The age-old argument as to which type of risk assessment report—qualitative or quantitative—carries greater credibility now has a basis in empirical academic research. As it happens, and contrary to conventional wisdom, greater quantification is not always the better path.
Risk Reports and Perceptions

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Which Types of Risk Management Reports Communicate Reliability?

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EXECUTIVE SUMMARY

This study focuses on the communication of risk information between management and the Board of Directors. The objective is to examine the impact of using quantification within risk management reports. Specifically, it examines the impacts of the format—qualitative versus quantitative—of risk information provided to board members on their judgments. In practice, we find that many organizations quantify some risk information in reports from management to the board of directors in an attempt to better communicate magnitude or likelihood of risk. However, there is limited research to understand the impact of information reporting choices in a risk management setting.

The study results uncover indirect associations between information format and management judgment and confidence. Specifically, we find an association between the use of qualitative information formats and perceived reliability and relevance of the data for strategic risks, and also find that qualitative information formats are associated with management judgment, judgment confidence and perceived competence of the report preparer. We believe that this research indicates a need for report preparers to consider the types of risks and underlying data when developing risk reports, and that different formats may be appropriate based on risk types.

BACKGROUND AND RESEARCH QUESTIONS

RISK MANAGEMENT EXPECTATIONS

Expectations for risk management programs within organizations have continued to increase and evolve since the financial crisis that began in 2008. Primarily these expectations have focused on the involvement of senior management and the Board of Directors in identifying, understanding and managing critical threats to the organization. Along with these increased expectations have been white papers and research focused on developing risk management frameworks to support the developing risk management processes. These frameworks provide general ideas and principles that relate to risk management activities; however, they are limited in terms of direct activities and actions for implementation of the risk management process, including how best to communicate complex risk information to executives and Board members.

One recent study by Ballou, Heitger and Stoel (2011) focused on the communication of risk to the Board of Directors. The results of this study identified that there is little consistency in determining the method to communicate risk information. Specifically, the level of integration of information across business activities, the level of detail of risk information, the types of information and the format of information all showed great variation across respondents. One of the most interesting findings from the prior research survey was a negative association between the use of quantified information and Board members self-declaration of awareness of key organizational risks.
Many risk management methods suggest the need to quantify risk information to create comparable information across risks and allow for comparisons to risk appetites. However, if quantification causes managers to question the underlying information and creates potential uncertainty for Board members, then quantification may not necessarily aid the risk management process. Therefore, our study focuses on understanding how the choice of form (qualitative, range or point) of risk information may impact users’ perceptions of the information and their decisions.

PRIOR RESEARCH

Prior research into information form has shown that the format of information impacts how users perceive information, their resulting judgments, and their confidence in those judgments (Hirst, Koonce and Miller, 1999; Anderson, Kadous and Koonce, 2004; Kelton, Pennington and Tuttle, 2010). Rationale for these findings has been based on the level of precision of the information, sufficiency or quantity of information, and cognitive processing of the information.

Hirst et al. (1999) examine the impact of forecast form on investor’s judgment by manipulating the use of point or range information within financial forecasts. The use of range information may impact the perceptions of the information as range information may signal an uncertainty about market conditions or an inability of the organization to gather the information needed to make a specific determination. By contrast, the use of point information may portray a stronger management process with a more certain understanding of likely outcomes and how they will impact the specific decision. Similarly, work by Anderson et al. (2004) considers that quantification provides additional information over qualitative information. The work argues that qualitative formats provide information about the direction of potential change; whereas, quantitative formats provide information about direction and potential magnitude. Contrary to the results from the Ballou et al. (2011) study that found a negative correlation between quantified information and risk awareness, these articles argue that quantitative data should generally improve the decision process.

An additional line of literature considers the theory of cognitive fit and that the presentation format of the information must be aligned with the specific tasks and expectations (Kelton et al., 2010). Alignment or misalignment between the information format and task or expectation may cause differences in the ease in which users process information. As a result, user decisions are not necessarily impacted by the format of information per se, but rather by how well the information is processed, which results in differences in decision making judgments. Outside the context of risk management, Kadous, Koonce and Towry (2005) consider the effect of quantification of information on judgment and persuasion. The authors argue that the use of quantified information may be a form of persuasion that results in additional scrutiny and analysis by the report recipient. Their research produced mixed results as it did not find a direct link between quantification and perceived outcome. However, the research identifies indirect links—quantification of information may impact other perceptions, specifically the perceived competence of the preparer and the level of critical analysis performed by the decision maker. These findings are consistent with the concept that quantification may cause the report recipient to believe they are being persuaded, and as a result the recipient focuses more closely on the analysis.

The Kadous et al. (2005) research also considers the type of inputs—objective or subjective—that are available to the report preparers. When the inputs are subjective, participants are more likely to perform analysis, suggesting a negative impact on participants’ belief about the potential outcome. These results seem consistent with the findings from the risk management survey in Ballou et al. (2011), as the inputs for evaluating risk likelihood and impact may generally be subjective and lead to additional analysis by board members. Accordingly, they might then find that quantification does not improve the information quality within the report (and perhaps believe that it hurts the quality based on anchoring them on inaccurate risk exposure levels).
For this study we extend the model from Kadous et al. (2005) while considering the risk management context and the potential impact of quantification of risk management information. We specifically consider the impact of quantification on management decisions; however, we also consider that quantification may impact other perceptions, including those of the preparer and of the reliability and relevance of the data, which may then impact the management decisions. The research model is shown in Figure 1.

IMPACT OF RISK TYPES

Risk management programs are expected to identify potential threats to achieving organizational objectives. These threats may take various forms including new market entrants or other changes in competition, legal compliance with new or existing statutes, or more narrowly focused issues such as liquidity or staff retention and succession. Common general categories of threats include strategic, operational, reporting and legal/compliance. Reporting and legal/compliance categories may be viewed as more internally controllable and management may have more reasonable assurance of achieving those objectives. On the contrary, strategic and operational objectives may involve external threats not under internal control and risk management may be used to ensure timely communication to senior management and the Board about movement towards achieving the objectives. Since we are concerned about senior management and Board reporting, we focus on risks associated with strategic and operational objectives. These two categories may include opportunities and threats with some similarities but distinct differences in scope, responsibility, duration or potential action. However, as the underlying language and detail of the risk reports may be significantly different between the two types of risks, we propose to consider the results of the research model separately based on risk type.

![Figure 1: Research Model](image-url)
RESEARCH METHOD

The objective of this study is to examine the impact of using quantification within risk management reports. Therefore, we created experimental settings where study participants were asked to review a risk management report and provide information regarding their beliefs about the information and the organization’s ability to manage the risks. The experimental settings included two primary reports with one focused on strategic risks and the other on operational risks. We manipulated the information form within the reports between qualitative reports, range-based report, and point-based reports to understand the impact of the change in reporting form.

RESEARCH MATERIAL DEVELOPMENT

This study focuses on risk management reports as a context for examining the use of quantified information. To develop research materials, we partnered with the Risk and Insurance Management Society (RIMS), which is the pre-eminent organization dedicated to advancing the practice of risk management. Members of RIMS aided in development and review of the two sample risk management reports: a strategic risk report and an operational risk report (Figures 2 and 3). The intent of this process was to develop reports that were representative of actual risk reports and understandable by business managers regardless of membership within a specific organization or industry.

For each of the two sample reports, three versions were generated by changing the format of the impact severity and occurrence likelihood information (Figure 4). Specifically, one version was generated that used qualitative information (high and moderate), a second version used range information (50%-60% to represent high and 30%-40% to represent medium), and a third version used point estimates (55% and 35%).

Multiple versions were generated by changing the format of the impact severity and occurrence likelihood information in each sample.

1 The Director of Strategic and Enterprise Risk Practice for RIMS, Carol Fox, worked with the author team on designing the instrument and identifying research participants.
A set of 18 RIMS members participated in an initial pilot and review of the experimental materials, which were placed online. RIMS members were then randomly assigned to a specific condition. These participants were first presented with the specific risk report and then requested to provide feedback on the report. Specifically, these participants were asked to comment on the realism and the understandability of the report and answer questions about the specific manipulation. This initial pilot found that participants were able to understand the report and some specific suggestions were implemented. Additionally, the participants were able to correctly identify the specific manipulations within the experimental condition that they reviewed.

RESEARCH SAMPLE

Risk reports are generally for the purpose of documenting risks and corresponding actions to the board and senior management. For this study, we utilized members of RIMS as proxies for board members and senior management as we believed that these members are generally experienced, well educated and highly informed about risk management. A single website was used to welcome participants who were then randomly assigned to a specific condition. A total of 119 participants completed the study, with each participant reviewing one strategic risk report and one operational risk report. The participants were from a wide variety of industries with financial industry being the most represented (23%) followed by manufacturing (20%). The participants appeared to be good proxies for senior management as they were very experienced and educated. The participants reported an average of 24 years of experience and almost half (48%) indicate that they had obtained an advanced degree. We also believe that the participants were representative of senior management based on a review of their job titles which included: AVP strategic planning, chief risk officer, global head of enterprise risk and internal audit, director of corporate planning and senior risk officer, CFO and controller.

VARIABLE MEASUREMENT

The manipulation of the type of risk report that a participant received was managed randomly based on participants’ arrival to an initial website. Based on the specific risk report and format, three variables were developed—qualitative, range and point—each variable was coded as one or zero based on the type of information provided in the risk report. The experimental materials provided participants with the risk reports and then asked participants to provide their assessment of the reliability and relevance of the information. These measures were captured on 11-point Likert scales. Participants were also asked to provide their assessment of the report and the information they received. This information was collected in free-form text and was used to develop an analysis variable based on the amount of feedback provided.

This study focuses on three relevant outcomes from the risk report: 1) belief in management’s ability to achieve favorable outcomes, 2) confidence in that belief, and 3) perceived competence of management and the report preparer. As such, we measured all three of the potential outcome variables based on participant’s perceptions developed from reviewing the risk reports.
RESULTS
As our research question is focused on the impact of information format within risk reports, our analysis focused on the qualitative, range and point variables. We considered direct correlations with other variables in the model, regression analysis with our variables of interest as independent variables and a range of different dependent variables, and an overall path model based on our research model in Figure 1.

The results of our analyses were very consistent. In considering the relationship between the information format (qualitative, range and point variables) and overall judgment or confidence, we found a weakly significant negative relationship between the use of range formats and decision confidence in the operational risk condition. We did not find other statistically significant direct association between the information formats and overall judgment or confidence.

However, the results do support an indirect association with judgment and confidence in the strategic risk setting. We found a statistically significant positive (negative) relationship between the use of qualitative (quantitative – point and range) format and the perceived relevance and reliability of the data. The perceived relevance and reliability of the data was positively related to the management judgment and judgment confidence, as well as the perceived competence of the report preparer. Therefore, in the strategic risk setting, the use of qualitative (quantitative) data is positively (negatively) related to the perceived reliability and relevance of the data, which is related to the management judgment, decision judgment and perceived competence. However, we did not find support for these indirect associations for the operational risk report setting.

CONCLUSION
The results of this study indicate that information format within risk reports may not have a direct association with judgments; however, we do find indirect associations between information form and judgment and perceptions. These results seem to indicate the need for report preparers to consider the types of reports and potential beliefs of the Board of Directors about the underlying information when developing risk presentation.

Specifically, the results suggest that report preparers may wish to develop different report formats based on risk types and perceptions of underlying data. For risks that are well understood and impact risk areas such as operations where data and models for calculating likelihood and impact are well defined, specific point estimates may be appropriate. When considering strategic risks that do not have a specific calculation model and underlying data is more subjective, the use of qualitative report formats may assist in communicating the potential issues to the Board.
ABOUT MIAMI UNIVERSITY

Nationally recognized as one of the most outstanding undergraduate institutions, Miami University is a public university located in Oxford, Ohio. With a student body of 16,000, Miami effectively combines a wide range of strong academic programs with the personal attention ordinarily found only at much smaller institutions.

ABOUT MIAMI UNIVERSITY’S CENTER FOR BUSINESS EXCELLENCE

Established nearly a decade ago as part of the Farmer School of Business, Miami University’s Center for Business Excellence (CBE) focuses on organizational integrity, leadership, and transparency as reputational drivers when managing key stakeholder relationships. Accordingly, the CBE helps improve decision making across the continuum from executives to students, creating generations of leaders focused on long-term organizational value. Funded through gifts from interested business partners and alumni, the CBE offers multi-disciplinary programs for students coupled with practical experience with business leaders, along with its research pursuits in the areas of governance, risk management and reporting. For more information about the Miami University CBE, visit www.fsb.miamioh.edu/cbe.

ABOUT RIMS

RIMS, the Risk Management Society™, is a global not-for-profit organization representing more than 3,500 industrial, service, nonprofit, charitable and government entities throughout the world. Founded in 1950, RIMS brings networking, professional development and education opportunities to its membership of more than 11,000 risk management professionals located in over 60 countries. For more information on RIMS, visit www.RIMS.org.

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