

# **Enterprise Risk Management: A process for enhanced management and improved performance**

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**Keywords:** strategic risk; risk management; enterprise risk management; decision support; corporate governance

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## **1. INTRODUCTION**

Enterprise risk management (ERM) is a new approach for companies – a new way of thinking that allows a company to identify and manage its risk. In fact, the goal of ERM is to create, protect and enhance shareholder value (Barton et al. 2002). ERM is defined as a “process, effected by an entity’s board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives” (COSO 2004).

Today, companies face ever increasing pressure to implement ERM. Such pressure comes from the Securities Exchange Commission (SEC), stock exchange regulations (in countries like the U.S. and Australia), legal court cases, and from Standard and Poor’s decision to incorporate a company’s ERM efforts into their ratings. In spite of the growing importance of ERM, there has been very little research on the subject.

Early ERM research focused on descriptive field research and value concepts. A few papers have focused on determinants of companies adopting ERM. Additionally, one paper has examined the market reaction to an announcement of a risk officer. Our exploratory study is the first research to document the value equation of ERM and the importance of the components of an ERM framework. Our results show that the value of implementing an ERM process can be seen in both enhanced management and improved performance. Both results are derived directly from the ERM process and framework.

### **1.1. Background**

COSO has published two frameworks for companies and auditors. The first COSO framework was called Internal Control – Integrated Framework (COSO 1992). This control framework was written in 1992 and is now being used by many U.S. companies to comply with the Sarbanes-Oxley Act of 2002. Around the same time as the passage of the Sarbanes-Oxley Act, COSO was busy with a second framework which is called Enterprise Risk Management – Integrated Framework (COSO 2004). This second framework does not replace the first

framework but instead incorporates it.<sup>1</sup> The SEC considered adopting the second ERM framework for Sarbanes-Oxley compliance but instead chose to stick with the first control framework.<sup>2</sup> However, the ERM framework could be used to comply with the Sarbanes-Oxley Act as long as it met the SEC framework criteria.<sup>3</sup>

The SEC added that other suitable frameworks are developed outside the United States (Gramling and Walker 2009). In fact, many countries outside the United States have adopted risk and control frameworks although the appellations differ by country (King report in South Africa, CoCo in Canada, etc.). Interestingly and in spite of the fact that these countries have a risk and control framework, the second COSO Enterprise Risk Management framework is even being implemented by some non-U.S. companies. For example, Santam's Ltd's 2005 annual report shows that they adopted COSO's ERM framework and their own risk and control framework to comply with regulations in their country. They disclose, "The company's approach to risk management and control has evolved over a number of years, and was further reviewed and refined during 2005. The approach, practices, and policies are in line with the King II report on corporate governance standards in South Africa and the enterprise risk management framework discussed in the COSO (Committee of Sponsoring Organisations of the Treadway Commission) report."

The growth of ERM does not appear to be slowing down and many believe poor risk management is one cause of current global economic problems. Additionally, executives and boards face pressure to adopt ERM from NYSE listing rules, from SEC regulations, and from legal court cases. Even economies such as South Africa, the United Kingdom, and Australia have moved down the road to requiring or strongly suggesting companies adopt some form of enterprise risk management (see Shenkir and Walker 2008). The Conference Board reports, "ERM continues to be the primary approach used to provide companies with a holistic, strategic method of understanding and managing risks" (Conference Board 2007). Although this pressure

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<sup>1</sup> COSO (2004) states that "The Internal Control – Integrated Framework is conceptually sound and has stood the test of time. The Enterprise Risk Management – Integrated Framework is a broader framework that incorporates the internal control framework within it. In other words, one approach to risk is to develop controls to mitigate the risks. The frameworks are compatible and are based on the same conceptual foundation."

<sup>2</sup> Shenkir and Walker 2008.

<sup>3</sup> The SEC criteria for a "suitable framework" are due process, broad distribution, free from bias, permit/allow consistent measurements of internal control, be sufficiently complete, and be relevant to internal control over financial reporting (Gramling and Walker 2009).

may force companies to adopt ERM, there is always the question about how ERM changes a company and leads to value.

## **2. LITERATURE REVIEW**

Despite the growing interest in ERM, there exists very little research on ERM, value and ERM frameworks. Early field-based research revealed how major U.S. companies try to manage their risks (see Barton et al. 2002 and Walker et al. 2002). These studies describe the ERM processes at companies such as Microsoft and Wal-Mart. Early empirical work in this area sought to determine why companies would adopt ERM. One study by Kleffner et al. (2003) surveyed Canadian Risk and Insurance Management Society members about ERM adoption. They found that 31% had adopted ERM and that the primary reasons for adoption were risk manager influence, board encouragement, and stock exchange guidelines.

Other early work on ERM included a focus on the determinants of ERM. One of the first papers was Liebenberg and Hoyt (2003). They built a regression model to understand the determinants of companies that would appoint a chief risk officer. Liebenberg and Hoyt compare firms that appointed a chief risk officer to a matched sample and found that firms that appoint a chief risk officer are more likely to be financially leveraged.<sup>4</sup> They concluded that further research is necessary to understand ERM determinants. A related but more recent look was done by Pagach and Warr (2007). They also studied the announcements of senior risk officer appointments and found that such appointments are positively associated with size, leverage, volatility, and the number of business segments.

More recent work on ERM has examined additional determinants of ERM adoption. Desender (2007) studied 100 pharmaceutical companies and coded their ERM efforts based on public filings from 2004. He found an association between a separate chairman and CEO and the degree of ERM implemented by the company. Another paper related to ERM determinants was Beasley et al. (2005). They surveyed internal auditors and their views on factors associated with ERM implementation. They found that ERM implementation is positively associated with board independence, requests from the CEO or CFO to have internal audit involved, the presence of a CRO, the company's auditor being a Big 4 audit firm, size (revenue), and various industry

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<sup>4</sup> Their paper assumes that the appointment of a chief risk officer also means the company has an ERM process.

indicator variables (banking, education, and insurance). They also found that U.S. based companies are negatively associated with the ERM implementation stage, implying that U.S. companies are not as advanced in ERM implementation.

From these first few empirical papers, it is evident that ERM may be related to various corporate characteristics. Beasley et al. (2008) extended the brief and early ERM literature by moving beyond the ERM adoption question. Instead, they examined market reactions to the announcement of officers overseeing an ERM process. Given the sparse amount of research in this area, Beasley et al. is an important step in the direction of assessing value related to ERM adoption. Beasley et al acknowledge that they “do not have a clear understanding on the impact of ERM on shareholder wealth.”

Part of this lack of clarity is because Beasley et al. found mixed signals of an overall market reaction to the announcement of a chief risk officer. However, for non-financial firms, they found that reactions are positively associated with size and prior earnings volatility, while the same reactions are negatively associated with leverage and cash as a percent of liabilities. Beasley et al. acknowledge the limits of their study, including the ability to focus only on equity market reactions and on short-term reactions.

Gordon et al. (2009) studied 112 firms in the U.S. that had some ERM type disclosures. They found that the relation between ERM and performance is “dependent on the proper match between a firm’s ERM and the contextual variables surrounding firms.” Arena, Arnaboldi, and Azzone (2010) extend our knowledge further by conducting interviews with three companies over seven years. They find that ERM must interact with other existing risk management practices and that ERM is influenced by the organization setting and control issues.

In summary, the prior work on ERM includes a few studies that focus on the determinants of companies appointing risk officers and one study that delves into the potential value associated with ERM adoption.<sup>5</sup> We extend this early work by examining the value seen inside the company as measured by enhanced management and improved performance. Additionally, we show how these improvements link to the components of an ERM framework.

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<sup>5</sup> One of the reasons for the limited amount of research in the ERM area is that although companies in the U.S. are required to disclose the effectiveness of internal control over financial reporting, they are not required to disclose an effective or ineffective ERM process.

## **2.1. ERM and Value**

The goal of an enterprise risk management process is to create, protect and enhance shareholder value (Barton et al. 2002).<sup>6</sup> However, Beasley et al. (2008) cited opposite sides of the value argument. First, they noted that portfolio theory potentially suggests no value added from ERM. Next, they cited early work by Stulz (1996, 2003) that risk management adds value by removing lower tail outcomes. Liebenberg and Hoyt (2003) argued that ERM adds value in numerous ways, including better efficiency, better understanding of risks, better basis for resource allocation, reduced earnings volatility (via aggregation as opposed to a single source), decreased regulatory costs, and better transparency with outsiders. Still, value can be hard to measure. Arena et al (2010) note that one of the companies they studied stated that risk management could add value. If ERM enables a company to completely avoid negative outcomes, then the added value may never be seen on the company's financial statements.<sup>7</sup> Thus, some key insight can be gained by studying whether firms believe they are getting value out of their ERM process and how they are getting that value.

## **2.2. ERM Framework**

The COSO Enterprise Risk Management – Integrated Framework defines ERM as “a process” that can help a company identify risk events and manage the related risks (COSO 2004). The COSO ERM framework provides eight components that should be in place to help a company both manage risk and provide reasonable assurance about meeting objectives. Those eight components are (in order):

- Internal environment
- Objective setting
- Event identification

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<sup>6</sup> Liebenberg and Hoyt (2003) note the traditional theoretical reasons for insurance risk management were a reduction in agency costs, reduction in bankruptcy costs, tax burdens, and regulatory scrutiny costs. The traditional theory for risk management via hedging was noted as mitigation of incentive conflicts, reduction in taxes, and increased ability to seize investment opportunities.

<sup>7</sup> This idea has been discussed in the book *The Black Swan* (Taleb 2007).

- Risk assessment
- Risk response
- Control activities
- Information and communication, and
- Monitoring.

It is not clear which of the ERM components listed above should add value or which component should add the most value. Barton et al. (2002) show that adopting and implementing ERM is a process that requires a considerable amount of time and can stretch over a few years. This would suggest studying the earlier components because they are more likely to be implemented than the latter ERM components. Additionally, one study (Desender 2007) has shown that companies disclosing ERM tend to disclose the earlier components of ERM.<sup>8</sup> Desender (2007) shows that companies provide the most information on COSO ERM components internal environment, objective setting, and risk identification and assessment. Desender further shows that companies provide the least information on the other COSO ERM components (risk response, control activities, information and communication, and monitoring). The tendency to disclose these earlier ERM components is most likely because these are the first components of an ERM process. Again, given the significant amount of time to fully implement an ERM process (see Barton et al. 2002), it is not surprising that these are the primary components being disclosed. If value is to be added from an ERM process, it is likely the components will play a role.

### **2.3. Model Overview**

Our model (see Figure 1, p. 21) captures both the linear and iterative aspects of ERM. Additionally, our model shows that as the components of an ERM process are put in place, the value increases because of enhanced management and improved performance. The model is linear because, in many ways, one step or component must follow another component. As an example, since COSO's ERM framework states that risks are related to the objectives,

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<sup>8</sup> It is also possible to understand that identifying risks appears easier than developing monitoring. In fact, COSO has recently released an exposure draft on "monitoring" to update the guidance in this area.



companies must first know their objectives. Once the objectives are known, companies can figure out the risks related to the objectives. Both Arena et al (2010) and Walker et al (2002) show that some companies tie ERM directly into objectives. As another example, companies need to first identify the risks before they can react to the risk. Similarly, once companies know the risks related to their objectives and begin to react to these risks, companies can begin to build better oversight and information related to the risks.

The model also reflects the iterative approach acknowledged by the COSO model. An iterative approach is required because as companies identify, react and monitor risks, the knowledge gained from that process improves both their information and communication component and their internal environment components. In turn, the new knowledge can help a company establish better objectives or change their objectives.

Our model shows the causal chain of an ERM process that can lead to enhanced management and improved performance. Specifically, as companies implement an ERM process, this new knowledge about objectives, risks, oversight, information and communication, and internal environment leads to enhanced management as evidenced by increased management consensus, better-informed decisions, better communication of risk taking to management, and increased management accountability. This enhanced management, in turn, leads to improved performance.

### **3. HYPOTHESES**

**3.1. Objective Setting.** ERM is defined by COSO as a process that will help a company meet its objectives. COSO notes that setting objectives is one of the first steps in an ERM process and that objective setting is a precondition to such components as risk identification, risk assessment and risk response. COSO adds that these objectives should be aligned with a company's risk appetite and tolerance levels. We use three indicators to capture this concept. The indicators capture how companies responded to questions related to aligning risks with objectives, establishing risk tolerance levels, and communicating risk expectations. Appendix A contains a summary and description of all indicator variables. This leads to our first hypothesis.

Hypothesis 1. There is a positive association between objective setting and risk identification.

**3.2. Identification.** Risk events can be both positive/upside and negative/downside. In either case, management should try to identify the risks related to the objectives of the business. To capture risk identification, we use two indicators. The first indicator is related to the use of a comprehensive risk inventory. COSO states that companies might use risk event categories. The second indicator is whether the company utilizes assessments or surveys to map the identified risks. As noted by both COSO and the AICPA, there are numerous ways companies can capture risk; conducting assessments is one common method (AICPA 2000). Clearly, companies must first identify their risks before they can react to them.

Hypothesis 2. There is a positive association between risk identification and risk reaction.

**3.3. Risk Reaction.** After companies have identified their risks they can then react to those risks in a variety of ways. We build the construct *risk reaction* to encompass the two related ERM components of risk response and risk assessment. Risk assessment implies that companies can assess identified risks along dimensions of impact and likelihood. This assessment can consider data sources, varying perspectives, qualitative and quantitative techniques, and the relationships between events. We use three indicators of risk assessment: conducting formal risk assessments, analyzing root cause and impact, and quantifying risk.

Risk response suggests that after having assessed risks, companies should respond to those assessments because they have more and better knowledge. Response techniques include risk avoidance, risk reduction, risk sharing, and risk acceptance. We use two indicators of risk response. The first indicator addresses the ERM concept of enterprise-wide risk management and includes having a process to integrate the effects of the risks; the second indicator examines risk mitigation strategies. As companies begin to assess risk, quantify risk, analyze the root cause, integrate risks, and develop mitigation strategies, we believe this should have an impact on management's ability to react to the risks.

Hypothesis 3. There is a positive association between risk reaction and oversight of risks.

**3.4. Oversight.** To summarize the model so far, after companies have established objectives, identified risks, and developed a risk reaction, they can begin to develop control activities and monitoring procedures. For parsimony, we combine the two COSO ERM components control activities and monitoring into one ERM construct – *oversight*. A recent SEC

rule mandates disclosure of risk oversight and other risk related ideas (see SEC Release 33-9089). Control activities are normally considered to be the policies and procedures a company uses and monitoring is thought of as the “ongoing management activities.” Our indicators in these areas cover policy and procedure manuals, actual business unit monitoring, and identification of related metrics. Companies with the right controls, metrics, monitoring and oversight in place should have better information than they had before implementation of an ERM process.

Hypothesis 4. There is a positive relationship between oversight and information and communication.

**3.5. Information and Communication.** Information and communication means “relevant information is identified, captured, and communicated.” It also means that information is identified at all levels, up, down and across the company, so that risks can not only be identified but can also be assessed and responded to. We use indicators that address both a common risk language for communicating and for providing regular briefs to board and executives. We expect that better information and communication will impact the internal environment at the company.

Hypothesis 5. There is a positive relationship between information and communication and the internal environment.

**3.6. Internal Environment.** The internal environment captures the more traditional idea of the tone at the top but is also much more. Under an ERM framework the internal environment includes risk consciousness, risk appetite, risk philosophy, and board oversight. We use three proxies for internal environment. The indicators address having a risk mission statement, including risk in job responsibilities, and having the board involved in the risk management efforts.

Because an ERM framework is not fully intended as a linear or serial process we also hypothesize relationships between these later ERM components and earlier components. This is designed to capture the iterative approach of ERM. As companies have better information and communication, this should influence their ability to set objectives or change objectives. We also

argue that as a company's internal environment improves, objective setting will also improve, leading to the following hypotheses.

Hypothesis 6. There is a positive relationship between information and communication and objective setting.

Hypothesis 7. There is a positive relationship between internal environment and objective setting.

**3.7. Management and Performance.** While ERM is considered a process, the benefits and ultimate value of the process are revealed in two constructs. First, field research in this area noted that the goal of an enterprise risk management process was to create, protect and enhance shareholder value (Barton et al. 2002). Additionally, COSO (2004) supported this idea of value being the underlying premise of an ERM process. COSO added that value is maximized when management sets strategy to balance growth and risks, and when management correctly uses resources as they pursue objectives. The central idea is that value is created, and therefore, performance is enhanced. Our indicators of performance include adjusting performance for risk, increasing ability to meeting strategic goals, reducing earnings volatility, and increasing profitability.

COSO notes that value is created and performance is enhanced by management decisions. Some of the decisions that management makes include considering the risk appetite, setting objectives, identifying risks, identifying risk responses, considering risk alternatives, assessing capital needs for the risks, etc. Therefore, our second construct captures management decisions. We use four indicators of enhanced management. The indicators address whether the company now has greater management consensus, makes better-informed decisions, communicates risk better (to the board and shareholders), and has increased accountability. The hypotheses for these two constructs, performance and management are stated below.

H8. There is a positive relationship between internal environment and management.

H9. There is a positive relationship between management and performance.

#### **4. RESEARCH MODEL**

Figure 1 (see p. 21) summarizes the theoretical constructs and hypotheses for the research model. The constructs and their underlying variables are shown in Appendix A. Each of the underlying variables is measured on a 5-point scale (with 1 as the lowest and 5 as the highest). We also add four control variables to the model. “Revenue” is a proxy for company size. “Business” controls for industry differences. Beasley et al. (2005) show that industry influences the stage of ERM development. “Country” captures the country in which the business operates. Beasley et al. (2005) show that U.S. firms are not as advanced as other (non-U.S.) firms in ERM development. The final control variable, “ERM stage”, controls for the stage of ERM (i.e., how far along the company has advanced in their ERM process).

#### **4.1. Sample**

We surveyed audit and risk management executives to obtain data related to ERM deployments and other organizational characteristics. With advice from risk management consulting professionals, we designed a survey of corporate ERM practices and pre-tested it with five corporate risk executives. Based on this feedback, we made revisions to improve the clarity and consistency. During the summer of 2004, 1000 surveys were sent to audit and risk management executives of member companies of The Conference Board. After a second mailing and telephone follow-up a few weeks later, 271 surveys had been received. The response rate, 27 percent, is in line with other surveys of internal auditors (Scarbrough et al, 1998; Raghunandan et al., 2001). All data used were obtained from the surveys. The survey asked the respondents at what stage they were in their ERM efforts. Since 121 respondents reported that their company was either in the planning stage or had not considered implementing an ERM system, the final sample is reduced to 150 companies.

#### **4.2. Research Method**

We utilized a partial least squares (PLS) analysis (PLS PM Version 2008) to test the hypotheses. PLS allows for multiple measures of both dependent and independent variables, which can then be used to assess indicator and construct reliability as well as to correct for measurement error (Bagozzi 1994). Fornell and Bookstein (1982) provide a complete description of PLS. We construct latent variables that are combinations of the original survey questions (variables). This construction enables us to test the COSO ERM components and related

constructs. To accommodate the use of multiple indicators, PLS weights indicator loadings on constructs, not in isolation, but rather in the context of a theoretical model (Hulland 1999). Additionally, PLS explains variance among a large number of indicators for each latent variable even for relatively small samples (Birkinshaw, Morrison & Hulland 1995). Since our sample size (n=150) was relatively small, we selected the PLS analytical technique which maximizes power but also permits simultaneous estimation of path coefficients (Hulland 1999).

## **5. RESULTS**

### **5.1. Descriptive Statistics**

Descriptive statistics for the control variables are as follows. “Business” was coded as a 1 if the company was energy, financial services, banking or insurance; otherwise 0. The mean value for business was .40, indicating slightly more than half the companies were not in these industries. “Revenue” was coded 1 if revenue was \$5 billion or more; otherwise 0. The mean value for revenue of 0.48 reflects a good mix of smaller and larger companies. “Country” was coded as 1 if the respondent was in the U.S.; otherwise 0. The mean value of 0.57 suggests that a slight majority of respondent firms were from the U.S. “ERM Stage” was measured as 6 = learning about ERM; 7 = between preparing and implementing; 8 = implementing ERM, and 9 = maintaining and monitoring ERM. The mean value of 7.55 suggests that the majority of respondent firms were well on their way to implementing ERM.

### **5.2. PLS Results**

Table 1 “Reliability” (see p. 23) shows both individual and composite measures of reliability. As Table 1 reveals, all but one factor loadings onto the respective constructs are greater than 0.7. The factor loading for internal environment is at .68. All composite reliability values also exceed 0.7. Table 2 “Correlation Matrix” (see p. 24) shows the correlation matrix. The results indicate that all variables exhibit discriminant validity with one exception (internal environment contrasted with information and communication). The shared variance between these two variables (0.600) is slightly higher than the extracted variance (convergent validity) for each variable. This slight problem may result from one of the three items in the internal environment construct, namely - “Has communicated a risk management mission statement, value proposition, and benefits statement to senior managers.” We consider the mission, value

proposition and benefits statement to constitute part of the internal environment, yet the question also asks about their communication to senior managers. This last item may correlate strongly with the two items measuring the information and communication construct, both of which contain communication (corporate-wide and to the Board and Executive Committee). So the shared variance (discriminant validity) between these two constructs (“internal environment” and “information & communication”) appears slightly higher than the extracted variance (convergent validity) of the construct “internal environment”.

The reliability of every latent variable, according to Joreskog’s (1971) coefficient, is satisfactory, particularly for second-order dimensions. All 26 measurement variables clustered into ten first-order dimensions: objective setting, identification, risk response, risk assessment, control, monitoring, information & communication, internal environment, management and performance. These results confirm a ten-dimensional, first-order structure whereas risk reaction and oversight were considered as second-order factors related respectively to risk response and risk assessment for the former and to control and monitoring for the latter (see Figure 1).

As Figure 2 shows, the total predictive power of the ERM components is 36 percent for *management*. The total predictive power of the ERM components and their impact via enhanced management is 54 percent for *performance*. Each of the nine hypotheses was found to have a significant relationship at  $p < .001$ .

Our first set of hypotheses (one through five) concern the linear, cumulative aspects of ERM. Hypothesis one posits a positive association between objective setting and risk identification, which is supported ( $\beta = .65$ ,  $p < .001$ ). Hypothesis two posits a positive association between risk identification and risk reaction, which is supported ( $\beta = .68$ ,  $p < .001$ ). Hypothesis three posits a positive association between risk reaction and oversight of risks, which is supported ( $\beta = .75$ ,  $p < .001$ ). Hypothesis four posits a positive association between oversight and information and communication, which is supported ( $\beta = .74$ ,  $p < .001$ ). Hypothesis five posits a positive association between information and communication and the internal environment, which is supported, ( $\beta = .78$ ,  $p < .001$ ). Since these steps follow one after another in an ERM framework, these five hypotheses have been set up in a linear manner. The significance on this linear relationship is important. Companies need to manage their risks and improve, but as the model confirms, that leads to improved performance when companies first identify the risks associated with their objectives. That step is closely followed by reacting to the

risk (e.g. assessing the risks) and then building an oversight and information process which, in turn, leads to an improved internal environment. Companies that try to build oversight and information processes that are not linked to the risk and objective aspect of the process may be less likely to get improved performance. This linear juxtaposition of the components of ERM shows that the value of ERM increases as these components are put in place.

Our second set of hypotheses (six and seven) highlight the non-linear aspect of ERM. Hypothesis six posits a positive relationship between information and communication and objective setting, which is supported ( $\beta = .48, p < .001$ ). Hypothesis seven posits a positive relationship between internal environment and objective setting, which is also supported ( $\beta = .32, p < .001$ ). These hypotheses suggest that as new knowledge from the ERM process improves the internal environment and the information and communication components, then the company can modify its objectives accordingly.

Our eighth hypothesis posits a positive relationship between internal environment and management. This hypothesis is supported ( $\beta = .34, p < .001$ ). The model explains 34 percent of the variance in management (variables such as better-informed decisions, greater consensus and communication to management). This is a significant finding. What the model is revealing is that an ERM process leads to enhanced management of the company. Furthermore, it appears that it is not the process itself that is important, but rather how the process enables management to manage the company that is the real key.

Our ninth hypothesis posits a positive relationship between enhanced management and improved performance. The results support this hypothesis ( $\beta = .76, p < .001$ ). This is also an important result. Many companies responded to government regulations related to controls and financial reporting by complaining of the costs associated with such programs. This is an understandable response. However, our model shows that government calls for greater risk oversight and development of ERM frameworks can lead to improved performance – which is something the companies themselves should desire.

The results for the control variables show that companies in the U.S. ( $p < .05$ ) and smaller companies ( $p < .001$ ) are less likely to report enhanced management and improved performance from the ERM process. On the other hand, companies at more advanced stages of ERM implementation ( $p < .05$ ) are more likely to report enhanced management and improved performance from the ERM process.



## **6. DISCUSSION**

This research has certain limitations. First, our measures of the enhanced management and improved performance from ERM are limited to our respondents' answers to the survey questions and to the choice of questions given to the respondents. Still, some research has shown that subjective performance measures can be good proxies for objective measures of performance (see Dess and Robinson 1984 and Venkatraman and Ramanujam 1987). Second, ERM is still a growing and developing area. As companies continue to build their ERM processes and seek ways to add value, and as new ERM tools and methods become available, other measures may become significant.

Even though there are limitations to our approach, we find some interesting and significant results. Not only are we the first paper to document the relation between ERM components and value, but we are also the first to show how ERM adds value. We survey global companies on their ERM practices and find that companies are getting value from implementing ERM. The results show that an ERM framework and its related components are associated with value as seen in both enhanced management of the company and improved performance.

Enhanced management of the company was measured along the dimensions of management consensus, better-informed decisions, communication of risk taking, and management accountability. The ERM framework components were positively associated with enhanced management. Additionally, better management and the related ERM components were associated with improved performance. Performance was identified in measures of risk-adjusted performance, increased ability to meet strategic goals, reduced earnings volatility, and increased profitability. These are all important areas to executives, boards and stakeholders. The results suggest that an ERM framework and an ERM implementation help companies improve performance in these key areas, and it does so by enabling executives to manage the company better.

ERM is hard to study because companies are not required to disclose their ERM processes. Even companies with some ERM disclosures may not accurately reveal their components or stage of ERM implementation. As such, past research has been very limited.

However, ERM is a new and growing process in many companies and has numerous progenies. ERM research is also new and there are only a few papers that have examined ERM. The research to date consists of field research on ERM practices and a few papers that examine the determinants of ERM. One other research studied the market reactions to announcements of risk officers. Our research contributes and extends this early literature by examining both the value question and by testing the ERM framework components.

Future research could explore the aspects of ERM and the value from the process. There have been numerous papers that have attempted to measure value associated with corporate governance or balanced scorecards. Similar approaches could be studied here. Future research could also study the other ERM framework components or compare COSO's ERM framework to other risk frameworks (e.g., ISO's risk framework). There is also a need for additional field-based research to discover how companies are implementing such processes and what measures they change or create to measure and manage their risks so that ERM survey and disclosure research is not just testing a simulacrum of ERM. Another area for future research is international differences in ERM. Both ERM and risk oversight are either mandated or strongly suggested in numerous economies around the world. These results should be encouraging to company executives and boards that are trying to implement ERM processes and the related idea of risk oversight.

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FIGURE 1  
Theoretical Model of ERM's Impact on  
Management and Performance

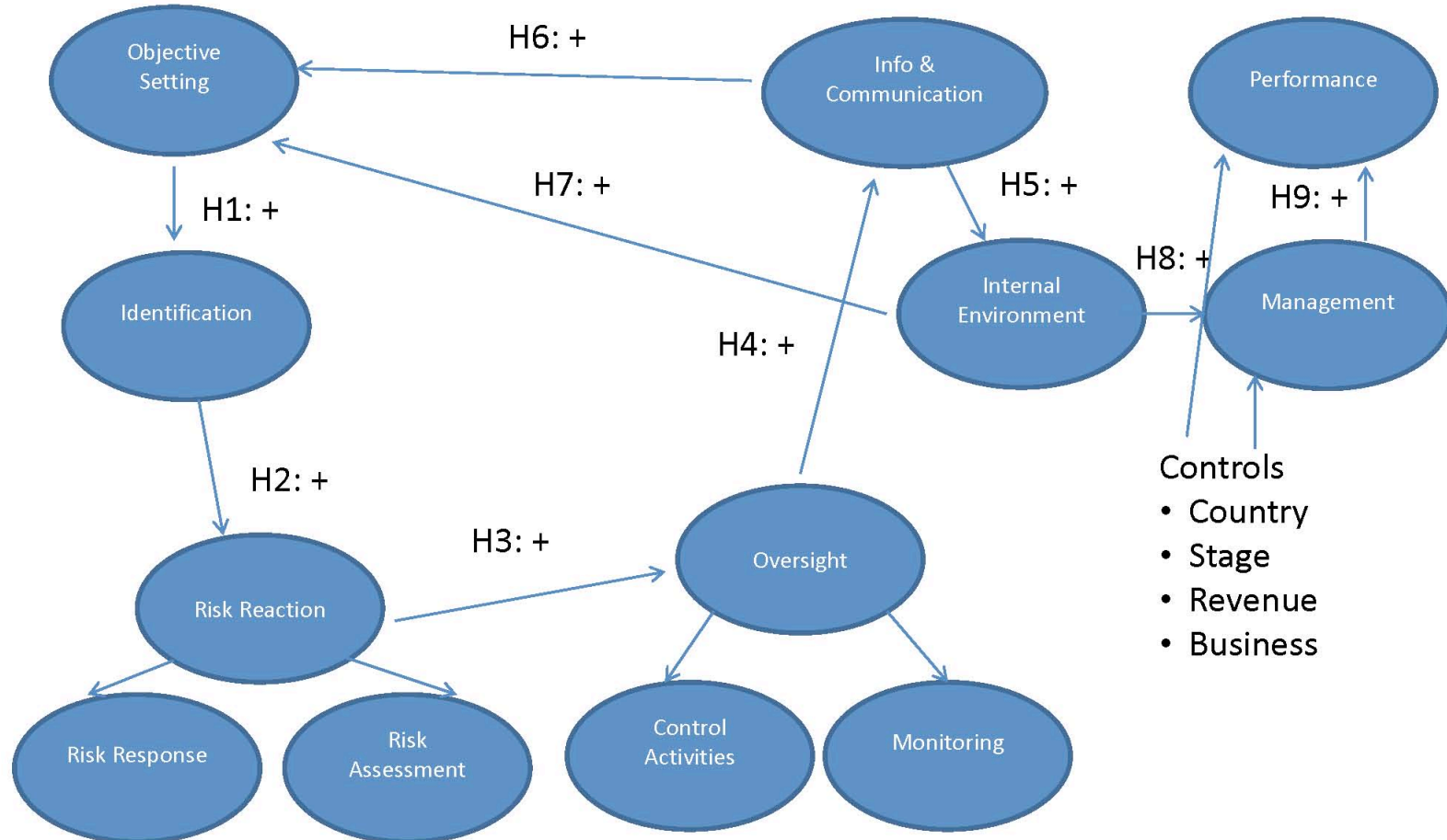
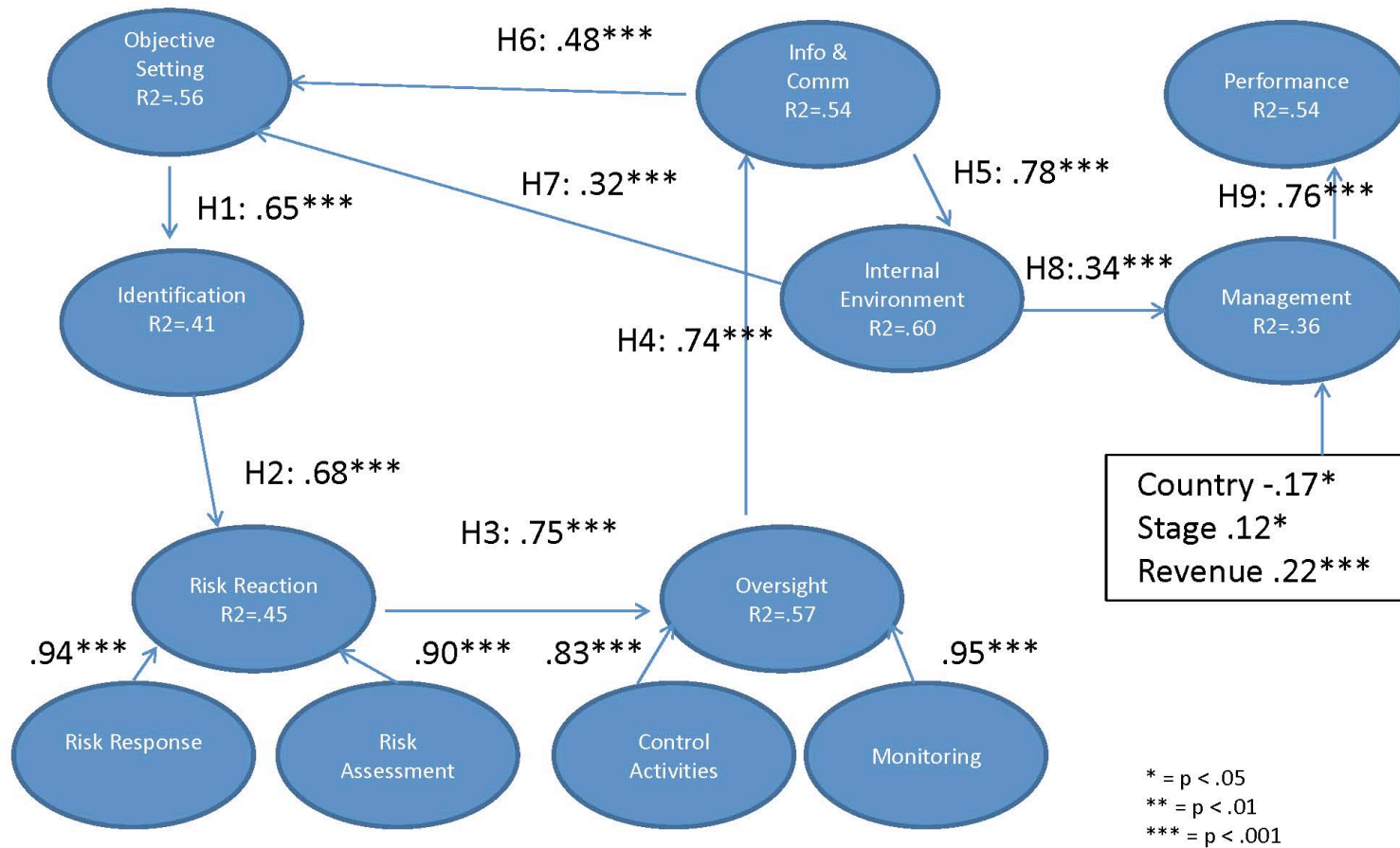


FIGURE 2  
Structural Model Results



**TABLE 1 Reliability**

<b>Construct</b>	<b>Items</b>	<b>Factor loadings</b>	<b>Reliability</b>
Objective setting	Obj set 1	0.837	0.884
	Obj set 2	0.852	
	Obj set 3	0.853	
Identification	ID 1	0.854	0.852
	ID 2	0.869	
Risk response	Risk response 1	0.891	0.863
	Risk response 2	0.850	
Risk assessment	Risk assess 1	0.860	0.859
	Risk assess 2	0.831	
	Risk assess 3	0.763	
Control (a single measure)	Control	1	
Monitoring	Monitor 1	0.899	0.897
	Monitor 2	0.904	
Information & Communication	Info & Com 1	0.838	0.832
	Info & Com 2	0.850	
Internal environment	Int env 1	0.813	0.804
	Int env 2	0.680	
	Int env 3	0.782	
Management	Manage 1	0.704	0.834
	Manage 2	0.736	
	Manage 3	0.749	
	Manage 4	0.793	
Performance	Perform 1	0.781	0.861
	Perform 2	0.746	
	Perform 3	0.763	
	Perform 4	0.826	
Risk reaction*	Risk response	0.905	0.884
	Risk assessment	0.979	
Oversight*	Control	0.830	0.885
	Monitoring	0.951	

\* second order constructs

**TABLE 2**  
**Correlation Matrix**

<b>Construct</b>	1	2	3	4	5	6	7	8	9	10
1. Objective setting	<b>0.718</b>									
2. Identification	0.415	<b>0.743</b>								
3. Risk response	0.452	0.296	<b>0.759</b>							
4. Risk assessment	0.552	0.457	0.493	<b>0.671</b>						
5. Control	0.357	0.272	0.340	0.267	<b>1*</b>					
6. Monitoring	0.434	0.240	0.538	0.390	0.379	<b>0.813</b>				
7. Information & communication	0.526	0.418	0.541	0.529	0.403	0.475	<b>0.712</b>			
8. Internal environment	0.466	0.357	0.573	0.395	0.420	0.522	0.600	<b>0.579</b>		
9. Management	0.312	0.189	0.164	0.200	0.155	0.213	0.279	0.240	<b>0.557</b>	
10. Performance	0.220	0.097	0.073	0.125	0.085	0.155	0.146	0.143	0.511	<b>0.608</b>

Extracted variance (convergent validity) for each variable is given in bold on the diagonal.

Shared variance (discriminant validity) between two variables is given elsewhere in Table 2.

\*single measure



## APPENDIX A

### Construct Variable Measures

Construct	Indicators
Objective setting	1 Has aligned its business risks with its corporate-level and business unit level goals and objectives
	2 Has established explicit, corporate-wide risk tolerance levels or limits for all major risk categories
	3 Has clearly communicated its expectations for risk-taking to your senior managers
Identification	1 Has established a comprehensive business risk inventory of the risks you expect your managers to manage
	2 Its business units utilize facilitated self-assessment and/or survey techniques to map risks
Risk reaction	1 Conducts formal risk assessment across the company on a regular basis
	2 Its business units analyze the root cause, impact, and interrelationships of its risks
	3 Has quantified its key risk to the best extent possible
	4 Has a process to integrate the effects of the major risk types (strategic, operational, financial, hazard, and legal)
	5 Its business units develop and determine risk mitigation strategies
Oversight	1 Has established written risk policy and procedure manuals that are consistent across major risks
	2 Its business units monitor and report on current status of managing key risks
	3 Has identified the key metrics required for reporting on risk management performance
Information & Communication	1 Has a corporate-wide common language for communicating risk type exposures, control activities and monitoring efforts?
	2 Has regular briefs to the Board and Executive committee on risk management issues
Internal environment	1 Has communicated a risk management mission statement, value proposition, and benefits statement to senior managers
	2 Has incorporated responsibility for risk management into the position description of all managers
	3 Board of Directors or Committee of the Board is actively involved in the risk management process
Management	1 Perceived benefit of ERM on company's general management consensus
	2 Perceived benefit of ERM on company's ability to make better-informed decisions
	3 Perceived benefit of ERM on company's ability to articulate and communicate risk taking to the management board and outside stakeholders
	4 Perceived benefit of ERM on increased company management accountability
Performance	1 Perceived benefit of ERM to measure risk adjusted performance among business units
	2 Perceived benefit of ERM to increase ability to meet strategic goals
	3 Perceived benefit of ERM to reduce earnings volatility
	4 Perceived benefit of ERM to increase profitability