk events, whether physical risks or risks to the organisation, they would regularly report on it without being asked to do so. On the suggestion for the better measurement of ERM effectiveness, he suggests a few indicators that the organisation implements an effective ERM, such as (i) having a full running Risk Management Department, which is separate from the internal audit function, (ii) the presence of a Board Risk Committee, and (iii) clear risk reporting lines to uphold the independence and objectivity of the risk function.
As the **Head of Internal Audit, Mr B** requires his team to review the risk inventory to assess the effectiveness of its implementations. He further suggests that measurement of effectiveness can be more effective if the ERM process within the organisation is supported by a software tool, as it allows a proper walkthrough of the process without missing any important step in the process.

Ms C (CFO) on the other hand, believes that for ERM to be effective, it is crucial that the implementation is not seen as a 'tick in a box' exercise. To be effective, the Risk team should comprise personnel from diverse backgrounds, especially technical. She further suggests that the best measure for ERM effectiveness is to carry out a post mortem exercise at the end of each project. During the post mortem, the project team should review the project profitability and investigate the root causes for any variances, especially the cost overruns. The outcome of this post mortem should be in the form of the lessons learnt and the best practices to be employed in future projects.

Mr D (CRO) considers that the COSO eight (8) components for effective ERM are collectively important in implementing an effective ERM in organisations, and that these components can be used to measure the effectiveness of both the formal and informal risk management activities within the organisation. Mr D

further adds that the fundamental components to nurture a strong risk culture in any entity are the internal environment (i.e. people and culture) and the objective settings (i.e. strategy). Additionally, in his capacity as the CRO, risk response is the most critical component because formulating risk response is the key to managing risks effectively. In his organisation, however, the effectiveness of ERM activities by the Risk Owners is measured based on three elements – Assessment, Improvement and Monitoring (AIM). Assessment comprises identifying and updating the events. There are 10 activities for which the evidence of each being carried out will form the basis for the evaluation of a KPI index. These activities are basically activities that the Risk Champion need to engage in to ensure that he/she can effectively identify and capture the key risk area. Examples of these activities include a review of critical documents/reports and interviews with the key staff. Improvement is the degree of completion for the action plans to address the risk events. Ideally, each risk gap should have an action plan, which then needs to be executed by the Risk Champions. Monitoring concerns with the question of whether the Risk Champion carries out the role of monitoring and controlling the risks periodically.

Although **Mr E (CIA)** represents an organisation in which ERM is still underway, his feedback is deemed relevant considering his background as the internal auditor of four public listed companies. In his view, the effectiveness of ERM should be measured according to three dimensions of the reporting structure – support from the top management, and how the risks are being understood and embraced by the employees in the organization – which are part of the COSO components for effectiveness. These dimensions are essentially the key components of ERM of information and communication (reporting), and the internal environment (support from the top and the risk culture).

Being in a financial services industry, which is highly regulated and complex, the ERM practices in Company Y are without doubt the state-of-the-art model for ERM. Based on the telephone interview with **Mr F (CFO)** and upon reading the risk management disclosure in the financial statement of the company, inferences are made that ERM is not only implemented but embraced in the organisation. Each risk item is quantified and embedded in the annual target and appraisal process in Company Y. Mr F declares that all the eight components of ERM are implemented in his company and maintains that the proper functioning of each component is necessary to ensure an effective ERM, which is what COSO is endorsing.

Mr G has a similar stance to that of the other respondents concerning the applicability of the eight components of COSO in measuring effectiveness. However, he added that the losses or costs incurred due to risk events occurring is another good indicator for effectiveness although he also acknowledged that

such a measure is not standard across all organisations and should be on a case by case basis.

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