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Review**

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Shiho Fujita*

Graduate School of Business and Commerce, Keio University
2-15-45 Mita, Minato-ku, Tokyo 108-8345 Japan
e-mail: fujita.shiho@keio.jp

Keita Iwasawa

Graduate School of Business and Commerce, Keio University
2-15-45 Mita, Minato-ku, Tokyo 108-8345 Japan
e-mail: atk.m@keio.jp

Eisuke Yoshida

Professor, Keio University, Faculty of Business and Commerce
2-15-45 Mita, Minato-ku, Tokyo 108-8345 Japan
e-mail: eyoshida@fbc.keio.ac.jp

*Corresponding author

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Enterprise Risk Management in Accounting Research: A Literature Review

Shiho Fujita^{a*}, Keita Iwasawa^b, Eisuke Yoshida^c

^a Graduate School of Business and Commerce, Keio University, Japan

* Corresponding author. E-mail address: fujita.shiho@keio.jp

^b Graduate School of Business and Commerce, Keio University, Japan

E-mail address: atk.m@keio.jp

^c Faculty of Business and Commerce, Keio University, Japan

E-mail address: eyoshida@fbc.keio.ac.jp

Abstract

This study aims to clarify the characteristics of studies on Enterprise Risk Management (ERM) in accounting and present future research subjects through a literature review. There are few review studies in accounting, compared to adjacent fields such as management and finance. We selected 25 academic papers from the EBSCO database, and conducted a systematic review from three points of view: (1) ERM frameworks, (2) factors that promote or obstruct the introduction of ERM, and (3) the impact of ERM. We find that (1) there are the conflicting results for ERM frameworks, (2) research on ERM frameworks is one of the features in accounting, and (3) accounting and finance journals follow different topics of interest related to ERM. In addition, this study contributes to the development of ERM research in accounting by clarifying and organizing the research on the introduction of ERM from the perspective of accounting, clarifying the characteristics of ERM research in accounting through a comparison with studies in adjacent fields, and identifying the conflicting findings on the impact of introducing ERM.

Keywords: Accounting, Risk management, ERM, Systematic review

1. Introduction

In recent years, the subject of Enterprise Risk Management (ERM) has attracted a

great deal of attention. Risks can have serious effects on companies, as is evident from the Enron case in 2000 and the Lehman Brothers bankruptcy in 2008. Under these circumstances, some authors pointed out the limitations of Traditional Risk Management (TRM). Olson and Wu (2015) used the term TRM to refer to risk management design for departments with specialized risks. According to Nielson et al. (2005), from 1955 to the 1990s, firms implemented TRM in “silos” with different risks in different divisions managed by different individuals. They show two problems with TRM. First, firms might neglect risks if they do not decide upon which department will deal with the risks in advance. Second, it may lead to erroneous decision-making: as each department deals with risk, perhaps even the same set of risks, it is difficult for managers to compare reports on these risks and make consistent decisions. ERM emerged in the late 1990s to address these problems. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) developed the Enterprise Risk Management-Integrated Framework (COSO’s ERM-IF), which defines ERM as follows: “Enterprise risk management is a process, effected by an entity’s board of directors, management and other personnel, applied in a 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 the entity’s objectives” (COSO, 2004).

Many researchers in various fields also focus on ERM (Choi et al., 2016). In management and finance, research focuses on the factors that promote or obstruct the introduction and impacts of ERM¹ (Andersen, 2008; Bromiley et al., 2015; Gatzert and Martin, 2015; Grace et al., 2015; Hoyt and Liebenberg, 2008, 2011; Kommunuri et al., 2016; Pagach and Warr, 2011; Thair and Razali, 2011; Zhao et al., 2014). ERM research places excessive emphasis on firm performance. For example, employing a Chief Risk Officer (CRO) increases shareholder value (Hoyt and Liebenberg, 2011), while transitioning from TRM to ERM does not (Thair and Razali, 2011). Others confirm that introducing ERM has a positive effect on firm performance (Andersen, 2008; Farrell and Gallagher, 2015; Grace et al., 2015). These studies highlight the usefulness and challenges in introducing ERM. Literature review papers were published (Bromiley et al., 2015; Gatzert and Martin, 2015) in business management and finance journals that clarified the interests and features of ERM research in these fields.

Researchers in the accounting field have shown renewed interest in ERM. For

¹ Researchers use seven variables as drivers for the introduction of ERM: enterprise size, diversified management, institution ownership, company growth, profitability, leverage, and stock price (Gatzert and Martin, 2015).

example, *Management Accounting Research*, the *Journal of Accounting and Public Policy*, and *British Accounting Review*, among others, published special issues on ERM in 2009 and 2013, 2015, and 2017, respectively. Traditionally, such scholars emphasized the contribution of management accounting to risk management. Simons (1999) shows that the firm performance evaluation system and incentives for management accounting influence managers' risk-taking behavior. Processes related to "management, analysis, reporting of financial and nonfinancial information" in management accounting are closely related to ERM as ways to minimize managers' erroneous decision making (Barton and MacArthur, 2015).

However, it is difficult to know what and how accounting research on ERM has clarified. Prior ERM research in accounting is fragmentary, and there is little in the way of literature reviews. Therefore, in contrast to adjacent fields, the characteristics of ERM research in accounting are unclear. This study attempts to address this gap and suggest future research subjects. We conduct a systematic review to investigate the different interests and features from other fields, and the limitations of ERM research in accounting.

The remainder of this paper is organized as follows. In the next section, we describe the research method. Section 3 describes the results and discusses the literature review. Finally, we draw conclusions from this study and comment on future research.

2. Method

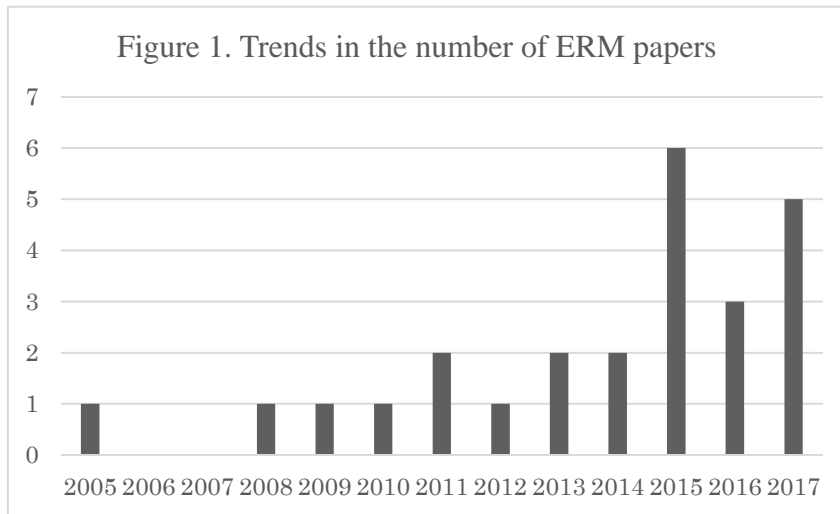
To clarify the characteristics of ERM research in accounting and suggest avenues for future research, we conduct a systematic review. A systematic review is a well-defined and uniform approach to identify all relevant studies, report the results of eligible studies, and, when appropriate, calculate a summary estimate of the overall results (Hulley et al., 2007). According to Fink (2013), a systematic review has seven tasks: 1) selecting research questions, 2) selecting bibliographic or article databases, 3) choosing search terms, 4) applying practical screening criteria, 5) applying methodological screening criteria, 6) doing the review, and 7) synthesizing the results.

Following Fink (2013), we apply the following process. First, we conducted a keyword search of the EBSCO database to select academic papers containing the words "enterprise risk management" or "ERM" in their title and the word "accounting" in the journal name. We excluded some papers that seemed unrelated to the introduction of ERM.² This process yielded 25 papers (Reference 1).³ Figure 1

² We did not select by research method but targeted all papers.

³ The target period of the literature search extends up to October 2017, as at the time of writing this paper.

illustrates the recent increase in ERM research in accounting journals.



3. Review and Discussion

Literature reviews of ERM in adjacent research fields clearly focuses on factors that promote or obstruct the introduction of ERM. We therefore review the literature from three points of view: (1) ERM frameworks, (2) factors that promote or obstruct the introduction of ERM, and (3) the impacts of ERM. ERM frameworks are an important factor in clarifying the characteristics of ERM research in accounting. Many accounting studies focus on ERM frameworks, which do not attract attention in adjacent fields (Olson and Wu, 2015). In addition, we compare the research on the latter two views following the review frameworks of adjacent fields, to determine the characteristics of ERM research in accounting.

3.1 ERM frameworks

COSO's updated ERM-IF is a widely known ERM framework published in 2004. The original 1992 framework includes three objectives (Operations, Reporting, Compliance) and five components (Internal environment, Risk assessment, Control activities, Information and Communication, Monitoring). The 2004 revision added Strategic as an objective and Objective setting, Event identification, Risk response as components (COSO, 2004). Today, risk is not simply a problem to be addressed, but is also recognized as a source of competitiveness (Bromiley et al., 2015). While the original component was *Risk Assessment*, the revision introduced *Risk Response* as an additional component. In 2009, ISO 31000 was published as an international standard

for ERM.

Many studies discuss the advantages and disadvantages of ERM frameworks (Arena et al., 2010; Beasley et al., 2005; Choo and Goh, 2016; Hayne and Free, 2014; Karanja, 2016; Paape and Spakle, 2012; Tekathen and Dechow, 2013), and many agree with the usefulness of COSO's ERM-IF. In Fraser et al.'s (2008) survey, 74% of respondents had read COSO's ERM-IF, making it the most widely-read publication about risk. In COSO's (2010) survey, 65% of the respondents stated that COSO's ERM-IF was "very familiar" or "fairly familiar." In addition, Power (2009) argues that COSO's ERM-IF spread globally and was the best way to implement ERM in a short period compared to risk management standards from other countries. Based on these surveys, Hayne and Free (2014) conduct an interview survey and identify COSO's ERM-IF as the overwhelming choice as the basis for implementing ERM.

On the other hand, there is some skepticism about COSO's ERM-IF. Arena et al. (2010), Paape and Spaklé (2012), and Tekathen and Dechow (2013) argue that COSO's ERM-IF cannot manage risks specific to company attributes because it provides very broad guidance and leaves the details to each organization. Arena et al. (2010) find that firms do not necessarily execute ERM the way the COSO's ERM-IF assumes, based on interviews with three non-financial companies in Italy. Although the three companies adopted ERM based on COSO's ERM-IF, communication between administrators and managers sometimes failed. Additionally, Paape and Spaklé (2012) find that COSO's ERM-IF did not contribute to effective risk management; in a questionnaire rolled out to 193 ERM adopters in the Netherlands, only 43% of them actually applied COSO's ERM-IF and 66% of them did not quantify the risk tolerances that the COSO ERM-IF emphasizes. COSO's ERM-IF is undergoing a revision to overcome problems such as the measurement and evaluation of risks. Some studies claim that management accounting tools such as balanced scorecards (BSC) are effective methods to solve this problem in accounting (Arena et al., 2010; Jordan et al., 2013; Beasley et al., 2006; Olson and Wu, 2015). Therefore, accounting has great potential to contribute to the discussion of the merits and demerits of ERM frameworks, and this topic warrants future research.

3.2 Factors that promote or obstruct the introduction of ERM

First, studies show that ERM frameworks such as the COSO ERM-IF and ISO 31000 are factors that promote the introduction of ERM (Beasley et al., 2005; Choo and Goh, 2016; Karanja, 2016). Beasley et al. (2005) shows that COSO's ERM-IF was a key factor in the ERM introduction stage statically. Choo and Goh (2015) show that

when firms adopt the Six Sigma Define-Measure-Analyze-Improve-Control (DMAIC) system, they could smoothly introduce ERM. Karanja (2016) reveals that 95 out of 122 US companies developed ERM in accordance with COSO's ERM-IF and ISO 31000. This result differs from that of Paape and Spaklé (2012), and whether or not firms introduce ERM by applying COSO's ERM-IF or ISO 31000 may depend on the country.

We next discuss the variables that some studies use to clarify the factors that promote or obstruct the introduction of ERM by applying multivariate analysis. We can classify these factors into corporate governance, corporate characteristics, and corporate finance.

Several corporate governance factors are positively associated with a firm's ERM deployment stage, including the presence of a CRO (Baxter et al., 2013; Beasley et al., 2005, 2015; Paape and Spaklé, 2012) and explicit calls from the Chief Executive Officer (CEO) or Chief Financial Officer (CFO) for internal audit involvement in ERM (Beasley, 2005). However, no study reports that the simple presence of a CEO can promote ERM introduction, though the CEO's position on the Board of Directors and the separation of the Chairperson and CEO leads firms to adopt more sophisticated ERM (Lundqvist, 2014; 2015). In addition, board independence in terms of having many outside board members is key (Beasley et al., 2005; Baxter et al., 2013).

Top management is also important (Arnold et al., 2011; Barton and MacArthur, 2015; Lundqvist, 2014; 2015; Meidell and Kaarbøe, 2017; Tekathen and Dechow, 2013; Viscelli et al., 2017). Top management affects the formation of risk cultures because it influences the adoption of specific risk management procedures (Meidell and Kaarbøe, 2017), accountability within the organization (Cohen et al., 2017), and organizational flexibility (Arnold et al., 2011; 2015). Cohen et al. (2017) find a strong relationship between ERM implementation and the financial reporting process based on a survey of CFOs, audit partners, and audit committee members of US companies.

In terms of auditing by the Big-4 audit firms (Ernst & Young, Deloitte & Touche, KPMG, and PricewaterhouseCoopers), the research returns conflicting results. For example, Beasley et al. (2015) shows that auditing by the Big-4 firms promotes the introduction of ERM, because large auditing firms improve audit quality and strengthen corporate governance. This interpretation differs from that of Paape and Spaklé (2012) and Lundqvist (2014; 2015). Paape and Spaklé (2012) find no differences between the Big-4 firms and other audit firms in introducing high quality ERM in the Netherlands. Lundqvist (2014; 2015) also shows that the implementation of risk governance is not motivated by public pressure from the Big-4 audit firms in

the three Scandinavian countries and Finland.

In terms of corporate characteristics, many studies focus on financial institutions (Jabbour and Abdel-Kader, 2016; Paape and Spaklé, 2012). Baxter et al. (2013) show that companies with high Standard & Poor's (S&P) ratings had higher average market responses than did companies with low ratings, which improved ERM quality and governance. According to Paape and Spaklé (2012), financial institutions are likely to adopt ERM compared to other industries because the Basel II regulations and ratings encourage the introduction of ERM. In addition, the timing of the introduction of ERM may affect the pressure on such regulations and ratings. For example, early adopters of ERM did so due to internal factors such as enhancing financial health and external factors such as improving their ratings (Jabbour and Abdel-Kader, 2016).

Moreover, the results for non-profit organizations and US companies are not consistent. Non-profit organizations have lower rates of ERM implementation compared to general corporations (Paape and Spaklé, 2012). However, the results regarding the factors that promote or obstruct the introduction of ERM are inconsistent. In US companies, Beasley et al. (2005) show that 46% of CROs in the Asia-Pacific region recognize that ERM is a top priority, while US CROs are 26% less interested, according to a PWC (2004) survey. By contrast, Beasley et al. (2015) show that US companies had better ERM processes than did foreign companies.

Concerning corporate finance, while highly profitable companies intend to introduce ERM, companies with high financial leverage tend not to do so (Baxter et al., 2013; Beasley et al., 2005; Lundqvist, 2015; Paape and Spaklé, 2012).

We next compare the above factors to reviews in adjacent fields. We can identify some features of accounting studies on ERM by comparing them to Gatzert and Martin (2015), who review ERM literature in financial journals. First, finance and accounting studies use only two variables in common, revenue and leverage, while the remaining variables differ. Second, while several accounting studies adopt variables such as the CRO and CEO's requirements, Big-4 audit firms, credit ratings, financial institutions, non-profit status, and US-based companies, they did not attract much attention in financial journals. Third, while several finance studies adopt variables such as company size, diversity management, institutional ownership, and company growth status, they attracted little attention in accounting journals.

There are some potential avenues for further research. First, many prior studies examine the top management, but there is little research on the lower organizational levels. Studying lower levels of the organization will allow researchers to evaluate ERM adoption centering on the CRO, as COSO (2004) assumes. Second, it is

necessary to observe trends in various industries. Many studies target financial institutions, while few studies occur within non-financial firms. Many industries, such as education and energy are adopting ERM (Beasley, 2005). Third, it is necessary to clarify not only the macro view, such as the organization's context, but also the micro view inside the organization. Many prior studies on the factors that promote or obstruct the introduction of ERM focus on the organizational structure. However, Zhao et al. (2014) point out the importance of factors such as risk information quality and quantity, human resources with risk consciousness, and so on.

3.3 The impacts of introducing ERM

Most studies show that introducing ERM has a significant impact on a firm's performance (Arnold et al., 2015; Baxter et al., 2013; Beasley et al., 2008; Florio and Leoni, 2017; Gordon et al., 2009; McShane et al., 2011; Yap and Yap, 2016). Beasley et al. (2008) show that ERM implementation helped firms prevent declines in stock and achieve improved ratings. McShane et al. (2011) find that firm performance improved as the risk management system evolved from TRM to ERM. However, in companies with high ratings, moving from TRM to ERM does not increase company value. Yap and Yap (2016) show that ERM implementation has a positive effect on firm performance in small-medium sized enterprises, though many studies focus on large organizations.

Some studies discuss stock price fluctuation after ERM introduction (Baxter et al., 2013; Beasley et al., 2008; Paape and Spaklé, 2012). Baxter et al. (2013) show that the average market reaction is higher for firms with excellent ERM ratings than for those with lower ratings, and the market reacts sensitively to changes in ERM ratings. Furthermore, ERM quality is not related to returns during the financial crisis, but it is strongly related to returns in the rebound period. Although markets react to the introduction of ERM, they do not react when a firm hires a CRO (Beasley et al., 2008). In this way, shareholders believe that enterprises will make risk-based decisions and increase corporate value, and ERM will bring them profit. In contrast, Paape and Spaklé (2012) assume that investors may not emphasize ERM implementation.

Other studies evaluate risk information disclosures (Beasley, 2008; Hj et al., 2016). Beasley (2008) finds no increase in risk-related disclosures after CRO announcements. Hj et al. (2016) show that the amount of risk disclosure information in the company's annual report increased by 5% after the implementation of the Bursa Malaysia Guidelines, and reveal that there are few mentions of the term CRO in the annual reports. These results are similar to those of Beasley et al. (2008). They insist that

because the chief internal auditor or CFO could fill the CRO's role, the mentions of the term CRO are low in Malaysia. Moreover, some studies find changes in capital allocation after introducing ERM (Jabbour and Abdel-Kader, 2015) and changes in the management decision-making process within oil and gas companies in the 18 years since the introduction of ERM (Meidell and Kaarbøe, 2017).

However, these studies have some limitations. First, since the company's risk management process changes drastically by moving from TRM to ERM, it is necessary to clarify why and how this change improves risk management behavior, and how ERM affects firm performance. For example, Mikes (2009) divides enterprises mainly into "ERM by the numbers" (i.e., a quantitative orientation) and "holistic ERM" (i.e., a qualitative orientation), and indicates that the former embrace a calculative culture, while the latter focus on qualitative information and manage quantifiable risks, aggregate risks, and risks that cannot be quantified using BSC and risk dashboards, while also measuring risk-based performance. Although this suggests the importance of focusing on the ERM process, there is little research on this process. Second, it is necessary to consider the magnitude of measuring ERM in depth. For example, McShane (2011) and Farrell and Gallagher (2015) use different indices to measure ERM maturity (S&P's ERM rating, RIMS, and RRM, respectively). Inconsistent scales to measure ERM can make it difficult to compare research results on the impact of introducing ERM. Third, it is necessary to clarify the influence of management accounting tools on the introduction of ERM. There are indications that management accounting tools such as strategy maps and BSC, make ERM function more smoothly (Arena et al., 2010; Jordan et al., 2013; Beasley et al., 2006; Olson and Wu, 2015). Therefore, we should theorize the advanced cases where firms introduce ERM smoothly by applying management accounting tools.

4. Conclusion

This study aimed to clarify the characteristics of ERM research in the accounting field. We conducted a systematic review of 25 accounting studies. Our results show that: (1) there are conflicting findings related to ERM frameworks, (2) the research on ERM frameworks is a feature in accounting studies, and (3) finance and accounting journals follow different topics of interest related to ERM.

This study makes several academic contributions. First, we clarify and organize the current accounting research on ERM introduction. We divide the prior research into three main topics: ERM frameworks, the factors that promote or obstruct the introduction of ERM, and the impact of introducing ERM. In addition, we present the

development and issues in each area, and clarify the characteristics of ERM research in accounting by comparing it to reviews in adjacent fields. Specifically, only accounting research discusses ERM frameworks. In addition, accounting and financial studies use different variables to evaluate the factors that promote or obstruct the introduction of ERM. Accounting studies emphasize corporate governance variables, with many studies on financial institutions. Moreover, we highlight the conflicting findings on the impact of introducing ERM.

However, this research also has several limitations. First, we used only one database, EBSCO's "Business Source Premier." Although EBSCO includes major academic journals from Europe and the US, it does not cover non-English speaking countries, so expanding the scope of the journals included in a literature review may yield new findings. Second, we searched only for those articles that had the keywords "enterprise risk management" or "ERM" in the titles. Therefore, the literature review does not include studies that refer to ERM without including the term in the title. Third, we did not review the literature on the ERM process because we focus on the introduction of ERM, which is discussed mainly in adjacent fields. We made this choice because there were few studies on the ERM process, while many studies focused on ERM introduction.

Companies must nowadays manage various risks such as strategic risk, business risk, credit risk, and so on. Many accounting studies combine ERM with budget management (Barton and MacArthur, 2015; Hopwood, 1978) and management control (Soin and Collier, 2013) to minimize the damage from various risks. Therefore, accounting can contribute to the development of ERM.

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