Risk Management Terms

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Risk Management Terms

Abstract

As risk management is being transformed from a piecemeal process into a coordinated effort within organizations, progress is being impeded by differing terminology, methodology, and measures. In an effort to improve communication within and across organizations and industries, we conducted a survey of risk professionals regarding their understanding of important risk terms. We supplemented survey results with analysis of firm-level information on significant risks as reported in 10-K financial statements. Our results confirm the existence of significance differences in terminology. The dominating pattern we observe is a dichotomy between internal and external perceptions. We further observe a difference between terms used by actuarial professionals and traditional risk managers.

1. Introduction

Risk management is undergoing a transformation. Rather than being conducted piecemeal in a variety of departments within an organization, greater emphasis is being placed on coordination and cooperation among departments to manage the organization's full range of risks as a whole. This process of coordinated risk management generally is referred to as enterprise risk management (ERM). While ERM can offer significant benefits, the effort can be impeded by differing terminology, methodology, and measures across affected departments. In an effort to improve communication within and across organizations and industries, we conducted a survey of risk professionals regarding their understanding of important risk terms. The results offer insight into relevant similarities and differences in risk perception by individuals. We supplemented our survey results with an analysis of firm-level information on significant risks as reported in 10-K financial statements.

In this paper, we detail our findings and recommend areas for future research. In the next section, we provide a brief background to the changing nature of risk management, including some of the internal and external pressures encouraging that change. Section three is a discussion of the data collection process used to answer questions about risk factor terminology and importance. We report and analyze our results in section four, and offer conclusions in section five.

2. Background on the Changing Nature of Risk Management

The position of "risk manager" within an organization was not known until the latter half of the 20th Century, and for most of the time since then the risk manager was an individual responsible for management of pure risks only, primarily through purchase of insurance. As derivative financial products became more prominently used in the 1990s, however, the concept of risk management increasingly became associated with financial, or speculative, risk management. These divergent tracks are relevant because the two fields evolved from distinct philosophical underpinnings with differing terminology, models, and measures.

Today we see the two fields of pure and speculative risk management merging through ERM. Impetus for the merger comes both from the internal opportunities for greater competitive advantage as well as external requirements by regulatory and rating agencies. In Appendix A, we provide brief discussions of some of the most notable regulatory and rating agency requirements for ERM. Two of the most important are Basel II, the banking regulatory requirement throughout the European Union, and Sarbanes-Oxley, the U.S. legislation which imposes strict reporting and control requirements. Many sources suggest that these two pieces of legislation have been the primary drivers of ERM. (See, for example, Ernst and Young, 2006, and AON Risk Services, 2007).

Our hypothesis was that terminology for risk management would differ within and across organizations, depending on the initial impetus for implementation. We mentioned variations between the insurance-purchasing and financial risk management areas. There are also accounting influences from the Committee of Sponsoring Organizations of the Treadway Commission (COSO), which first coined ERM, as well as engineering and health and safety, which have active involvement in managing risks.

3. Data Collection

In order to identify similarities and differences in use of risk terms across industries, we surveyed risk managers from the life/health and property/liability insurance industry as well as four non-insurance industries. We also surveyed members of the Casualty Actuarial Society (CAS) and the Society of Actuaries (SOA). Results from our survey were compared with definitions found in publicly available documents. These individual definitions obtained through our survey, and public definitions provided by industry outlets, were then supplemented with financial statement records detailing each firm's most important risk factors. In combination, we anticipate being able to report on the extent to which risk terminology has become common and to identify areas where additional effort may be worthwhile to discuss differences and reach consensus.

3.1 Risk Terminology Survey

3.1.1 Sample Selection

In addition to the insurance industries (both life/health and property/liability), we selected four non-insurance industries as the subjects of our survey. The four industries were selected as representative of significant diversity in underlying exposures and hazards, yet also areas known to be actively involved in ERM. They are pharmaceuticals, information technology (IT), energy, and hospitals. Our target group was the largest (by revenue) twenty companies in each industry.

Companies were identified for the non-insurance industries through Hoover's Online Data Source, which provides financial data on the vast majority of publicly-traded companies in the world. We limited our sample by selecting only firms with headquarters in the United States, given language difficulties that were likely to arise with a cross-border survey. Furthermore, with the exception of hospitals, we chose only firms whose primary business was designated as the industry selected and which were not subsidiaries. For hospitals, we included hospital subsidiaries because of the common practice of using holding companies in the health care industry. Excluding subsidiaries for hospitals would have excluded most of the large hospitals from our sample. The entire selection process employed through Hoover's is outlined in Appendix B.

Because Hoover's only offers data on publicly-traded firms, and mutual insurers are not among them, a different source was needed for our sample of insurers. We referred to the 2005 *Best's Aggregates and Averages* and selected the top twenty insurers (including Canadian insurers) according to net premium written. Some companies have large enough premiums in both life/health and property/liability lines to be listed twice. We supplemented the lists with additional companies to include twenty for each in total. Our full list of survey target companies in each industry is provided in Appendix C. Specific respondents were identified through the national risk management and insurance society (RIMS) member base, accessible to us because of our own membership. In a few instances, we were unable to identify specific individuals at our target firms, leading to samples slightly less than 20 for each industry.

3.1.2 Survey Instrument and Distribution

Working with our project oversight group (POG), we developed a survey requesting information on 11 risk terms. For each term, we requested (i) a word-based definition, and (ii) a method of measurement used by the organization. We also encouraged respondents to answer questions based on their personal understanding of the terms rather than to identify an organization-wide definition. Respondents could also supply definitions for only a subset of risk terms. We were interested in their individual understanding and also hopeful this approach would lead to greater numbers of responses.

The survey was pre-tested with several risk managers, revised accordingly, and distributed. A copy of the final survey is provided in Appendix D. The survey was distributed via e-mail to 111 initial target respondents, 20 each from IT and property/liability insurance; 19 from hospitals, 18 energy firms, and 17 each from pharmaceutical firms and life/health insurers. The e-mail included a link to the online survey. We also indicated that we would follow up by telephone either to answer questions or to allow respondents to complete the survey by phone.

Useable responses from this process were provided by 30 individuals: 5 in the pharmaceutical industry, 12 from hospitals, 7 from IT companies, 2 from energy, 2 from life/health insurers, and 2 from property/liability insurers. Somewhat disappointed with the low response from the insurance industry, we undertook two additional efforts. One was to contact individuals recommended by our POG members. Three additional property/liability insurer responses were generated from this effort. The second was a blast e-mail to all 2,795 members of the joint CAS/SOA risk management section members, from which 65 usable responses were obtained. In total, we received 98 useable responses, although only about thirty to forty percent of these responded to any given question. Furthermore, we received so little information regarding risk measurement that we are not reporting those results. In summary, we had 65 responses from CAS/SOA, 7 from RIMS members in the insurance industry, and 26 from non-insurance RIMS members.

3.2 Standard Risk Definitions

One intention of this study is to compare individual risk definitions with standard definitions provided by professional organizations which cross industries, such as the Committee of Sponsoring Organizations (COSO), or more specifically tied to particular industries such as the Committee of Chief Risk Officers (CCRO), which is an energy-related organization. To identify such standard definitions, we undertook an internet search of the 11 terms included in our risk terminology survey. We searched on the terms themselves as well as of the industries, trade groups, and governmental and regulatory bodies associated with each industry.

Two general observations can be made from the effort to identify standard definitions. One is that no single source provided a definition for each term in our survey. The second is that a few terms were not defined in any of our general sources. Instead, we relied on definitions from consultants or other sources not necessarily representing a standard. These two general observations support our initial hypothesis that variations in terminology likely exist across and within industries.

Our standard definition references are the following:[1]

- SOA (2006): Enterprise Risk Management Specialty Guide May 2006, SOA
- CCRO (2002): Committee of Chief Risk Officers; Volume 6 of 6 Glossary, Nov 2002
- Basel (2006): International Convergence of Capital Measurement and Capital Standards: A Revised Framework, June 2006
- COSO: Enterprise Risk Management Framework; Executive Summary, COSO
- ISO (2002): Guide 73: Risk management - Vocabulary - Guidelines for use in standards, ISO/IEC, 2002
- EPA (1991): Environmental Risk: Your Guide to Analyzing And Reducing Risk, 1991, U.S. Environmental Protection Agencies
- EPA Glossary: U.S. Environmental Protection Agencies; Terms of Environment: Glossary, Abbreviations and Acronyms, available at http://epa.gov/glossary/
- FFIEC: Federal Financial Institutions Examination Council's (FFIEC), available at http://www.ffiec.gov/

3.3 10-K Risk Factors

To add a more official sense of each organization's risk concerns and characteristics, we reviewed risk information provided on each publicly-traded firm's form 10-K. Form 10-K is the annual

[1] After completing our work we learned of another excellent source from the Comite' Europeen des Assurances (CEA) and Group Consultatif Actuariel Europeen, titled *CEA – Group Consultatif Solvency II Glossary.*

report required by the SEC each year. Under a new securities requirement as of June 29, 2005, firms are required to disclose risk factors in their annual reports on Form 10-K and any material changes from risk factors as previously reported.

We collected the 2006 Form 10-K for the top 10 companies for the four non-insurance industries in our survey. All the 10-K forms can be found electronically online. The amendments requiring risk factor disclosure in the Exchange Act reports are effective December 1, 2005. More specifically, the required risk factor disclosure applies to annual reports on Form 10-K for fiscal periods ending on or after December 1, 2005. Thus, a company with an October 31, 2005 fiscal year end is not required to include risk factor disclosure in its Form 10-K until its Form 10-K for the fiscal year ended October 31, 2006. For this reason, we looked through the 10-K form as of 2006 for each company in the four major industries.

To extract the major risk factors faced by each company and industry, we focused on the Item 1A entitled "Risk Factors" of Part I of amended Form 10-K, which requires a company to set forth, where appropriate, the risk factors described in Item 503(c) of Regulation S-K applicable to the company and to provide any discussion of such risk factors in plain English in accordance with Rule 421(d) of the Securities Act. Under Item 503(c) of Regulation S-K, a company, where appropriate, must provide a discussion describing the most significant factors that may adversely affect the issuer's business, operations, industry, financial position or its future financial performance.

The risk factors identified from the Form 10-K were then compared with the risk factors considered by our survey respondents. We discuss differences and similarities in section four of this paper.

4 Analysis

Two analyses are reported here. One involves a summary and discussion of responses to the risk management terminology survey. The other is a review of risk factors highlighted in 10-K reports. For both analyses, we focused on the organizations listed in Appendix C.

4.1 Risk Management Terminology Survey

As discussed in section 3 of this paper, we surveyed individuals from a variety of industries about their understanding of designated risk terms. Specifically, for each term considered, we present general definitions found in the literature as a base of comparison, discussion of these general definitions, and evaluation of the extent to which survey respondents provided answers similar to and different from the generally available definitions. We analyzed survey responses both across industries and across profession. This analysis was intended to represent a respondent's position within the organization.

Originally we had intended to use a broad set of categories such as CRO, risk managers, insurance specialist, actuary, portfolio manager. After reviewing the data, however, we recognized that two primary job titles dominated: risk manager and actuary. Further, we observed that these job titles aligned with our two samples: the original RIMS sample and the follow-up CAS/SOA risk management section sample. We therefore decided to use these two categories for the "by profession" analysis. Table 1 shows a summary of the number of responses that we received for each of the 11 risks. The table is divided to show the comparison between insurance and non-insurance totals, as well as RIMS vs. CAS/SOA totals.

Table 1: Summary of Responses by Risk

Risk Term	Non-Insurance	Insurance	RIMS	CAS/SOA
Credit	10	31	12	29
Environmental	16	11	16	11
Financial	12	20	13	19
Hazard	16	9	19	6
Market	11	27	14	24
Operational	11	29	16	24
Pricing	8	26	11	23
Product	9	13	9	13
Reputational	13	21	17	17
Strategic	11	14	13	12
Risk Appetite	8	6	8	6

Note the general agreement between the two summaries by risk term.

4.1.1 Credit Risk

4.1.1.1 Definitions in References

SOA (2006): The economic loss suffered due to the default of a borrower or counterparty.

Basel (2006): The risk that the counterparty to a transaction could default before the final settlement of the transaction's cash flows.

CCRO (2002): Potential adverse occurrence of a counterparty's ability to pay its obligations.

These three standard definitions all focus on risk or loss caused by a counterparty's default, and were consistent with one another. Interestingly, Basel changed the title of its term from "credit risk," used in the 1988 Capital Accord from the Basel Committee on Banking Supervision (*International Convergence of Capital Measurement and Capital Standards,* July 1988) to "counterparty credit risk" in

the Basel 2006 publication. Both the newer and older versions had the same definition, and we do not know why Basel added the extra defining term.

4.1.1.2 Definitions from Survey Respondents

Forty-one responses were received for "credit risk." Table 2 shows a summary of the representative responses, while Table 3 shows the tabular summary. The dominant variation we observed across definitions was whether the risk generates from internal or external conditions. Two respondents suggested that the risk involved their own organization's inability to perform its obligations. For instance, one hospital risk manager defined credit risk as follows: *"Risks due to uncertainty in our ability to meet our financial obligations."* In contrast, 20 out of 29 of CAS/SOA respondents looked externally at the ability of their counterparties to perform as promised. Reinsurer performance was a common reference.

Six respondents specifically mentioned their bond portfolio and included the possibility of rating downgrade rather than full blown default. These responses appeared to generate from individuals with responsibility for portfolio performance. While the general concept was the same as the reference definitions, inclusion of rating downgrades allowed for loss caused by less extreme events.

Furthermore, some respondents mentioned the relevance of peculiar firm characteristics to the risk exposure, such as the extent to which the firm entered into long-term contracts and the importance of access to capital. Hospitals appeared to be concerned with the cost of obtaining funds if they experienced a rating downgrade or default, with two of the three responses mentioning this issue.

Table 2: Credit Risk Representative Responses

Source of risk	Cause of Loss	Representative response
Counterparty/3rd party	Default/insolvency	The risk of an asset, couterparty, or business partner defaulting on their promises to pay/deliver a service.
	Downgrade	Risk of credit downgrade by borrowers (investments)
Own organization	Default/insolvency	Risks due to uncertainty in our ability to meet our financial obligations.
	Downgrade	Rating agency downgrade which would cause borrowing

Table 3: Credit Risk Comparison Across Industries

Source of Risk - Cause of Loss	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Counterparty - default/insolvency	1	1	1	2	5	21
(2) Counterparty - credit downgrade	0	0	0	0	0	1
Both (1) and (2)	0	0	0	0	0	5
Own organization - default/insolvency	0	1	0	1	2	0
Own organization - credit downgrade	1	1	0	0	2	1
Other	0	0	0	1	1	3
Answered response total	2	3	1	4	10	31

4.1.1.3 Consistency with Standard Definition

As mentioned above, one of the most noticeable patterns was to define credit risk internally rather than from counterparties. As shown in Table 3, four of the ten non-insurance respondents exclusively took an internal view, while just one of the thirty-one insurance respondents took such a view. We note as well that some of the survey respondents referred to ratings downgrades rather than out-and-out default. These were more commonly provided by respondents who had a portfolio responsibility and were considering investment assets rather than other contractual promises.

4.1.1.4 Patterns Across Industries

Some differences across industries can be observed in Table 3. While responses from insurance companies and the IT industry generally referred to risk associated with a counterparty's default or insolvency, two of three responses from hospitals looked internally, and one of the two pharmaceutical responses also looked internally. As mentioned above, two hospitals also mentioned the importance of funding needs for capital investments.

4.1.1.5 Patterns Across Professions

Of the five responses with an internal focus, Table 4 shows that four are from the RIMS survey group and one is from the CAS/SOA group. Perhaps more important was that only 12 of the 33 risk managers actually responded to this question. We take this as evidence that ERM is not yet being implemented widely.

Table 4: Credit Risk Comparison Across Professions

Source of Risk - Cause of Loss	RIMS	CAS/SOA
(1) Counterparty - default/insolvency	6	20
(2) Counterparty - credit downgrade	0	1
Both (1) and (2)	1	4
Own organization - default/insolvency	2	0
Own organization - credit downgrade	2	1
Other	1	3
Answered response total	12	29

4.1.2 Environmental Risk

4.1.2.1 Definitions in References

EPA (1991): Environmental risk is the risk associated with the likelihood or probability that a given chemical exposure or series of exposures may damage human health. Environmental risk takes two factors into account: the amount of a chemical present and its relation to the amount the exposed person can tolerate. Each person reacts to risk situations differently, both physically and mentally.

EPA Glossary: The potential for adverse effects on living organisms associated with pollution of the environment by effluents, emissions, wastes, or accidental chemical releases; energy use; or the depletion of natural resources.

Peterson/Carreau: Risks that arise from the manner in which business is conducted (e.g., geographic, industrial, political, societal, etc.) which, while unrelated to the quality of the products or services, can negatively impact market and customer brand or franchise acceptance.

A search of numerous sources did not reveal any widely used standard definitions of environmental risk. The 1991 EPA (1991) definition focused on human health while the EPA Glossary expanded to incorporate effects on all living organisms, including effects on natural resources. These definitions strongly reflected the EPA's perspective, where its mission was to protect human health and the environment, and may not be suitable for some industries that were less likely to have similar exposures. We noted that the environment was defined more broadly so as to include any natural/social/economic environment in which an organization operated. Peterson and Carreau were

consultants for financial institutions and therefore had a different approach from the EPA. We included their definition because of this distinction. The Peterson/Carreau definition referred to "environmental" as related to the business environment. This approach was similar to what was offered by some of our respondents whose organizations were not exposed to pollution-type losses.

4.1.2.2 Definitions from Survey Respondents

Twenty-seven definitions of "environmental risk" were provided by our respondents. Table 5 provides a summary of the characterization of definitions observed in the responses. For the most part, our survey respondents took one of two approaches to defining environmental risk. One involved effects of their organization's actions on the natural environment, similar to the EPA definitions. The other references the effect of the external environment, including changes in the natural environment as well as social, economic, and competitive environments, on the organization. The survey respondents again had an external/internal view of the risk similar to credit risk.

The first listed characterization represents the risk perception looking at internal risk factors affecting the environment such as the natural environment. The second perspective considers external environmental factors, such as natural catastrophes, causing internal negative consequences, including interruptions to the business operation/plan. There is an overlap of risk categories between environmental risk and hazard risk (summarized later), where a natural disaster could be considered a hazard risk or an environmental risk.

Table 5: Environmental Risk Representative Responses

Source of risk	Cause of Loss	Representative response
External Environment	* Regulatory Change * Pandemics, etc. * Competition	Any risk present outside the firm that could affect the firm's results.
Internal actions	Operations damage the environment	The risk of being responsible for the environmental clean up of a plant or neighboring area.

4.1.2.3 Consistency with Standard Definition

The EPA definition focused on the effects of organizational actions on people and the environment, that is, internal actions with external effects. Table 6 shows a summary of the responses by industry. Six out of 16 of the non-insurance respondents offered an exclusive internal view versus none from insurance. Nine insurers and 8 of the non-insurance respondents had an alternative view involving exclusively an external factor resulting in internal organizational effects.

Table 6: Environmental Risk Patterns Across Industries

Source of Risk	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) External environment	1	4	1	2	8	9
(2) Internal Actions	3	3	0	0	6	0
Both (1) and (2)	0	1	0	1	2	0
Other	0	0	0	0	0	2
Answered response total	4	8	1	3	16	11

4.1.2.4 Patterns Across Industries

A clear industry difference appeared to emerge in the environmental risk category. Here nine of eleven of insurers took a view similar to Peterson/Carreau, while ten of sixteen of the other industries had the EPA view (or one consistent with either definition). One of the possible explanations was that the non-insurance industries were likely to involve manufacturing and hazardous materials that could harm human health and the environment in their ordinary operation. Insurers, however, generally would not be expected to affect the environment through its actions; an environmental risk to an insurer would likely result from external events that affect either responsibilities under their insurance policies or the performance of their financial assets.

4.1.2.5 Patterns Across Professions

It was interesting that none of the CAS/SOA respondents had a perspective of internal actions affecting the external environment, while ten of sixteen of RIMS respondents had this view, or one consistent with both an internal and external perspective. In addition to the possible explanation associated with variations across industries, professional domain also could play a part in these outcomes. If we assumed (our survey did not ask this question; hence, we need to make an assumption) that RIMS members were likely to handle risk factors associated with liability exposures, and that actuaries were responsible for predominantly financial concerns, the inconsistency between professionals was understandable. Among the unanswered responses, two risk managers in the pharmaceutical industry indicated that this risk was handled in the environment, health and safety division. Reviews of financial statements and other sources confirmed the extensive use of such independent divisions or departments in pharmaceutical and energy companies, often in order to satisfy their regulatory standards.

Table 7: Environmental Risk Patterns Across Professions

Source of Risk	RIMS	CAS/SOA
(1) External environment	8	9
(2) Internal Actions	6	0
Both (1) and (2)	2	0
Other	0	2
Answered response total	16	11

4.1.3 Financial Risk

4.1.3.1 Definitions in References

SOA (2006): Risk from price, liquidity, credit, inflation and basis risk.

CCRO (2002): Exposure to a relevant financial uncertainty.

Comparing these two definitions, the SOA definition was narrowly defined by specifying five sources of risk, one of which was credit risk that had its own separate definition. The CCRO definition, in contrast, was quite broad by naming all "relevant financial uncertainty." While all the sources of risk listed by the SOA were incorporated into the CCRO definition, we were uncertain of the importance of any additional sources of risks.

4.1.3.2 Definitions from Survey Respondents

Thirty-two respondents offered definitions of "financial risk" with a summary of the definitions shown in Table 8. As was true for both credit and environmental risk, we observed a dichotomy between internal and external factors in survey respondent definitions of financial risk. Table 9 shows the quantitative summary by industry. Six respondents referred to fluctuations in financial markets, such as interest rate movements, as the cause of loss potential. Twenty-two responses, however, referred to internal factors such as "risk that cash flows are not effectively managed, leading to loss in revenue." In this way, the definitions offered by our respondents resembled the CCRO definition better than the SOA definition.

Eleven responses also focused on consequences rather than sources of volatility, which also fit the CCRO definition. Examples included "risk of not meeting financial forecast," and "reporting the wrong result." Interestingly, some of these responses were repeated, almost verbatim, even though they

were not included in the "officially published" definitions, such as "risk related to financial control," or "audit risk," or "failure to meet fiduciary responsibility."

Table 8: Financial Risk Representative Responses

Source of risk	Cause of Loss	Representative response
Financial markets	* Interest rate movements * Exchange rate fluctuations * Bond and stock market volatility	* Risks related to financial markets * Interest rate risk and currency risk in the broadest senses; asset liability mis-match
Own financial activities	Cash flow management	* The risk that cash flows are not effectively managed leading to a loss in shareholder value and the overall financial stability.
	Financial reporting & monitoring	* Risks relating to financial control, reporting, monitoring and measuring our financial performance.
	Financial decisions	* Are you getting appropriate value from contracts?

4.1.3.3 Consistency with Standard Definition

The SOA definition identified external risk factors affecting values of financial assets. Respondents to our survey, however, commonly referred to additional (internal) factors such as cash flow management and financial reporting/monitoring. These additional factors were incorporated into the CCRO definition, but not that provided by the SOA.

Table 9: Financial Risk Patterns Across Industries

Source of Risk	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Financial markets	0	0	0	1	1	5
(2) Own financial activities	2	4	0	3	9	13
Both (1) and (2)	0	0	0	0	0	0
Other	1	1	0	1	2	2
Answered response total	3	5	0	5	12	20

4.1.3.4 Patterns Across Industries

We did not see consistent differences across industries. Twenty-two responses identified only internal financial activities as risk factors, and six responses specified only external financial uncertainty. No respondents explicitly mentioned internal and external risk factors in their definitions. Eleven responses also focused on consequences rather than causes of loss.

4.1.3.5 Patterns Across Professions

Although no pattern emerged across industries, categorizing professionals offered some observations with the results summarized in Table 10. Ten of 13 RIMS respondents looked internally, as compared to 12 of 19 CAS/SOA respondents. Historically, RIMS members focused on pure risks, which involved internal errors and similar concepts. With regard to perception of exposed assets, actuaries were likely to specify asset/liability as this risk exposure, while responses from other industries tended to look at the firm's overall financial activities.

Table 10: Financial Risk Patterns Across Professions

Source of Risk	RIMS	CAS/SOA
(1) Financial markets	1	5
(2) Own financial activities	10	12
Both (1) and (2)	0	0
Other	2	2
Answered response total	13	19

4.1.4 Hazard Risk

4.1.4.1 Definitions in References

SOA (2006): Risk from property damage, theft, business interruption, liability claims, etc.

"Hazard risk" was commonly used to refer to the same concept as "pure risk" in so-called traditional risk management. The most current edition of *Risk Management Finance*, the textbook used for the Associate in Risk Management (ARM) exam series, refers to "hazard risk" as "insurable risk." The demarcation between pure and speculative risk had been the dividing line between traditional risk management and financial management until the development of enterprise risk management attempted to erase any demarcation.

4.1.4.1 Definitions from Survey Respondents

Twenty-five respondents provided definitions of "hazard risk" with the summary of definitions shown in Table 11. Respondents offered a variety of causes of loss to incorporate within the concept of "hazard risk." We observed the internal/external perspective in two ways. One involved the actual cause of loss, where the organization's own activities (e.g., production, manufacturing, services, operations) resulted in harm, or some external factor such as a natural disaster, caused loss. Furthermore, the effect of

the event was either internal, such as damage to the organization's physical property, or external, including harm to customers and the natural environment.

Although these categories were observed in the responses provided, the majority of definitions were much broader, mentioning the importance of being "insurable" and encompassing more than one internal/external perspective. We suspected that the specific examples mentioned were intended simply to offer something concrete, and related to the issues of greatest concern to the respondent on the day she or he answered our questions.

Table 11: Hazard Risk Representative Responses

Source of risk	Cause of Loss	Effect	Representative response
Own operations	Product/manufacturing Service/operation	* worker's injury * customer's physical harm * property damage	* General chance to have physical harm exposure to employees or visitors. * Product liability, drivers out on the road. Looks at it from product standpoint
External conditions	Natural catastrophes, including earthquake, hurricane, windstorms, etc.	* underwriting loss * property damage	* Exposure of forces of nature, wind, hail, fire * Natural events. acts of god.

4.1.4.3 Consistency with Standard Definition

For those not in the CAS/SOA respondent category, the survey definitions appeared to follow that of the standard definition, mentioning a variety of insurable risks. Interestingly, the CAS/SOA respondents did not follow the standard definition. As shown in Table 13, with only six CAS/SOA respondents, those who responded mostly focused on catastrophic exposures due to natural catastrophes.

4.1.4.4 Patterns Across Industries

Table 12 summarizes the hazard risk by industry. Respondents from the IT and pharmaceutical industries identified liability as a major concern, perhaps representing a potential severity loss into their answers. Hospitals and energy tended to focus more on property damage exposures. Hospitals did not mention liability because they tended to incorporate that risk into the operational risk category, that is, an example of human error. We do not know why energy took this approach.

The CAS/SOA respondents generally took a different approach, focusing on large-scale conditions, such as "financial exposure under all in force (re)insurance contracts to a single insured event," and "The company uses the term catastrophe risk instead of hazard risk. Cat risk is the capital at risk due to catastrophic loss of wind and earthquake." We noted that of the terms included in this study, the smallest response from the SOA group was found in hazard risk.

Table 12: Hazard Risk Patterns Across Industries

Source of Risk	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Own operations	3	3	0	3	9	1
(2) External conditions	1	3	0	3	7	3
Both (1) and (2)	0	0	0	0	0	0
Other	0	0	0	0	0	5
Answered response total	4	6	0	6	16	9

4.1.4.5 Patterns Across Professions

Table 13 summarizes the hazard risk pattern across professions. The one pattern we detected was the lack of CAS/SOA responses (only 6 responses), perhaps indicating that this was not an area most of those individuals included in their professional responsibilities, similar to the RIMS respondents rarely providing a definition for credit risk. These differences suggested that ERM was not completed for our respondents' organizations. Table 13 also shows that 10 of 19 RIMS members looked internally, consistent with SOA definition, while only 1 of 9 insurance respondents looked internally.

Table 13: Hazard Risk Patterns Across Professions

Source of Risk	RIMS	CAS/SOA
(1) Own operations	10	0
(2) External conditions	8	2
Both (1) and (2)	0	0
Other	1	4
Answered response total	19	6

.1.5 Market Risk

4.1.5.1 Definitions in Key References

SOA (2006): The exposure to potential loss that would result from changes in market prices or rates.

CCRO (2002): Potential fluctuations in prices, volumes exchanged, and market rules that may affect a company's buying and selling activities. Usually, this is composed of: price risk, credit risk, performance risk, volumetric risk.

Basel (2006): The risk of losses in on and off-balance-sheet positions arising from movements in market prices.

All three definitions were similarly defined in that market price movement was identified as the primary cause of loss, although the CCRO definition includes other market-related risk factors: volumes exchanged and market rules. One of the most important differences between the SOA/Basel definitions and the CCRO definition was the implied market. The market identified by the CCRO definition appeared to focus on energy-related conditions, while the market identified by the SOA/Basel definitions appeared to focus on the financial markets where their assets are evaluated.

4.1.5.2 Definitions from Survey Respondents

Table 14 summarizes the representative definitions and we identified three types of characterization. The first type of definition identified market price/rate movement as the key risk factor, similar to the SOA and Basel definitions. "Market" in this context typically implied financial markets. Unexpected movement of stock prices may negatively affect a firm's asset values. The second type identified the competitive market as the risk factor. In this definition, loss of market share due to intense competition was considered market risk. The third type described the effect of/on the firm's marketing strategy/plan. For example, an inappropriate marketing strategy may cause the organization to fail to attain its performance objectives. This type of definition also could be considered a part of strategic risk.

Table 14: Market Risk Representative Responses

Source of risk	Cause of Loss	Representative response
Financial markets	Market price/rate movement	Risk of change in the market value of financial assets
Industry market	Competition	Risk of competitors coming in and taking market share.
Own strategic decisions	Effect of/on marketing strategy	* Risks which will potentially affect our growth strategy. * Part of strategic, market place risk, ability to internally monitor and understand the external environment so that the organization develops appropriate strategies and realistic goals

4.1.5.3 Consistency with Standard Definition

Thirty-eight responses were received from our survey participants. According to the result of the survey, the SOA/Basel definitions were consistent with responses from the insurance industry, and the CCRO definition more appropriately represented responses from other industries. However, risk factors such as the competitive market and marketing strategy were not identified in any of standard definitions.

4.1.5.4 Patterns Across Industries

Table 15 tabulates the responses by industry. Two respondents from the pharmaceutical industry indicated that they were exposed to intense market competition and that being competitive was critical to attaining the organization's growth strategy. Three hospitals mentioned marketing strategy, including new market entry and service line strategies. Twenty-two of the twenty-seven of insurance industry responses were consistent among one another, identifying market price/rate movement as the primary risk factor, although three responses described market competition.

Table 15: Market Risk Patterns Across Industries

Source of Risk	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
Financial markets	1	1	0	2	4	22
Industry market	2	0	0	0	2	3
Own strategic decisions	0	3	0	1	4	0
Other	0	0	0	1	1	2
Answered response total	3	4	0	4	11	27

4.1.5.5 Patterns Across Professions

Table 16 summarizes the market risk patterns across professions. Twenty-six of 38 responses focused on market price/rate movements. For the CAS/SOA respondents, 20 of 22 (excluding the other category) answered the question based on market price/rate movements, while 6 of the 13 (excluding the other category) RIMS answered based on market price/rate movements.

Table 16: Market Risk Patterns Across Professions

Source of Risk	RIMS	CAS/SOA
Financial markets	6	20
Industry market	3	2
Own strategic decisions	4	0
Other	1	2
Answered response total	14	24

4.1.6 Operational Risk

4.1.6.1 Definitions in Key References

SOA (2006): The risk of direct or indirect loss resulting from inadequate or failed internal processes, people, and systems or from external events.

CCRO (2002): The risk of direct or indirect loss resulting from inadequate or failed internal processes, people, and systems or from external events. (Operations risks are the risks associated with physical asset or delivery of energy commodities.)

Basel (2006): The risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.

Definitions provided by all three outside references are very similar, the only distinction was the inclusion of "direct or indirect" in the SOA and CCRO definitions. Given that Basel provided a list of included sources of risk, and stated specifically that all risks other than strategic risks were considered part of operational risk, we did not consider this omission to be significant.

4.1.6.2 Definitions from Survey Respondents

Operational risk first was introduced in the banking industry as the Basel Committee considered ways to incorporate risks beyond market and credit risks. Bankers and bank regulators were aware of the seriousness of operational risk from a number of high-profile financial calamities, including Nick Leeson's ruin of Barrings. The move to include operational risks was the first major step to an integrated risk management approach leading to ERM. The term "operational risk," however was widely debated and provided a catch-all for all risks other than credit and market risk. As a result, each individual firm was likely to define it uniquely, depending on its own non-systematic risks.

The actual definitions of operational risk provided by our respondents are varied, but four consistent patterns were observed. These were failure to provide expected service/product, failure in internal process, human error, and external event. All, but the first, were found in the standard definitions.

Table 17: Operational Risk Representative Responses

Source of risk	Cause of Loss	Representative response
Own operations	Failure to provide expected service/product	Inability to deliver on promises to customers; generally not in providing a promised product or service in the way the customer was led to believe it would be delivered.
	Failure of internal processes	Ineffieciencies in the organization processes that affect the business model, the ability to satisfy customers and stakeholders needs and the orgs quality, costs, and time
	Human error	* Bad decisions in the normal course of events * Professional liability risk

Table 18 shows a summary of the patterns across industries. Some respondents included more than one category and are shown on separate lines. Two hospitals, one IT company, and one pharmaceutical company identified professional liability claims as a consequence of operational risk. No other respondents mentioned liability risks specifically. Given the importance of medical malpractice to health care providers, and the potential for large loss from IT failures, their mention of professional liability seemed reasonable.

Table 18: Operational Risk Patterns Across Industries

Cause of Loss	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Failure to provide expected service/product	0	1	0	0	1	4
(2) Failure of internal processes	0	1	0	0	1	4
(3) Human error	0	1	0	1	2	3
Both (1) and (2)	1	0	0	1	2	1
Both (2) and (3)	1	0	0	0	1	10
All (1), (2), and (3)	0	1	0	0	1	2
Other	2	1	0	0	3	5
Answered response total	4	5	0	2	11	29

4.1.6.3 Consistency with Standard Definition

For this risk factor we received 40 responses. The failure to provide the expected service or product was not defined in standard definitions, yet it was a primary response from the pharmaceutical, hospital and IT industries as shown in Table 18. Operational risk included not only failure to offer service or product due to business interruption but also failure to meet customer's expectations. We note, however, that failure to meet expectations could be a consequence of other errors of people, processes, and systems. We were surprised that more respondents did not mention external events. Perhaps our inclusion of "hazard risk" in the list of terms caused respondents to place external risk in this category instead.

4.1.6.4 Patterns Across Industries

No patterns across industries in Table 18 emerged in the definitions of operational risk. Because operational risk was one of the three identified by the Basel Committee, and was mentioned often in ERM discussions, we had anticipated more consistent answers. We found some consistency in that respondents focused on errors and failures. The source of these errors and failures differed across organizations.

4.1.6.5 Patterns Across Professions

Table 19 summarizes the operational risk patterns across professions. Six of 16 RIMS respondents identified failure to provide expected service/product as compared to 5 of the 24 CAS/SOA respondents. Despite the fact that operational risks may be the most difficult to actually identify and manage on a day-to-day basis, it offered one of the more consistent definitions by our respondents.

Table 19: Operational Risk Patterns Across Professions

Cause of Loss	RIMS	CAS/SOA
(1) Failure to provide expected service/product	1	4
(2) Failure of internal processes	1	4
(3) Human error	2	3
Both (1) and (2)	2	1
Both (2) and (3)	3	8
All (1), (2), and (3)	3	0
Other	4	4
Answered response total	16	24

4.1.7 Pricing Risk

4.1.7.1 Definitions in Key References

No standard definition was provided in the sources that we referenced. An electronic search of "pricing risk," identified numerous references to "regulatory pricing risk," which was defined as "Risk that arises when insurance companies are subject to regulation of the premium rates that they can charge." It was interesting that none of our respondents provided this definition. An alternative definition provided in some finance outlets was "fluctuation in input/output prices", a focus on a firm's profitability and how it can be affected by external factors.

4.1.7.2 Definitions from Survey Respondents

Table 20 identifies two dominant themes in pricing risk definitions. One was the cause of poor pricing and the second was the effect. Causes of poor pricing appeared to generate from one of three conditions: (1) errors in underlying assumptions; (2) changes in the losses (for insurers); or (3) competitive stresses which led to underpricing. We saw an internal cause (errors) and two external causes (changes in the loss distributions, such as higher mortality or lower interest earnings; and competitive pressure).

Table 20: Pricing Risk Representative Responses

Source of risk	Cause of Loss	Effect	Representative response
Inappropriate pricing	Errors in underlying assumptions Changes in the loss conditions (for insurers)	Prices do not yield profit	Pricing is inaccurate because of poor information or poor methods.
	Competitive stresses leading to underpricing	Prices might yield profit but less than could be obtained without competitive pressure	Inappropriate pricing decisions and increased pressure from the competition resulting in sub-optimal profits

A second theme was the effect or consequence of poor pricing. In this category we observed responses indicating either that prices were set below ultimate costs or that prices were not competitive. In the first instance, the organization experienced a direct financial loss. In the second, the organization earned a profit, but that profit was less than what would be earned at a competitive price. The lack of a competitive price either caused the organization to lose clients or simply led to a lower profit per client.

4.1.7.3 Consistency with Standard Definition

We received 34 responses for this risk and are summarized in Table 21. None of the respondents offered the definition associated with regulatory pricing requirements. Quite a number of them did discuss input/output price issues, primarily associated with costs being greater than anticipated when prices were set.

Table 21: Pricing Risk Patterns Across Industries

Cause of Loss	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Errors in underlying assumptions	1	0	0	1	2	25
(2) Competitive stresses leading to underpricing	0	0	0	3	3	0
Both (1) and (2)	1	0	0	0	1	0
Other	0	1	0	1	2	1
Answered response total	2	1	0	5	8	26

4.1.7.4 Patterns Across Industries

Respondents from outside the insurance industry were approximately evenly split between internal errors and external competitive stresses as shown in Table 21. The insurance industry looked only

internally at errors in underlying assumptions. Sometimes the assumptions were wrong due to changes in the external environment, such as mortality. Yet their focus was on the assumptions, and not on competition.

4.1.7.5 Patterns Across Professions

CAS/SOA respondents tended to focus on the underlying assumptions and not on competitive pressures as shown in Table 22. It would be interesting to survey non-actuarial executives within the insurance industry to observe whether or not they would offer input on competitive pressures.

Table 22: Pricing Risk Patterns Across Professions

Cause of Loss	RIMS	CAS/SOA
(1) Errors in underlying assumptions	5	22
(2) Competitive stresses leading to underpricing	3	0
Both (1) and (2)	1	0
Other	2	1
Answered response total	11	23

4.1.8 Product Risk

4.1.8.1 Definitions in Key References

No standard definition was provided by our set of references. An electronic search, however, provided several perspectives. One, from AMR Research, a consulting organization that focuses on the intersection between business and technology (particularly supply chain issues), was as follows: "Examines how well the product can and will serve the needs of a given market. Factors include technology, functionality, referenceability, and internationalization. The purpose is to determine the overall ability of the product to meet and continue to meet the needs of a market." (http://www2.cio.com/analyst/report2602.html) A second definition is from Arkema, a chemical manufacturer. Under "risk assessment and characterization of management" on their web page, Arkema states: "We define product risk management as the actions taken to evaluate and address risk, including any method to lessen the impact, or control the adverse effects on health and the environment posed by the known hazards and the reasonably anticipated exposures to chemicals throughout a product's life cycle." (http://www.arkema-inc.com/index.cfm?pag=892)

4.1.8.2 Definitions from Survey Respondents

The representative definitions for product risk are shown in Table 23, with the detailed summary by industry shown in Table 24. Twenty-two definitions of "product risk" were provided by our participants. The definitions were highly varied. The definitions included product safety, referring to product liability, and/or "exposing outsiders and others to risk of health and safety." Other definitions included meeting customer expectations for quality, while still others mentioned inappropriate pricing and/or including coverage (for insurers) that was not intended. We summarized these as two possible patterns in the responses: product or service quality and safety; and whether or not the product was competitive as shown in Table 23. The quality and safety factors clearly were internal actions. The competitive product could relate to internal failure to meet demand or external changes in demand.

The difference from pricing risk was explained by various external effects of products or services, such as the potential for product liability. Inappropriate product design could harm consumer's health and the environment. Furthermore, products and services could convey important information to consumers who determined the company's image and reputation. Therefore, product risk was sometimes considered as a part of strategic/marketing risks.

Table 23: Product Risk Representative Definitions

Source of risk	Cause of Loss	Representative response
Product design and/or manufacture		
*Lack of safety	Product liability	* Measured in form of product liability, liabilities that could arise from use of product in stream of commerce, from a Risk Management perspective
* Lack of quality	Product non-performance	* Failure risk - faulty or nonperforming product or services
Changes in competitive market	Product is not demanded	* Inability to maintain the relevance of our products and services by aligning our offerings with the evolution of our industry.

Table 24: Product Risk Patterns Across Industries

Source of Risk	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Product design and/or manufacture	4	0	0	2	6	7
(2) Changes in competitive market	0	0	0	2	2	1
Both (1) and (2)	0	0	0	0	0	0
Other	0	0	0	1	1	5
Answered response total	4	0	0	5	9	13

4.1.8.3 Consistency with Standard Definition

We viewed the standard definitions found through our internet search as offering the two perspectives on products noted by our respondents. One was the potential effect of products and services on health and the environment (the Arkema definition). The other was the potential effect of selling

products and services that do not serve the needs of the market (the AMR Research definition). While we found no standard definition among our general sources, suggesting the lack of standardization in most industries, it appeared that individuals had two general perceptions about the term itself.

4.1.8.4 Patterns Across Industries

We noted that hospitals and energy firms did not offer responses to this question as shown in Table 24. Hospitals do not sell a "product," hence their omission makes sense. We were unclear why the energy industry failed to offer input. Respondents from the pharmaceutical and insurance industries all offered the perspective of poorly designed/manufactured product, while the IT industry was evenly split between the two definitions. We anticipated responses from insurance which would focus on changes in the competitive market and were surprised by only one response.

4.1.8.5 Patterns Across Professions

With such limited responses, it was still interesting to see that seven responses from the insurance industry considered product risk internally. This perception was totally opposite from pricing risk.

Table 25: Product Risk Patterns Across Professions

Source of Risk	RIMS	CAS/SOA
Product design and/or manufacture (1)	6	7
Changes in competitive market (2)	2	1
Both (1) and (2)	0	0
Other	1	5
Answered response total	9	13

4.1.9 Reputation Risk

4.1.9.1 Definitions in Key References

No standard definition was provided in our set of references, but several were found elsewhere. One comes from Peterson and Carreau, discussed above with regard to environmental risk. Their definition is: "Reputation risk arises when a situation, occurrence, business practice or event has the potential to materially influence the public and stakeholder's perceived trust and confidence in an institution." A second was from the Information Systems and Audit Control Association (ISACA) as "The current and prospective effect on earnings and capital arising from negative public opinion." On its web page, ISACA describes itself as: "In the three decades since its inception, ISACA has become a pace-setting global organization for information governance, control, security, and audit professionals." (http://www.isaca.org)

This section for reputation risk intentionally does not have any tables, because the definitions were all very similar in approach and no general pattern was discerned.

4.1.9.2 Definitions from Survey Respondents:

We received 34 responses for reputation risk. All responses mentioned very broad causes of loss to reputation, good will, effects on brand name, and similar negative perception of the organization. Sometimes respondents mentioned negative perceptions of particular stakeholders, including employees, customers, investors, regulators, and the community, such as "How we are perceived by customers." Sometimes they were silent on this point, such as "Risk that the perception of the company is damaged by an event." We can imagine that a firm might respond differently to distinct stakeholders for a variety of conditions. For instance, shareholders typically look to market value while customers look to product value and low prices. With regard to reputation risk, however, we sensed that all these stakeholders are connected. Bad publicity will affect all of them to some extent. The concept appeared nebulous, as mentioned by several respondents, and also appeared to receive serious consideration by each organization's upper management.

4.1.9.3 Patterns Compared to Standard, Across Industry and Profession

We observed no particular pattern across industry or across profession. Virtually all respondents offered definitions of reputation risk consistent with those found through our internet search. Reputation risk was an area of great importance with very broad application, and was also incredibly difficult to quantify, and therefore, to define and measure. The agreement in responses for the definition reputation risk was one of the more similar areas among the areas we queried. If a difference did exist, it might be within the context of which stakeholders were of greatest concern to decision makers.

4.1.10 Strategic Risk

4.1.10.1 Definitions in Key References

SOA (2006): Risks from damage to reputation, competition, demographic trends, technological innovation, capital availability and regulatory trends.

FFIEC: The risk associated with the financial institution's future business plans and strategies.

Strategic risk was one of the broadest risk categories among our list of risks. We were not surprised that we did not find a consistent definition. Compared with the FFIEC definition, the SOA

definition was industry specific and restrictive. The FFIEC definition was broadly defined, although it referred to the "financial institution."

4.1.10.2 Definitions from Survey Respondents

Regarding strategic risk, we observed once again an internal/external dichotomy among our survey respondents as shown in Table 26. In this instance, the dichotomy was whether or not external factors prevented an organization from achieving its business objective/goal or whether the strategy itself was flawed thereby causing harm to the organization, an internal perspective.

Table 26: Strategic Risk Representative Responses

Source of risk	Cause of Loss	Representative response
Internal actions	Inappropriate business strategy	The risk of reduced profit / loss due to major business decisions.
External events	Unexpected external event	The risk that an external event or trend may cause our strategy to become ineffective.

4.1.10.3 Consistency with Standard Definition

As shown in Table 27, twenty-five definitions were offered by our respondents, many of them similar to the FFIEC definition, broad in nature and not specific about the source of the strategic problem. The FFIEC definition was so broad that it did not offer much assistance in identifying the problem source. Nineteen of 25 respondents suggested that the source of strategic risk was either due to poor decision-making of the organization's executive leadership, or due to events outside the control of the organization. The former concern would require improvements in executive leadership while the latter would require better information about the changing landscape of the competitive environment.

Table 27: Strategic Risk Patterns Across Industries

Cause of Loss	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
(1) Inappropriate business strategy	3	2	0	1	6	7
(2) Unexpected external event	0	1	0	2	3	2
Both (1) and (2)	0	0	0	0	0	1
Other	0	1	0	1	2	4
Answered response total	3	4	0	4	11	14

4.1.10.4 Patterns Across Industries

No obvious industry pattern is observed in survey responses in Table 27, although no energy respondent answered this question. The responses were approximately equally weighted (6 of 11 for non-insurance versus 7 of 14 for insurance) across the internal and external perspectives, both for the respondent group as a whole and generally for each industry. Eleven of the 26 of non-insurance industry

respondents provided a definition of strategic risk as compared to 11 of the 72 insurance industry respondents.

4.1.10.5 Patterns Across Professions

The number of responses was too low, and spread throughout the categories, for us to make any general comments about patterns across professional domain.

Table 28: Strategic Risk Patterns Across Professions

Cause of Loss	RIMS	CAS/SOA
(1) Inappropriate business strategy	8	5
(2) Unexpected external event	3	2
Both (1) and (2)	0	1
Other	2	4
Answered response total	13	12

4.1.11 Risk Appetite

In addition to these eleven risks for which we requested definitions, we also asked respondents to define "risk appetite." As noted in Table 30, 14 respondents offered a definition, and those we did receive, were varied and broad. Most of the literature suggested that an important first step in a successful ERM program was the determination of the organization's risk appetite. Either the organizations represented by our survey group had not yet undertaken this step, or the respondents were unfamiliar with the results of the effort. Assistance in determining an organization's risk appetite might be a source of opportunity in the burgeoning field.

4.1.11.1 Definitions in Key References

SOA (2006): The level of aggregate risk that a company can undertake and successfully manage over an extended period of time

CCRO (2002): A company's ability and/or willingness to absorb declines in the value of an asset, liability, trade, transaction, or portfolio.

Basel (2006): The broad-based amount of risk a company or other entity is willing to accept in pursuit of its mission or vision.

These three definitions provided both similarity and differences. Similarity could be identified with three identified components: aggregate level, risk-taking, manageability. The SOA definition explicitly referred to an "aggregate level" of risk, while the Basel definition could be interpreted to include aggregate level of risk. The CCRO definition, interestingly, referred to "an asset, liability, trade, transaction, or portfolio," which appeared to focus attention much more narrowly. Risk taking behavior was mentioned in each definition, although each used a different verb: undertake, absorb, and accept. It was interesting to note that survey respondents used similar words such as take, retain, and assume, possibly reflecting different attitudes toward risks. The SOA definition specifically mentioned the ability to "successfully manage," while this concept was only implied in the other two definitions. Basel focused on the high-level objective of meeting the organization's mission or vision. The CCRO simply referred to "ability to absorb."

We also noted that the Basel (2006) set of definitions defined "risk tolerance" separately from risk appetite. Risk tolerance was defined as "the acceptable variation relative to the achievement of objectives."

4.1.11.2 Definitions from Survey Respondents:

The definitions for risk appetite are shown in Table 29, while the detail by industry is shown in Table 30. Our survey yielded only a few responses to this particular question: eight from the RIMS group and six from the CAS/SOA group. These fourteen respondents provided definitions consistent with the standard definitions. The one possible difference observed across these responses was the focus either on insurable risk or financial risk. As noted below in Table 31, these variations appeared to arise across the two respondent groups of RIMS members and CAS/SOA members.

Table 29: Risk Appetite Definitions

Basic components	Additional factors
* Risk aggregation	* Risk level (speculative or pure risk)
* Risk taking	* Risk-return specification
* Manageability	

Table 30: Risk Appetite Patterns Across Industries

	Pharm	Hospital	Energy	IT	Non-Insurance	Insurance
Pure risk	3	4	0	0	7	1
Risk-return relation	1	0	0	0	1	5
Answered response total	4	4	0	0	8	6

4.1.11.3 Consistency with Standard Definition

Responses were generally consistent with the SOA and Basel definitions. Some responses defined risk appetite with reference only to insurable risks, or pure risk. As shown in Table 31, eight of 14 respondents also only discussed risk (generally referring to a downside potential), while six of 14 respondents presented the concept of a risk-return trade-off. That is, the latter group refers to a balancing between acceptable levels of risk in coordination with anticipated returns for the risk.

Table 31: Risk Appetite Patterns Across Professions

	RIMS	CAS/SOA
Pure risk	7	1
Risk-return relation	1	5
Answered response total	8	6

4.1.11.4 Patterns Across Industries

Table 30 shows that the responses from the insurance industry were based on the risk-return definition for risk appetite, while those from pharmaceutical and hospital companies tended to define risk within insurable risk. In fact, only one of eight responses outside the insurance industry referenced the potential return in relation to the risk. As noted below in Table 31, this same dichotomy was observed across professional domain; hence, we cannot differentiate whether the distinction was across industry or across professional domain.

4.1.11.5 Patterns Across Professions

Table 31 shows that RIMS members were likely to define risk appetite within pure risk, which may reflect their traditional domain handling insurance coverage. The majority of responses tended to define risk without relating to the return, and that seemed common to risk managers and actuaries. Quite surprisingly, one risk manager and one actuary indicated that their companies did not have such definitions.

4.1.12 Summary of Survey Results

The over-riding theme observed in survey responses had been a dichotomy between internal and external perceptions. An example of the dichotomy was observed in definitions of “credit risk.” Some respondents provided a definition of credit risk consistent with our standard references, which focused on a counterparty’s failure to perform. Other respondents defined credit risk with regard to their own

inability to perform. Similarly in environmental risk, respondents defined it either as effects of the environment on the organization or the organization on the environment.

The other dominant pattern was that the CAS/SOA respondent group tended to focus more on the financial elements of risk while the RIMS respondent group tended to focus more on the traditional insurable elements of risk. The historical development of risk management makes this pattern understandable. In a few instances as noted below, we observed further refinement of industry effects.

4.2 10-K Reported Risk Factors

Our second analysis was from a review of risk factors reported by organizations in their 10-K filings. As part of new reporting requirements, each publicly-traded firm must list the risks of greatest importance to the firm in its 10-K financial statement. We reviewed these reports and extracted the list of risk factors considered most important to the largest 10 companies in each of our non-insurance industry samples, along with discussion of our interpretation of similarities and differences across industries.

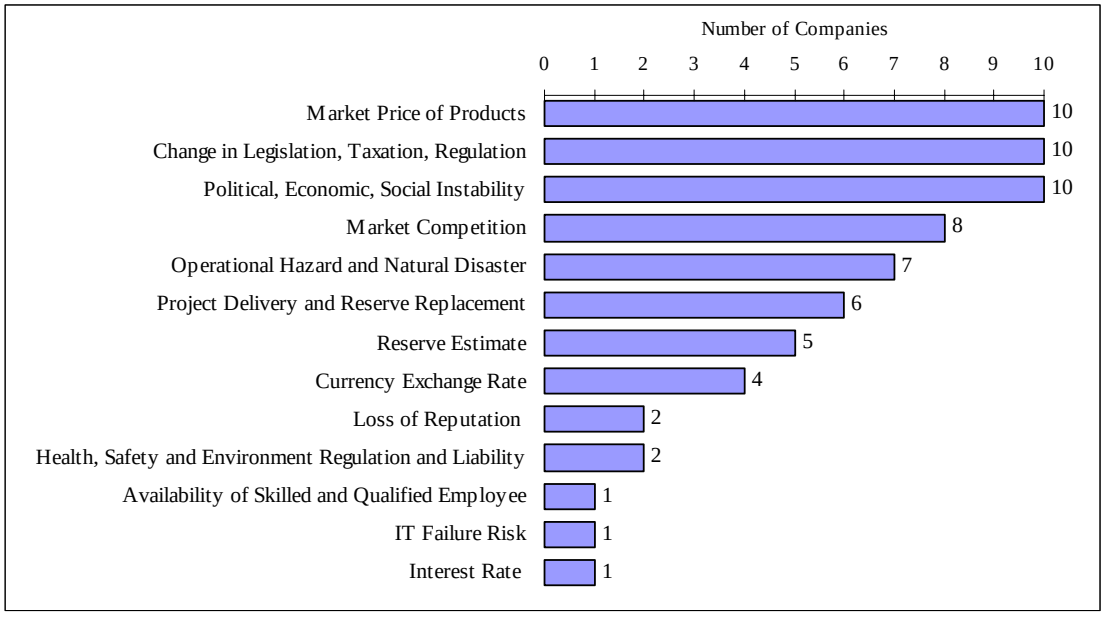
4.2.1 General Observations Across Industries

We observed that members of the IT industry listed many more risk factors than members of the other three industries. In total, IT members listed risks in 21 categories. For all 10 IT firms, a total of 125 risks were identified as being significant, for an average of 12.5 risks per company. The other three industries reported fewer risks both in numbers of categories and overall listings. Hospitals reported 14 categories and overall 71 risks; pharmaceuticals reported 15 categories and listed 75 risks; and energy companies reported 13 categories for 67 risks. Market competition and/or market prices always placed near the top of risk categories, as did mention of regulation, legal issues, and changes in laws. After these two broad categories (often with several ways to mention them), divergence across the industries began to emerge. For instance, availability of skilled and qualified employees was mentioned only once among the ten energy companies and only three times in the pharmaceutical industry, but was at the top of the hospital listing with seven mentions (no risk source received more than seven mentions among the hospital group), and in the middle of IT with six. Below we explored each industry in more detail.

4.2.2 Primary risk factors in Energy industry

Figure 1 summarizes the major risk factors in the energy industry. Three categories of important risks received mention by all 10 energy companies in their 10-K. These were (1) product market prices; (2) changes in legislation, taxation, and regulation; and (3) political, economic and social instability. Interestingly, market competition falls below these three, receiving eight mentions. Operational hazards and natural disasters ranked next by seven companies. It appeared as though industry members generally recognized very similar concerns, and perceived a volatile industry politically. Even the "market prices" category may have reflected concerns across political and regulatory realms, given that it received separate attention from market competition. Most of the risks mentioned were external to the firm.

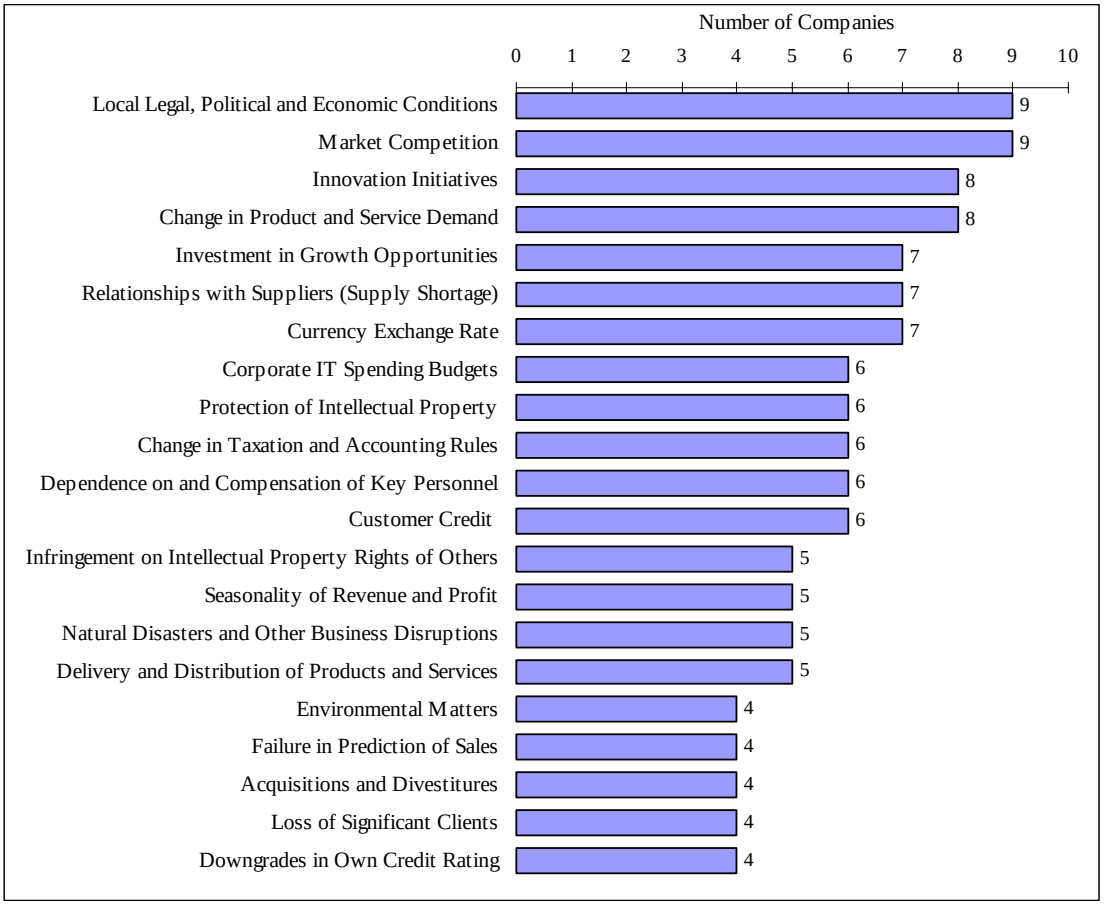
Figure 1: Major Risk Factors in Energy Industry



4.2.3 Primary risk factors in IT industry

Compared with the energy industry, IT companies appeared far more concerned with competitive pressures as shown in Figure 2. Market competition placed at the top, along with local legal, political, and economic conditions. Each of these risks received mention by nine companies. Eight companies also mentioned two items we considered to represent competitive pressures in "innovative initiatives" and "changes in product and service demand." Other industries did not refer to competitive pressures to such an extent. For IT, the highest-listed operational risk (by five companies) was "natural disasters and other business disruptions," falling below twelve other types of risks mentioned by more companies. It appears as though operational risks are not of relatively significant concern to members of the IT industry.

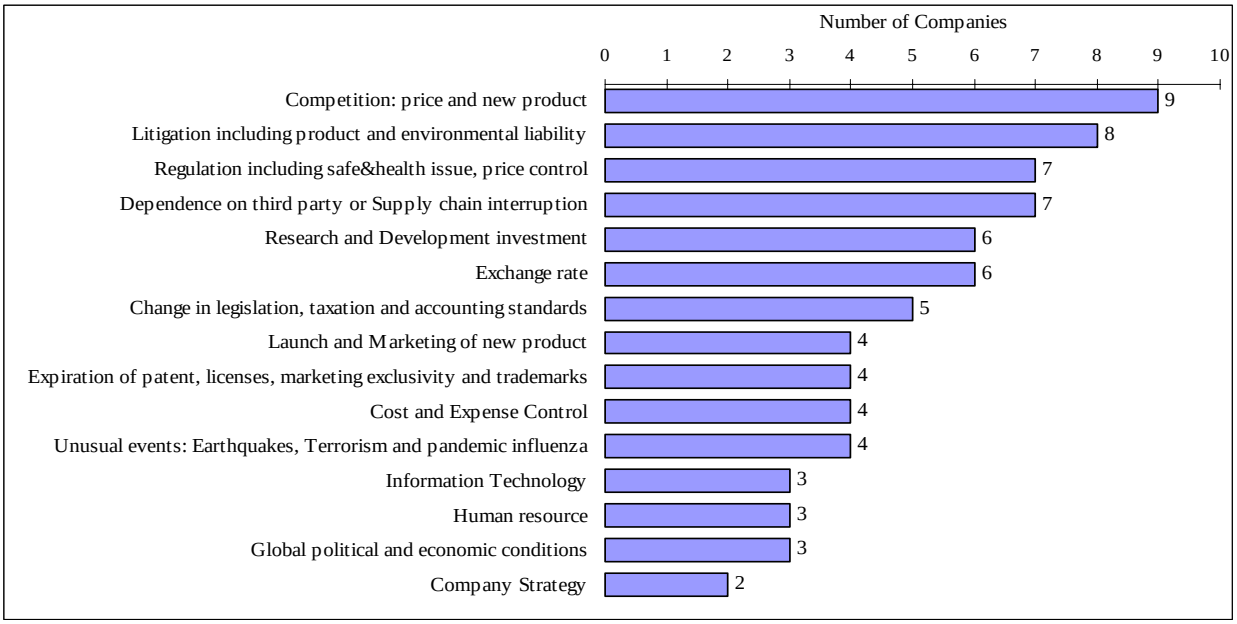
Figure 2: Major Risk Factors in IT Industry



4.2.4 Primary risk factors in Pharmaceutical industry

Competition was the highest-ranking risk factor for the pharmaceutical industry as well. Nine companies listed this risk among their most important, as shown in Figure 3. Litigation, including product and environmental liability, followed with eight companies. This is the highest accounting of operational risks among the four industries. The following two categories (with seven mentions each) also could be considered operational risks in "regulation including safety and health" and "dependence on a third party of supply chain interruption." While pharmaceuticals were the only companies to mention "research and development," we were surprised it is only at six companies, along with exchange rates, the fifth (of fifteen) most common risk factors among the pharmaceutical industry group. Furthermore, "global political and economic conditions" was relatively low, listed by just three companies. This risk placed much higher for the other industries.

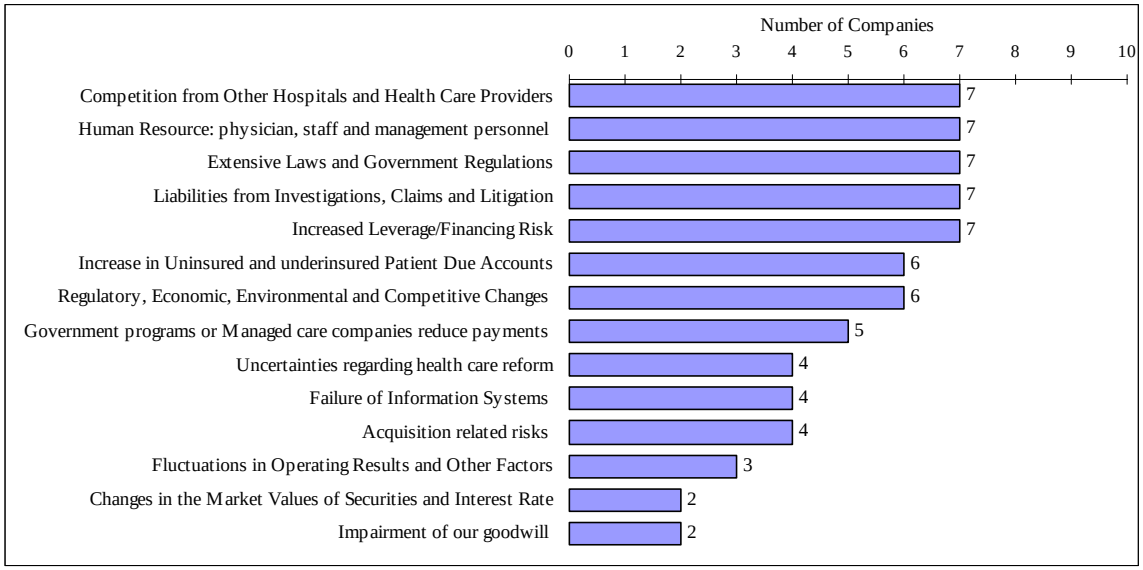
Figure 3: Major Risk Factors in Pharmaceutical Industry



4.2.5 Primary risk factors in Hospital industry

As illustrated in Figure 4, hospitals did not show as much consistency in risk concerns as the other industries. The most frequently mentioned risk was listed by only seven companies. Furthermore, the five categories receiving seven mentions were widely divergent in type, ranging from competition, to human resource issues, to litigation, to regulations, to financial risk. Following this initial list was a series of items related specifically to the health care industry, such as uninsured patients, government programs (Medicare and Medicaid), and health care reform. These results highlighted the complex competitive, regulatory, people-driven environment of the health care industry. While hospitals definitely demonstrated concern over external risks, such as competition and legal issues, they also showed more of an internal focus than any of the other industries, with significant concern for HR matters, liability claims investigation, increases in uninsured accounts payable, and similar issues.

Figure 4: Major Risk Factors in Hospitals



4.2.6 Concluding comments on 10-K risk factors

As mentioned at the start of this section, we observed that competition and regulatory activities, mostly external concerns, consistently dominated 10-K risk factor listings across the four industries studied. Interestingly, survey respondents tended more toward internal definitions across the various risk terms. We cannot determine any cause for this variation, yet offer a possible scenario. Individuals within organizations might well focus on the factors over which they believe they have some control. These factors would be more likely to be internal than external. A focus on such controllable, internal factors, therefore, would not be surprising.

5. Summary and Recommendations for Future Research

The impetus for the research reported here was to observe similarities and differences in risk terminology for the ultimate purpose of improving communication across and within organizations. We approached this objective by conducting a survey of risk management professionals from six industries: pharmaceuticals, hospitals, information technology, energy, life and health insurance, and property and liability insurance. Survey responses were supplemented with review of risk factors listed as being significant in the 10-K reports of our non-insurance industry sample.

Survey responses clearly demonstrated high differences in risk definitions. Not only did our respondents differ significantly among themselves, but also when compared with standard definitions provided by trade groups, regulators, and other general sources. While the group offered significant variability, we feel confident in highlighting one particular theme, which is the dichotomy between internal and external perspectives. Insurance industry respondents, mostly representatives from the CAS/SOA risk management section, typically focused on external perspectives. Respondents from the other four industries, typically members of the national Risk Management and Insurance Society (RIMS), more often provided internal perspectives.

At least two explanations appear plausible to us. One is that the CAS/SOA group is comprised primarily of individuals with financial risk management responsibilities while the RIMS group focuses on the traditional, insurable, risks. A second explanation is the very nature of the insurance business, which is heavily dependent on estimates of external outcomes. Actuaries must anticipate and estimate changes in interest rates, loss conditions, and expense loadings, which most often are not controllable by the insurer. Members of our non-insurance industries, however, undertake operations where tremendous control over their own outcomes does exist.

We believe a number of future avenues for research are warranted. One is to investigate whether or not the existence of variations in definitions affects individuals' ability to communicate within and

across organizations. Such an investigation would be aided by visits with industry members, in-depth interviews with individuals responsible for risk management, and review of risk committees across industries are all desirable efforts. Analyses within and across industries would make such efforts particularly interesting. We anticipate ERM will continue to evolve and develop, and improved communication will assist in this process.

A second avenue for future research is to observe changes in terminology across time. Participants in the 2007 ERM Symposium in Chicago, IL suggested conducting a survey, similar to what was reported here, each year of the symposium. The audience will reflect just a single industry, yet will allow observation of differences across time.

Another important question is whether or not these variations in terminology also translate into variations in measures and models. Development of good ERM models as well as collecting information about the sorts of measures and models currently being used are all desirable efforts. We anticipate that people will be hesitant to offer too much specific about the measures and models they employ, given the proprietary nature of such information; however, general information may be available. Furthermore, the CAS and SOA should consider pursuing research to develop strong fundamental models and measures to be shared among its members.

We believe that enterprise risk management is a strong concept in the insurance and other industries, one that is likely to continue to develop with the passage of time. That the CAS and SOA have taken leadership positions in the development of ERM assists its members in their own efforts to provide quality service to their organizations and clients. We encourage the joint risk management track to undertake future research, such as described here, and as their members recommend.

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Appendix A – Rating Agency ERM Activity

Rating Agency

Standard & Poor's: Beginning in the fall of 2005, Standard & Poor's began incorporating enterprise risk management (ERM) criteria into its insurance ratings to systematically reflect an insurer's risk management. In June 2006, S&P refined its ERM quality definitions into weak, adequate, strong, and excellent rating categories. *In Insurance Criteria: Refining The Focus of Insurer Enterprise Risk Management Criteria*, S&P listed evaluation components as including the assessment of risk management culture, risk controls, emerging risk management, risk and capital models, and strategic risk management. These criteria are intended to force an effective risk management practice, rather than to guide the ERM performance in an organization. And these criteria have already been used on major rated insurers and reinsurers in Europe and North America and incorporated the results into these ratings.

A.M. Best: A.M. Best stated in February 2006 that its rating process will take into account the "external output from capital models" that insurers use to assess their capital adequacy, as well as the "assumptions underlying the model and the quality of the model." According to A.M. Best Comments on Enterprise Risk Management and Capital Models, Best will not identify ERM as a separate rating consideration, rather, it will be included as an integral part of its rating analysis and discussions with all Secure-rated companies. However, such an action definitely will drive the more sophisticated capital models and development of ERM in insurers.

Moody's: According to Guy Carpenter's November 2006 "Rating Agency Update," Moody's Investor Service rating process has considered a top level assessment of business risk that analyzes a firm's capabilities in risk management based on the Gold Benchmark standards for risk governance, risk management, risk measurement and risk intelligence. However, the agency has indicated that while its rating process already included a top level risk assessment, they would begin a separate ERM analysis. Moody's has been meeting with companies to discuss their ERM process and then determine how ERM will be incorporated into its rating methodology. It has developed Risk Management Assessment reports that characterize ERM ability as strength, neutral or weakness.

Fitch: Fitch Ratings also indicated that their agency was going to begin reviewing an insurer's business model to determine how ERM is embedded within it. In a June 2006 "Criteria Report," Fitch added, "The agency also will be looking for companies to embed the model within an enterprise risk management framework that makes use of the information generated by the capital model. Fitch is likely to give a lower weighting to a model used solely to fulfill regulatory requirements."

Stock Exchange

Combined Code (U.K.): in 1992, London Stock Exchange introduced new regulations following a serious of high profile corporate frauds and accounting scandals. New rules are contained in Combined Code, which sets requirements in respect of internal controls, including financial, operational, compliance and risk management for all companies incorporated in the UK and listed on the Main Market of the London Stock Exchange.

Dey Report (Canada): it is completed by the Toronto Stock Exchange (TSE) committee chaired by Peter Dey in December 1994. The report contained stricter guidelines to assist TSX-listed companies in their approach to corporate governance. Its recommended guidelines addressed Board responsibility, composition, compensation, and education, among them there is a requirement that boards of directors be responsible for identifying corporate risks and ensuring that processes are in place to mitigate those risks.

Appendix B - Industries' definition in Hoover's Online

Our industries	***Hoover's* industries and sectors**
Hospitals/ Clinics	**Hospitals**
Pharmaceutical	**Pharmaceuticals** Biopharmaceuticals & Biotherapeutics Pharmaceuticals Manufacturers Diagnostic Substances Drug Delivery Systems Generic Drugs Over-the-Counter Medications Vitamins, Nutritionals & Other Health-Related Products
Utility	**Energy & Utilities** Alternative Energy Sources Electric Utilities Electric Power Distribution Electric Power Transmission Fossil Fuel Power Generation Hydroelectric Power Generation Nuclear Power Generation Energy Trading & Marketing Energy Exchanges Retail Energy Marketing Wholesale Energy Trading & Marketing Independent/Merchant Power Production Natural Gas Utilities Oil & Gas Exploration & Production Oil & Gas Exploration Services Oil & Gas Field Equipment Oil & Gas Field Services Oil & Gas Well Drilling Royalty Trusts Oil & Gas Refining, Marketing & Distribution Fuel Oil Dealers Liquefied Petroleum Gas Dealers Petroleum & Petroleum Products Wholesalers Petroleum Bulk Stations & Terminals Petroleum Refining Oil & Gas Transportation & Storage Crude Petroleum Pipelines Natural Gas Gathering & Processing Systems Natural Gas Pipelines Refined Petroleum Pipelines Utility Services Water Utilities Wastewater Treatment Water Distribution

Information Technology	**Computer Services** Application Service Providers Computer Products Distribution & Support Information Technology Services Technology Leasing **Computer Hardware** Computer Networking Equipment Network Access & Communication Devices Network Security Devices Routing & Switching Equipment Storage Networking Equipment Wireless Networking Equipment Computer Peripherals Computer Displays & Projectors Computer Input Devices & Speakers Personal Storage Drives & Media Printing & Imaging Equipment Handheld Computers & Accessories Mass Storage Systems Magnetic Disk Storage Optical Disk & Magnetic Tape Storage Personal Computers Servers & Mainframes Specialized Computer Systems ATMs & Other Self-Service Terminals Manufacturing Industrial & Military Computer Systems Point-Of-Sale & Electronic Retail Systems Supercomputers Workstations & Thin Clients **Computer Software** Accounting & Finance Software Asset Management Software Billing & Service Provisioning Software Business Intelligence Software Collaborative Software Content & Document Management Software Customer Relationship Management, Marketing & Sales Software Database & File Management Software Development Tools, Operating Systems & Utilities Software E-commerce Software Education & Training Software Engineering, Scientific & CAD/CAM Software Enterprise Application Integration Software Enterprise Resource Planning Software Entertainment & Games Software Financial Services, Legal & Government Software Health Care Management Software Human Resources & Workforce Management Software Manufacturing, Warehousing & Industrial Software Messaging, Conferencing & Communications Software Multimedia, Graphics & Publishing Software Networking & Connectivity Software Retail, Point-Of-Sale & Inventory Management Software Security Software

	Storage & Systems Management Software Supply Chain Management & Logistics Software Wireless Software

Appendix C – Company Lists

Hospital List

Rank	Group/Company	Revenues (million USD)	Data
1	HCA Inc.	24,455	Dec-05
2	Tenet Healthcare Corporation	9,614	Dec-05
3	Catholic Health Initiatives	6,121	Jun-04
4	Catholic Healthcare West	6,002	Jul-05
5	Trinity Health Record	5,287	Jun-04
6	Triad Hospitals, Inc.	4,747	Dec-05
7	Universal Health Services, Inc.	3,936	Dec-05
8	Community Health Systems, Inc.	3,738	Dec-05
9	Health Management Associates, Inc.	3,555	Dec-05
10	Sisters of Mercy Health System	3,003	Jun-04
11	Advocate Health Care	2,780	Dec-04
12	University of Pittsburgh Medical	2,148	Jun-05
13	Mayo Clinic Jacksonville	2,148	Dec-05
14	Sutter Health Sacramento Sierra Region	2,148	Dec-05
15	The Cleveland Clinic Foundation	2,148	Dec-05
16	Clarian Health Partners, Inc.	2,012	Dec-05
17	Baylor Health Care System	1,960	Jun-04
18	Spectrum Health	1,868	Jun-04
19	LifePoint Hospitals, Inc.	1,855	Dec-05
20	Massachusetts General Hospital	1,783	Sep-05

Source: *Hoover's Online*

Pharmaceutical List

Rank	Group/Company	Revenues (million USD)	Data
1	Pfizer Inc.	51,298	Dec-05
2	Johnson & Johnson	50,514	Dec-05
3	Abbott Laboratories	22,338	Dec-05
4	Merck & Co., Inc.	22,012	Dec-05
5	Bristol- Myers Squibb Company	19,207	Dec-05
6	Wyeth	18,756	Dec-05
7	Eli Lilly and Company	14,645	Dec-05
8	Amgen Inc.	12,430	Dec-05
9	Schering- Plough Corporation	9,508	Dec-05
10	TAP Pharmaceutical Products Inc.	3,362	Dec-04
11	Forest Laboratories, Inc.	2,912	Mar-06
12	Genzyme Corporation	2,735	Dec-05
13	Biogen Idec Inc.	2,423	Dec-05
14	Hospira, Inc.	2,627	Dec-05
15	Allergan, Inc.	2,319	Dec-05
16	Gilead Sciences, Inc.	2,028	Dec-05
17	King Pharmaceuticals, Inc.	1,773	Dec-05
18	NBTY, Inc.	1,737	Sep-05
19	Dade Behring Holdings, Inc.	1,658	Dec-05
20	Watson Pharmaceuticals, Inc.	1,646	Dec-05

Source: *Hoover's Online*

Energy List

Rank	Group/Company	Revenues (million USD)	Data
1	Exxon Mobil Corporation	328,213	Dec-05
2	Chevron Corporation	184,922	Dec-05
3	ConocoPhillips	162,405	Dec-05
4	Valero Energy Corporation	82,162	Dec-05
5	Koch Industries, Inc.	80,000	Dec-05
6	Marathon Oil Corporation	58,596	Dec-05
7	Plains All American Pipeline, L.P.	31,177	Dec-05
8	Sunoco, Inc.	31,166	Dec-05
9	Hess Corporation	22,747	Dec-05
10	Dominion Resources, Inc.	18,041	Dec-05
11	Constellation Energy Group, Inc.	17,132	Dec-05
12	Duke Energy Corporation	16,746	Dec-05
13	Tesoro Corporation	16,581	Dec-05
14	Exelon Corporation	15,357	Dec-05
15	Occidental Petroleum Corporation	15,208	Dec-05
16	Schlumberger Limited	14,309	Dec-05
17	Southern Company	13,554	Dec-05
18	ONEOK, Inc.	12,676	Dec-05
19	The Williams Companies, Inc.	12,584	Dec-05
20	SemGroup, L.P.	12,574	Dec-04

Source: *Hoover's Online*

IT List

Rank	Group/Company	Revenues (million USD)	Data
1	International Business Machines Corporation	91,134	Dec-05
2	Hewlett- Packard Company	86,696	Oct-05
3	Dell Inc.	55,908	Jan-06
4	Microsoft Corporation	39,788	Jun-05
5	Ingram Micro Inc.	38,826	Dec-05
6	Cisco Systems, Inc.	24,801	Jul-05
7	Tech Data Corporation	20,483	Jan-06
8	Electronic Data Systems Corporation	19,757	Dec-05
9	Xerox Corporation	14,826	Dec-05
10	Computer Sciences Corporation	14,616	Mar-06
11	Oracle Corporation	14,380	May-06
12	Apple Computer, Inc.	13,931	Sep-05
13	Sun Microsystems, Inc.	11,071	Jun-05
14	EMC Corporation	9,664	Dec-05
15	Science Applications International Corporation	7,187	Jan-05
16	NCR Corporation	6,028	Dec-05
17	Unisys Corporation	5,759	Dec-05
18	Pitney Bowes Inc.	5,492	Dec-05
19	Lexmark International, Inc.	5,222	Dec-05
20	Symantec Corporation	4,143	Mar-06

Source: *Hoover's Online*

US Life & Health insurance List

Rank	Group	Total Life/Health Net Premiums Written (million USD)
1	AIG Life Group	36,427
2	Metropolitan Life & Affiliated	32,580
3	Hartford Life Group	26,678
4	ING USA Life Group	23,773
5	Prudential of America Group	21,895
6	United Health Group	16,549
7	New York Life Group	16,062
8	AXA Financial Group	15,584
9	Manulife Financial	15,244
10	AEGON USA Inc	14,748
11	MassMutual Financial Group	14,286
12	Allianz Insurance Group	12,926
13	Lincoln National Corp	11,879
14	AFLAC Incorporated Group	11,562
15	Allstate Financial	10,853
16	Nationwide Life Group	10,773
17	Northwestern Mutual Group	10,644
18	Pacific life Group	9,693
19	Citigroup	9,631
20	TIAA Group	9,162

Source: 2005 Best's Aggregate & Averages - Life/Health

US PC insurance List

Rank	Group	Net Premiums Written (million USD)
1	State Farm Group	47,762
2	American International Group Inc	33,120
3	Allstate Insurance Group	25,984
4	St. Paul Travelers Companies	19,608
5	Berkshire Hathaway Insurance Group	16,188
6	Nationwide Group	14,263
7	Progressive Insurance Group	13,381
8	Liberty Mutual Insurance Companies	13,208
9	Farmers Insurance Group	11,365
10	Chubb Group of Insurance Companies	10,275
11	Hartford Insurance Group	9,627
12	USAA Group	8,026
13	State Compensation Insurance Fund of CA	7,950
14	CNA Insurance Companies	7,504
15	Zurich Financial Services NA Group	7,287
16	American Family Insurance Group	5,956
17	Safeco Insurance Companies	5,676
18	ACE INA Group	4,483
19	GE Global Insurance Group	4,438
20	Allianz of America, Inc	4,303

Source: 2005 Best's Aggregate & Averages - Property/Casualty

Appendix D - Online Survey

(See following pages)

Risk Management Terminology

Invitation

Researchers at the University of Wisconsin-Madison, in conjunction with the Casualty Actuarial Society and the Society of Actuaries, are conducting this survey on risk terms and measures. Our intention is to develop a better understanding of the risk vocabulary used across firms and industries.

A few items to note:

1. We will call you next week. You can answer our questions through the survey itself or wait to provide them over the phone. The conversation will go more smoothly if you have time to review the survey beforehand.

2. The survey is comprised of a series of terms. We ask for a definition and measurement for each term relevant to your organization.

3. The questions are intentionally open ended. We anticipate that your responses as a result will not convey the degree of complexity involved in your work. As exploratory research, we consider this simplification to be acceptable. We would prefer that you simplify your answers than not answer at all.

4. If the entire survey is too long, please answer for those items most relevant and/or interesting in your work.

5. While completing the survey, click "Back" to see earlier pages, and "Save & Next" to move forward.

6. If you wish to save your work and return later, please click "Save & Next" before closing. You may have multiple views of the survey.

7. When you have completed as much of the survey as you can, please go to the final page and click "Submit." We then will receive your completed survey. We look forward to receiving your information by October 20, 2006.

If you have any questions, contact Peng Shi at pshi@bus.wisc.edu or 608-265-4189.

Save & Next Close

Contact Information

In order to send you a copy of the final report and make it possible for further contact, we need your name, title, company, email address, phone number and mailing address. You personal information will be kept strictly confidential.

1. Your Contact Information

Name

Title

Company

Phone

E-mail

2. Mailing Address

Address line 1

Address line 2

City

Zip Code

State

Back Save & Next Close

Risk Management

3. How does your organization define risk management?

4. Does your organization use an enterprise risk management process? If yes, please briefly describe what this concept means within your organization.

5. How does your firm measure risk management success?

If you have developed any specific materials and/or methods for enterprise risk management that you would be willing to share with us, these materials would be appreciated. You can email them to us at pshi@bus.wisc.edu or mail to Peng Shi, University of Wisconsin-Madison, School of Business, 3164 Grainger Hall, 975 University Avenue, Madison, WI 53706-1323

Back Save & Next Close

Risk Terminology

Below are listed 11 terms in alphabetical order. Please check all terms relevant to you in managing risk in your organization. On the following pages you will be asked for a definition and measurement of each checked term.

We understand that each term may involve complex ideas. We are interested in your initial response, and are using an open-ended format for purposes of soliciting general information about similarities and differences across organizations and industries. If you have checked a term and then later decide it is too nebulous for you to define, please feel free to make this indication on the survey form and move on to the next item. We would prefer that you complete what you can and send us that information than to decide not to participate at all.

As mentioned above, if you have questions, please contact Peng Shi at pshi@bus.wisc.edu or 608-265-4189.

6. Please check those risk terminologies which are used in your organization:

- ☐ Credit Risk
- ☐ Environmental Risk
- ☐ Financial Risk
- ☐ Hazard Risk
- ☐ Market Risk
- ☐ Operational Risk
- ☐ Pricing Risk
- ☐ Product Risk
- ☐ Reputation Risk
- ☐ Risk Appetite
- ☐ Strategic Risk

Back Save & Next Close

Credit Risk

For purposes of managing risk:

7. How does your organization define credit risk?

8. How does your organization measure credit risk?

9. Comments:

Back Save & Next Close

Environmental Risk

For purposes of managing risk:

10. How does your organization define environmental risk?

11. How does your organization measure environmental risk?

12. Comments:

Back Save & Next Close

Financial Risk

For purposes of managing risk:

13. How does your organization define financial risk?

14. How does your organization measure financial risk?

15. Comments:

Back Save & Next Close

Hazard Risk

For purposes of managing risk:

16. How does your organization define hazard risk?

17. How does your organization measure hazard risk?

18. Comments:

Back Save & Next Close

Market Risk

For purposes of managing risk:

19. How does your organization define market risk?

20. How does your organization measure market risk?

21. Comments:

Back Save & Next Close

Operational Risk

For purposes of managing risk:

22. How does your organization define operational risk?

23. How does your organization measure operational risk?

24. Comments:

Back Save & Next Close

Pricing Risk

For purposes of managing risk:

25. How does your organization define pricing risk?

26. How does your organization measure pricing risk?

27. Comments:

Back Save & Next Close

Product Risk

For purposes of managing risk:

28. How does your organization define product risk?

29. How does your organization measure product risk?

30. Comments:

Back Save & Next Close

Reputation Risk

For purposes of managing risk:

31. How does your organization define reputation risk?

32. How does your organization measure reputation risk?

33. Comments:

Back Save & Next Close

Risk Appetite

For purposes of managing risk:

34. How does your organization define risk appetite?

35. How does your organization measure risk appetite?

36. Comments:

Back Save & Next Close

Strategic Risk

For purposes of managing risk:

37. How does your organization define strategic risk?

38. How does your organization measure strategic risk?

39. Comments:

Back Save & Next Close

Your Comments

40. Please give your comments:

Back Submit Close

Risk Management Terminology

Survey Completed

Thank you for taking the survey!

Close