

Risk Management Programs' Effect on Financial Professionals' Accountability and Investment Decisions

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EXECUTIVE SUMMARY

Risk management programs do not appear to make finance professionals overly risk-averse, but the programs do create greater feelings of accountability toward senior managers for the risks related to investment decision making.

Enterprise risk management (ERM) has received considerable attention from U.S. corporate management and board members since *Enterprise Risk Management—Integrated Framework* was issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 2004.¹ In 2008, Standard & Poor's began to include an assessment of ERM as part of its criteria for evaluating public companies' credit ratings.² In 2010, the U.S. Securities & Exchange Commission (SEC) required all U.S. public companies to disclose their board of directors' risk management oversight role.³ And in 2013, the New York Stock Exchange (NYSE) expanded its corporate governance standards to require audit committees of U.S. public companies to discuss the company's risk management process and major financial risk exposures.⁴

Despite this widespread attention to ERM in practice, the accounting literature lacks studies that address the effects that risk management programs have on the perceptions, decisions, and efforts of financial managers, controllers, and other financial professionals. Since financial professionals are responsible for approving a company's significant investing

and financing activities, it is important to study ERM's possible impact on these individuals' willingness to take reasonable risks in making business decisions.

COSO's ERM Framework states that the purpose of ERM is to manage organizational risks to provide reasonable assurance of achieving company objectives, which ultimately focus on creating value for shareholders.⁵ Using ERM as a proxy for a robust risk management program (RMP), it can be said that ERM may be "good" (i.e., value creating) for an organization to the extent that any resulting conservative risk judgments are balanced with and remain within the limits of the organization's healthy entrepreneurial risk appetite. In other words, a willingness to take reasonable financial risks consistent with the achievement of entity objectives is positive. Yet ERM may be "bad" (i.e., value diminishing) to the extent that any resulting conservative risk decisions are not balanced with—and instead end up constraining—the organization's healthy entrepreneurial risk appetite.

In a study sponsored by IMA[®] (Institute of Management Accountants), we tested these issues by conducting an experiment on 60 experienced financial professionals to examine the effect that RMP type and financial risk level have on the professionals':

1. Perceptions of their accountability to top management;
2. Project investment decisions; and
3. Decision-making effort.

By manipulating the type of risk management program (i.e., a robust or ceremonial approach to risk management) and financial risk level (i.e., high or low, as reflected by a relatively large or small financial investment) randomly between subjects, we had four versions of case materials in which participants could encounter either a robust or ceremonial RMP and either a large or small financial investment decision.

The results indicate that robust RMPs cause financial professionals to feel more accountable to top management when making investment decisions, arguably a "good" result. We find no evidence that robust RMPs cause financial professionals to become more reluctant to invest in projects. Thus, in this setting, a robust RMP appears to enhance accountability to top manage-

ment without constraining the desire to take reasonable risks.

Additionally, the results provide no evidence that robust RMPs influence financial professionals to exert more decision-making effort. Yet the study also reveals a positive relationship between investment size and financial professionals' decision-making effort. Overall, the results suggest that a robust RMP can cause financial professionals to experience greater accountability to top management but apparently without stifling normal risk taking.

THE GROWING IMPORTANCE OF ERM

ERM is becoming more and more widespread, in part because of public company risk management standards from organizations such as COSO and the NYSE as well as the regulations mandated by the Dodd-Frank Act and enacted by the SEC that charge top management and board members of public companies with risk management oversight responsibilities.⁶

ERM research also has increased, examining a variety of issues related to ERM implementation and use, including its link to strategy, the characteristics of companies that use ERM, its role in the financial reporting process, its relation to company value, and more.⁷ The studies tend to focus on ERM at the company level, however, and do not examine the effects of ERM on individual managers' perceptions of accountability to top management for risk taking, their decision-making process on potentially risky projects, or the level of effort that managers put into their decisions under ERM. These individual-level issues are important in order to understand the various effects of ERM on organizations.

The increased focus on ERM should affect financial professionals' perceptions and decisions across organizations if the risk management focus is robust and substantive. Specifically, financial professionals should feel pressure to more carefully consider risks associated with their business decisions when they are accountable to top management and the board. The current literature has not looked at these aspects of risk management, and no prior studies that we found use an experiment to consider the impact of ERM on individual decision making.

EXPERIMENT DESIGN AND CASE DEVELOPMENT

Based on this background, we conducted our experiment. We used a two-by-two experimental design with two RMP types (robust or ceremonial) and two financial risk levels (low or high) manipulated randomly between subjects. The research design is similar to that used by Todd DeZoort, Paul Harrison, and Mark Taylor.⁸

The experimental materials consisted of an informed consent, followed by a brief hypothetical case study that included sections addressing the company and industry background, financial performance, capital budgeting policy, top management, the board of directors and audit committee, the external independent auditor, and the internal audit department.

The base case materials described a publicly traded household appliance manufacturing company listed on the NYSE. The company operates in a relatively robust industry, and its financial performance and position are comparable to average companies in the industry. The company's five-year historical net sales, net income, and total assets were derived from industry benchmark data. Participants also received the company's capital budgeting policy, including the required rate of return on project investments. Governance information indicated that top management and the board of directors, including the audit committee, meet regularly and are qualified and experienced. The company has an active internal audit department, and the same independent accounting firm has expressed a clean audit opinion of the company for each of the past five years.

To develop the case, we leveraged the experience of professional accounting colleagues who are practicing CPAs (Certified Public Accountants) or who hold the CMA[®] (Certified Management Accountant) certification with more than five years of professional experience, examined benchmark information and financial data of public companies in the household appliance industry, and conducted a comprehensive literature review of academic studies on ERM and current relevant regulations and guidelines.⁹ In addition, other academics with expertise in the area reviewed the case and provided substantive feedback, leading to additional edits.

The online instrument was designed and administered using Qualtrics research software. Participants

were experienced financial professionals who accessed the instrument through a link sent to them in three separate email requests from IMA's director of research. We sent these email requests to IMA members who met the requisite experience and other selection criteria. In addition, we sent a fourth email request to other experienced accounting professionals (known through one coauthor's professional network) to obtain the required minimum participants.

Experimental Task

Participants were presented with the base case information and asked to assume that they were employed as financial managers charged with evaluating and making recommendations about whether the company should pursue project investment opportunities. Furthermore, they were told to assume that they report to the controller and that the degree of success of their investment recommendation is considered in their performance evaluation and in determining their base pay adjustments and incentive pay.

The participants were randomly assigned to either the robust or ceremonial RMP types. In the robust RMP condition, the materials said:

The board of directors has directed management to establish an organization-wide risk management program (i.e., an enterprise risk management (ERM) program) primarily to ensure that the Company is effectively managing its risks. SEC regulations mandate public company board members to disclose their risk oversight role. In addition, New York Stock Exchange (NYSE) standards require that the Company's audit committee discuss the firm's risk management process and major financial risk exposures. The board has delegated responsibility for overseeing the ERM process implemented by management to the audit committee, but the full board monitors the top risk exposures identified by that process. The full board and the audit committee have assumed an active role in providing risk oversight and have placed a high priority on giving attention to risk management. The CEO and CFO share the board's genuine enthusiasm for the Company's ERM program, and they are willing to expend the required resources to ensure that it is properly implemented.

Management has appointed a Chief Risk Officer (CRO), who was previously employed as a CRO for a manufacturing company in a similar industry as the Company, to assume risk oversight responsibilities. The CRO, who has specialized risk management experience, meets with the CEO and the CFO to discuss the Company's risk exposures once each month. The audit committee also meets with the CRO each quarter to engage in substantive risk management discussions about key financial, operational, and reputational risks. The CRO's risk management recommendations are taken seriously and acted upon in a timely manner.

The internal audit plan includes audits of the ERM program. The internal audit staff receives continuing professional education in risk management practices. Capital budgeting project investment decisions fall under the Company's ERM program.

The materials for the ceremonial RMP setting said:

The board of directors has directed management to establish an organization-wide risk management program (i.e., an enterprise risk management (ERM) program) primarily to demonstrate that the Company is in compliance with regulations. SEC regulations mandate public company board members to disclose their risk oversight role. In addition, New York Stock Exchange (NYSE) standards require that the Company's audit committee discuss the firm's risk management process and major financial risk exposures. The board has delegated responsibility for overseeing the ERM process implemented by management to the audit committee, but the full board is supposed to be informed of the top risk exposures identified by that process. The full board and the audit committee have not assumed an active role in providing risk oversight and have not placed a high priority on giving attention to risk management. The CEO and CFO understand the board's intent of demonstrating compliance with regulations, and they do not support expending resources for an ERM program.

Management has appointed the Controller of the Company to assume risk oversight responsibilities. The Controller, who lacks specialized risk management expe-

rience, occasionally mentions the Company's risk exposures to the CEO and the CFO as part of other meetings that focus on financial reporting issues. The Controller ensures that the matter of "risk oversight" appears in the board minutes once each calendar year by including this topic on the agenda of the annual meeting with the audit committee related to internal controls. The Controller does not make any risk management recommendations.

The internal audit plan does not include audits of the ERM program. The internal audit staff receives continuing professional education in internal controls. Capital budgeting project investment decisions fall under the Company's ERM program.

The robust RMP setting is designed to reflect a meaningful, substantive approach to risk management, with significant attention paid to the support from board members and top management as well as to the CRO's expert oversight. By contrast, the ceremonial RMP setting is designed to reflect a "check the box" approach, with limited support from the board and top management and a CRO with insufficient risk expertise.

Next, participants were randomly assigned to one of the two financial risk levels (high or low) and provided information describing a possible new product introduction. The high-financial-risk case required a large financial investment (relative to other project investments), while the low-financial-risk case required a small financial investment. The financial-risk variable is included in the study to assess whether the effects of RMP type vary based on the riskiness of the investment that participants were considering. The materials also contained manipulation check questions to ensure that the participants read and understood the descriptions of RMP type and project investment risk.

After participants considered the case background and randomized treatments, they had to answer four questions related to accountability, the investment decision, and decision-making effort. The accountability item asked them to rate how accountable they felt to certain parties for the risk associated with their recommendation about whether the company should make the project investment, using a scale of 0 to 100, where 0 = minimal accountability, 50 = moderate accountabil-

ity, and 100 = significant accountability. They provided separate ratings for how accountable they felt toward top management and the board of directors.¹⁰

The investment decision item asked participants to rate the likelihood that, as a financial manager charged with evaluating and making recommendations about whether the company should pursue project investment opportunities, they would recommend that the company make the financial investment to manufacture the new swift-cook oven (where 0 = not at all likely, 50 = moderately likely, and 100 = very likely).

The other two questions measured decision-making effort. The first item asked respondents to rate how much time they would take to develop a recommendation for this project investment relative to a typical project investment recommendation (where 0 = much less time, 50 = about average time, and 100 = much more time). The second item asked them to indicate the extent that they would consult with others to develop a recommendation for this project investment relative to a typical project investment recommendation (where 0 = much less consultation, 50 = about average consultation, and 100 = much more consultation).

Classification Questions

The study also included a number of classification questions to better understand the participants, including gender, years of professional experience, experience with RMPs, experience making project investment decisions, current title, professional certifications such as the CMA, public company status, and revenue of employer. In addition, we used the Risk Taking Index created by Nigel Nicholson, Emma Soane, Mark Fenton-O'Creedy, and Paul Willman to measure participants' general risk-taking propensities.¹¹

Eighty-eight participants completed the case materials online. We excluded 28 individuals who did not answer both manipulation check questions correctly, leaving 60 participants for analysis. Table 1 provides an overview of participant demographics. More men (72%) than women (28%) participated in the experiment. Participants had significant risk management expertise, with most having more than 15 years of professional business experience and specialized career experience relevant to the case.

Most participants had experience with RMPs and making project investment decisions. Current titles indicate that participants were mostly financial managers (22%), controllers (17%), external auditors (10%), and CFOs (8%). Participants worked mostly for public companies, private for-profit companies, and public accounting firms, primarily employers with large revenues. Fifty-one participants (85%) had at least one professional accounting or finance certification.

RESULTS

To examine our research question, we ran four different analyses of variance (ANOVA) models.¹² They are:

1. Accountability = f (RMP Type, Investment Size, RMP Type x Investment Size)
2. Investment Decision = f (RMP Type, Investment Size, RMP Type x Investment Size)
3. Relative Time = f (RMP Type, Investment Size, RMP Type x Investment Size)
4. Relative Extent of Consultation = f (RMP Type, Investment Size, RMP Type x Investment Size)

Table 2 shows the results for the item examining accountability to top management.¹³ The overall ANOVA model is significant, and there is a significant relationship between RMP type and accountability (significant at the 0.05 level). The 32 participants assigned to a ceremonial RMP condition had a mean of 77.75 for their accountability rating compared to a mean of 85 for the 28 participants in the robust RMP group. Thus, the robust RMP caused participants to feel significantly more accountable to top management. The interaction term (RMP Type x Investment Size) is not significant, indicating that the effect of RMP type on accountability does not vary based on the riskiness (i.e., relative size) of the investment.

Table 3 presents the ANOVA model for the investment decision. The overall model is not significant, nor is RMP type. Thus, RMP type does not appear to cause any difference in the participants' willingness to recommend the investment. Those in the robust RMP group had a mean of 40.64 compared to 39.63 in the ceremonial RMP group. Further, the insignificant RMP Type x Investment Size interaction indicates that any effect of RMP type on investment decisions does not vary based

Table 1: Demographic Information (n = 60)

Gender	Male	43	71.7%
	Female	17	28.3%
Total Years of Professional Business Experience	Fewer than 5 years	3	5.0%
	5 to 10 years	3	5.0%
	11 to 15 years	2	3.3%
	16 to 20 years	13	21.7%
	21 to 25 years	13	21.7%
	More than 25 years	26	43.3%
Experience with Risk Management Program in Career	Yes	41	68.3%
	No	19	31.7%
Experience Making Project Investment Decisions in Career (n = 58)	Yes	47	74.6%
	No	11	17.5%
Current Title	Financial Manager	13	21.7%
	Controller	10	16.7%
	External Auditor	6	10.0%
	Chief Financial Officer	5	8.3%
	Assistant Controller	4	6.7%
	Staff Accountant	3	5.0%
	Other Professional	19	31.7%
Business Segment	Public Company	21	35.0%
	Private For-Profit Company	21	35.0%
	Public Accounting	11	18.3%
	Not-For-Profit	3	5.0%
	Other	4	6.7%
Annual Revenue of Your Employer	Less than \$10 million	6	10.2%
	\$10 million to \$100 million	13	22.0%
	\$101 million to \$500 million	13	22.0%
	\$501 million to \$1 billion	4	6.8%
	More than \$1 billion	23	39.0%
Professional Certifications	CMA	32	53.3%
	CPA	27	45.0%
	CFA	2	3.3%
	Other	13	21.7%
	None	9	15.0%

Table 2: ANOVA Results (Accountability)
Dependent Variable = Extent Respondents Feel Accountable to Top Management for Risk Associated with Recommendation
(n = 60)

Source	df	Mean Square	F	Sig.
Corrected Model	3	606.210	3.515	0.021
Intercept	1	393109.712	2279.297	0.000
RMP Type	1	861.862	4.997	0.029
Investment Size	1	592.674	3.436	0.069
RMP Type x Investment Size	1	375.622	2.178	0.146
Error	56	172.470		

R Squared = 0.158 (Adjusted R Squared = 0.113)

RMP Type = robust or ceremonial
Investment Size = large or small
All p-values in tables are two-tailed.

Table 3: ANOVA Results (Investment Decision)
Dependent Variable = Likelihood Respondents Would Recommend
to Make Financial Investment
(n = 60)

Source	df	Mean Square	F	Sig.
Corrected Model	3	344.421	0.732	0.537
Intercept	1	96872.117	205.828	0.000
RMP Type	1	6.697	0.014	0.905
Investment Size	1	300.421	0.638	0.428
RMP Type x Investment Size	1	655.661	1.393	0.243
Error	56	470.645		

R Squared = 0.038 (Adjusted R Squared = 0.014)

RMP Type = robust or ceremonial
Investment Size = large or small

on the riskiness of the investment.

Table 4 shows the ANOVA model for relative time spent to develop a recommendation for the project investment. The overall model is significant, but RMP type is not significant. There is a significant relationship, however, between investment size and relative time to invest (significant at the 0.05 level). Thus, while RMP type does not influence the relative decision-making time, a higher relative investment size resulted in participants taking more time to make an investment

recommendation. The 28 participants assigned to the small investment size condition had a mean of 54.46 compared to a mean of 69.23 for the 31 participants with the large investment condition. The interaction term (RMP Type x Investment Size) is not significant, indicating that the effect of investment size on the level of effort does not vary based on the RMP type.

Table 5 presents the ANOVA model for the extent of consultation. The overall model is marginally significant (significant at the 0.10 level), but, once more, RMP

Table 4: ANOVA Results (Investment Decision)
Dependent Variable = Relative Time Respondents Would Take
to Develop a Recommendation
(n = 59)

Source	df	Mean Square	F	Sig.
Corrected Model	3	1088.954	3.286	0.027
Intercept	1	222986.995	672.780	0.000
RMP Type	1	46.000	0.139	0.711
Investment Size	1	3213.249	9.695	0.003
RMP Type x Investment Size	1	17.749	0.054	0.818
Error	55	331.441		

R Squared = 0.152 (Adjusted R Squared = 0.106)

RMP Type = robust or ceremonial
Investment Size = large or small
Note: One observation had missing data.

Table 5: ANOVA Results (Relative Extent of Consultation)
Dependent Variable = Relative Extent that Respondents Would Consult with
Others to Develop a Recommendation
(n = 57)

Source	df	Mean Square	F	Sig.
Corrected Model	3	745.941	2.227	0.096
Intercept	1	277011.537	826.942	0.000
RMP Type	1	7.730	0.023	0.880
Investment Size	1	1415.541	4.226	0.045
RMP Type x Investment Size	1	554.381	1.655	0.204
Error	53	334.983		

R Squared = 0.112 (Adjusted R Squared = 0.062)

RMP Type = robust or ceremonial

Investment Size = large or small

Note: Three observations had missing data.

type is not significant. There is a significant relationship, however, between investment size and the extent of consultation (significant at the 0.05 level). Thus, while RMP type does not influence the relative decision-making extent of consultation, a higher relative investment size caused participants to seek more consultation from others. Those in the small investment group had a mean of 65 compared to a mean of 75.83 for participants in the large investment group. Further, the insignificant interaction term (RMP Type x Investment Size) indicates that the effect of investment size on the extent of consultation does not vary based on RMP type.

ROBUST RMP INCREASES ACCOUNTABILITY

With the increasing attention being given to ERM and robust RMPs, understanding how they impact individual-level issues such as accountability and decision making is important. We found what appear to be two “good news” results. First, a robust RMP caused the financial managers to feel more accountable to top managers for the risks related to the investment decision. Thus, a robust RMP appears to cause managers to think more carefully about their accountability to others for taking risk.

Second, we found no evidence that a robust RMP caused financial professionals to avoid risk because the

robust and ceremonial RMP groups make similar investment decisions. In essence, it does not appear that robust RMPs cause financial professionals to become overly risk-averse.

Finally, this study revealed a significant relationship between investment size and financial professionals’ level of decision-making effort, as measured separately by relative time and the relative extent of consultation.

More research can be done to enhance understanding of these issues. For example, it could involve other key ERM corporate players as participants, such as board members, senior management, and auditors. Gaining insights into the perspectives and judgments of these other ERM participants will further expand our understanding of ERM and management’s decision making as well as the motivations on which those decisions are based. ■

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ENDNOTES

- 1 The Committee of Sponsoring Organizations of the Treadway Commission (COSO), *Enterprise Risk Management—Integrated Framework*, New York, N.Y., September 2004. After this study was conducted, COSO issued updated ERM guidance in 2017, *Enterprise Risk Management—Integrating with Strategy and Performance*.
- 2 Standard and Poor's, *Criteria: Governance, Accountability, Management Metrics & Analysis (GAMMA)*, 2008, www.standardandpoors.com.
- 3 Securities & Exchange Commission, *Proxy Disclosure Enhancement Release 33-9089*, 2010, www.sec.gov/rules/final/2009/33-9089.pdf.
- 4 NYSE Listed Company Manual, *Corporate Governance Standards* §303A.00, 2013, <http://nysemanual.nyse.com/lcm/>.
- 5 COSO, *Enterprise Risk Management—Integrated Framework*, September 2004.
- 6 *Dodd-Frank Wall Street Reform and Consumer Protection Act*, Public Law No. 111-203, 2010, Government Printing Office, Washington, D.C.
- 7 See, for example, Mark S. Beasley, Richard Clune, and Dana R. Hermanson, "Enterprise Risk Management: An Empirical Analysis of Factors Associated with the Extent of Implementation," *Journal of Accounting and Public Policy*, 2005, pp. 521-531; Therese R. Viscelli, Dana R. Hermanson, and Mark S. Beasley, "The Integration of ERM and Strategy: Implications for Corporate Governance," *Accounting Horizons*, June 2017, pp. 69-82; André P. Liebenberg and Robert E. Hoyt, "The Determinants of Enterprise Risk Management: Evidence from the Appointment of Chief Risk Officers," *Risk Management and Insurance Review*, June 2003, pp. 37-52; Donald Pagach and Richard Warr, "The Characteristics of Firms that Hire Chief Risk Officers," *Journal of Risk and Insurance*, August 2010, pp. 185-211; Jeffrey Cohen, Ganesh Krishnamoorthy, and Arnold Wright, "Enterprise Risk Management and the Financial Reporting Process: The Experiences of Audit Committee Members, CFOs and External Auditors," *Contemporary Accounting Research*, February 2017, pp. 1178-1209; Robert E. Hoyt and Andre P. Liebenberg, "The Value of Enterprise Risk Management," *Journal of Risk and Insurance*, April 2011, pp. 795-822; Michael K. McShane, Anil Nair, and Elzotbek Rustambekov, "Does Enterprise Risk Management Increase Firm Value?" *Journal of Accounting, Auditing & Finance*, August 2011, pp. 641-658; Ryan Baxter, Jean C. Bedard, Rani Hoitash, and Ari Yezegel, "Enterprise Risk Management Program Quality: Determinants, Value Relevance, and the Financial Crisis," *Contemporary Accounting Research*, August 2013, pp. 1264-1295; and Therese R. Viscelli, Mark S. Beasley, and Dana R. Hermanson, "Research Insights about Risk Governance: Implications from a Review of ERM Research," *SAGE Open*, December 2016, pp. 1-17.
- 8 Todd DeZoort, Paul Harrison, and Mark Taylor, "Accountability and Auditors' Materiality Judgments: The Effects of Differential Pressure Strength on Conservatism, Variability, and Effort," *Accounting, Organizations and Society*, July 2006, pp. 373-390.
- 9 On average, the participants rated the realism of the case at 67.65 on a scale from 0 = very unrealistic to 100 = very realistic. The understandability of the case was rated on average as 76.07 on a scale from 0 = very difficult to understand to 100 = very understandable.
- 10 We found no evidence that RMP type affects participants' perceived accountability to the board of directors.
- 11 Nigel Nicholson, Emma Soane, Mark Fenton-O'Creevy, and Paul Willman, "Personality and domain-specific risk taking," *Journal of Risk Research*, 2005, pp. 157-176.
- 12 We also added the classification variables (e.g., gender, years of professional experience, etc.) and general risk-taking propensity, one category at a time, to a multivariate analysis of variance (MANOVA) model, including our four dependent variables and independent variables for RMP Type, Investment Size, and RMP Type x Investment Size. None of the control variables was significant at the 10% level; therefore, we did not include them in the ANOVA models.
- 13 If we include all four dependent variables in a MANOVA model, then the overall model is significant at the 0.05 level, and the only significant independent variable is Investment Size.