MANAGEMENT

STRATEGY

MEASUREMENT

MANAGEMENT ACCOUNTING GUIDELINE

Managing Opportunities and Risks

By

Tamara Bekefi,

Marc J. Epstein

and

Kristi Yuthas

Certified Management Accountants Canada

AICPA®

CIMA

Published by The Society of Management Accountants of Canada, the American Institute of Certified Public Accountants and The Chartered Institute of Management Accountants.

NOTICE TO READERS

The material contained in the Management Accounting Guideline *Managing Opportunities and Risks* is designed to provide illustrative information with respect to the subject matter covered. It does not establish standards or preferred practices. This material has not been considered or acted upon by any senior or technical committees or the board of directors of either the AICPA, CIMA or The Society of Management Accountants of Canada and does not represent an official opinion or position of either the AICPA, CIMA or The Society of Management Accountants of Canada.

ISBN: 1-55302-212-2

MANAGING OPPORTUNITIES AND RISKS

INTRODUCTION

Risk taking, the engine driving business, is vital to companies seeking market success. Risks are, however, often thought of only as hazards, despite the fact that they can present significant opportunities and possibilities for organizational innovation and new competitive advantage leading to short- and long-term profitability. In fact, risk and opportunity are a duality—like two sides to the same coin.

Managing hazardous risk has been increasingly recognized as a critical business issue prompted by events as diverse as the financial debacles of companies like Enron, Worldcom, and Parmalat, the terrorist events of September 11, 2001, and the hurricane disaster of Katrina in 2005. CMA Canada, the AICPA, and CIMA have responded with four Guidelines that address this issue:

a) "Identifying, Measuring, and Managing Organizational Risks for Improved Performance";

b) "The Reporting of Organizational Risks for Internal and External Decision Making";

c) "Integrating Social and Political Risk into Management Decision Making"; and

d) "Business Continuity Management".

Though these four Management Accounting Guidelines on risk provide excellent coverage of many of the most

CONTENTS

EXECUTIVE SUMMARY

Recent corporate financial debacles, the threat of global terrorism, and other social, political and environmental issues have prompted an increased recognition of hazardous risk as a critical business issue. While the awareness of risk as a threat is imperative, so too is the recognition that risks can provide opportunities for innovation leading to new competitive advantage.

This Guideline builds on previous Guidelines on risk, but focuses on the opportunities created by organizational risks. It provides insights into the positive aspects of risk and views the risk management process as a way to exploit opportunities and drive new organizational innovation. It also provides tools and recommendations to financial professionals on how to develop a risk and opportunity management framework, measures, and management process to drive innovation and win in the marketplace.

critical issues in risk management, they conceptualize risk as it is typically defined—as a potential hazard. They examine how organizations can protect themselves against various risks by preparing for, mitigating, and responding to them. These Guidelines do not, however, elaborate on the fact that risks are not only hazards that should be avoided but are also opportunities that propel business growth. By focusing on the downside of risk, companies can sometimes forego opportunities that might initially appear too risky, but which have never been formally analyzed.

This Guideline builds on the previous guidelines by focusing on the importance of risk and opportunity management and the value-creation opportunities often hidden in risks. It aims to help create a more rigorous understanding of the risks that organizations take and provide tools to better evaluate and manage opportunities related to taking risks. This Guideline suggests a method for avoiding hazardous risks or minimizing their impacts while proactively seeking opportunities and risks that can reward the organization. It touches on three different, yet related, pursuits:

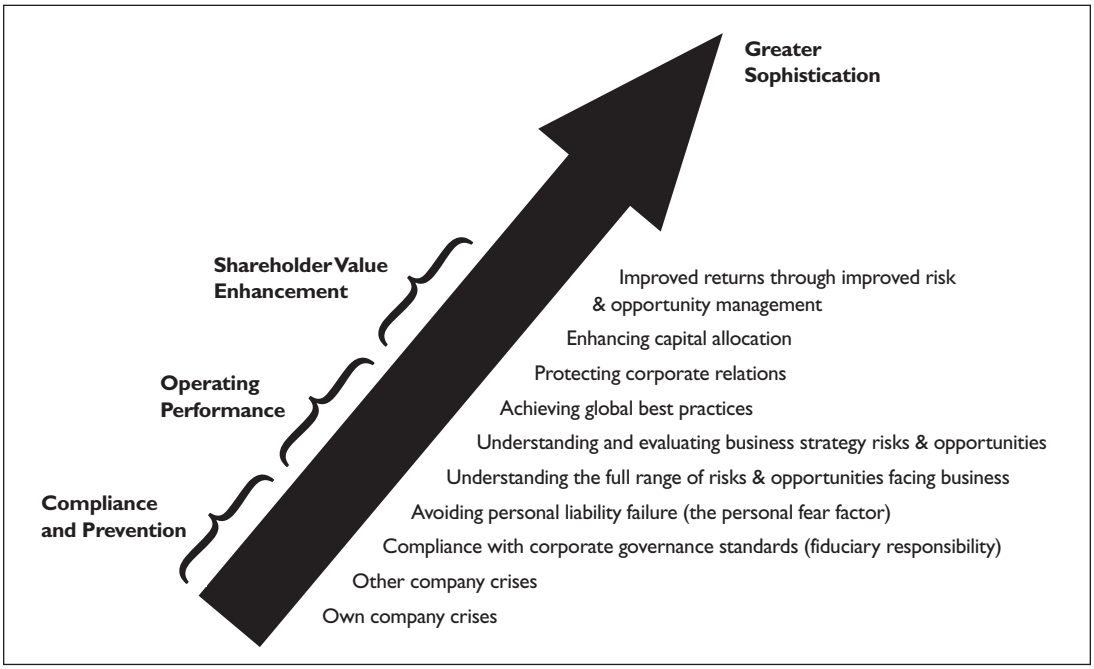
1) Identifying and managing risks discussed as traditional risk management in other Management Accounting Guidelines,
2) Identifying and managing opportunities, often related to innovation, and managing related risks, and
3) Identifying and managing opportunities where others see only unmanageable risk.

In essence, this piece gives guidance on how to develop the capacity to minimize unrewarded risk[1]— risks that have no upside even when handled perfectly, and maximize rewarded risk—risks that present opportunities for success, to develop an ambidextrous organization. Some companies with superior organizational knowledge and capabilities can accept risks and mitigate them effectively while their competitors may choose to avoid potential investments due to a low risk appetite or a narrow assessment of risks. In addition, organizations may be able to identify voids in the marketplace that provide opportunities for innovation others may not see.

This guideline articulates the positive aspects of risk management and how to capture opportunity through innovation. It views the process and output of risk and opportunity management as a source of competitive advantage and a way to successfully navigate charted and uncharted waters to drive new organizational innovation. It also provides recommendations to financial professionals on how they can expand the risk management framework, measures, and management processes to capture opportunities and gain competitive advantage. Financial professionals have a critical role in risk and opportunity management as the creators and designers of systems that establish key performance indicators and measure performance against them.

Managing risks and opportunities is, in many ways, separate from the daily toils of business, and

Exhibit 1: Risk & Opportunity Management Continuum[2]



therefore necessitates an explicit effort to step back and see the full risk and opportunity picture. Managing risk and opportunity is a continuum, illustrated in Exhibit 1, which is increasingly related to strategy, operating performance, and shareholder value enhancement, in addition to compliance and prevention. This Management Accounting Guideline describes a best practice and we acknowledge that risk and opportunity management described here is a journey. Not all organizations will be able to undertake the practice as described. But even those who cannot, may still use this piece to help sensitize their management to begin broadening the approach to risk rather than focusing exclusively on risk as a threat.

THE ROLE OF FINANCIAL PROFESSIONALS

The role of financial professionals in capturing and capitalizing on opportunities related to risk cannot be overstated. The corporate finance and accounting functions may not have full ownership of the risk and opportunity management process but they do possess the strategic vision, risk management expertise, financial management discipline, project management skills, and comprehensive perspective essential to improving the effectiveness and efficiency of risk and opportunity management. Management of these issues is heavily grounded in the role of financial professionals because of their contribution to 1) designing, implementing and overseeing the technical aspects of the process described in this Guideline, and 2) informing the Board of this process and its outcome. Financial professionals can develop approaches to identifying and measuring opportunities and risks, contributing in six essential ways:

1) Establishing guidelines and procedures for strategic planning around opportunities and risks;
2) Improving the identification, measurement, and management of risks and opportunities;
3) Preparing the evaluation;
4) Integrating the model;
5) Training managers to make more effective evaluations of risks and opportunities; and
6) Implementing processes to monitor and communicate business risks and opportunities.[3]

BACKGROUND

In "Identifying, Measuring, and Managing Organizational Risks for Improved Performance", Marc J. Epstein and Adriana Rejc-Buhovac present a model and measures for enhancing the identification and measurement of risks for improved management decisions. Stemming from the risk assessment requirements of the 2002 Sarbanes-Oxley Act in the U.S., and similar new regulations in other countries, it also builds on the Treadway Commission's Committee of Sponsoring Organizations (COSO) "Internal Control Integrated Framework", and its more recently issued "Enterprise Risk Management Integrated Framework". Epstein and Rejc-Buhovac's work further specifies the tools necessary for organizations to identify and measure a broad set of risks. More significantly, however, it concentrates on improving the quality and effectiveness of both operational and capital investment decisions, through more effective management of organizational risk.

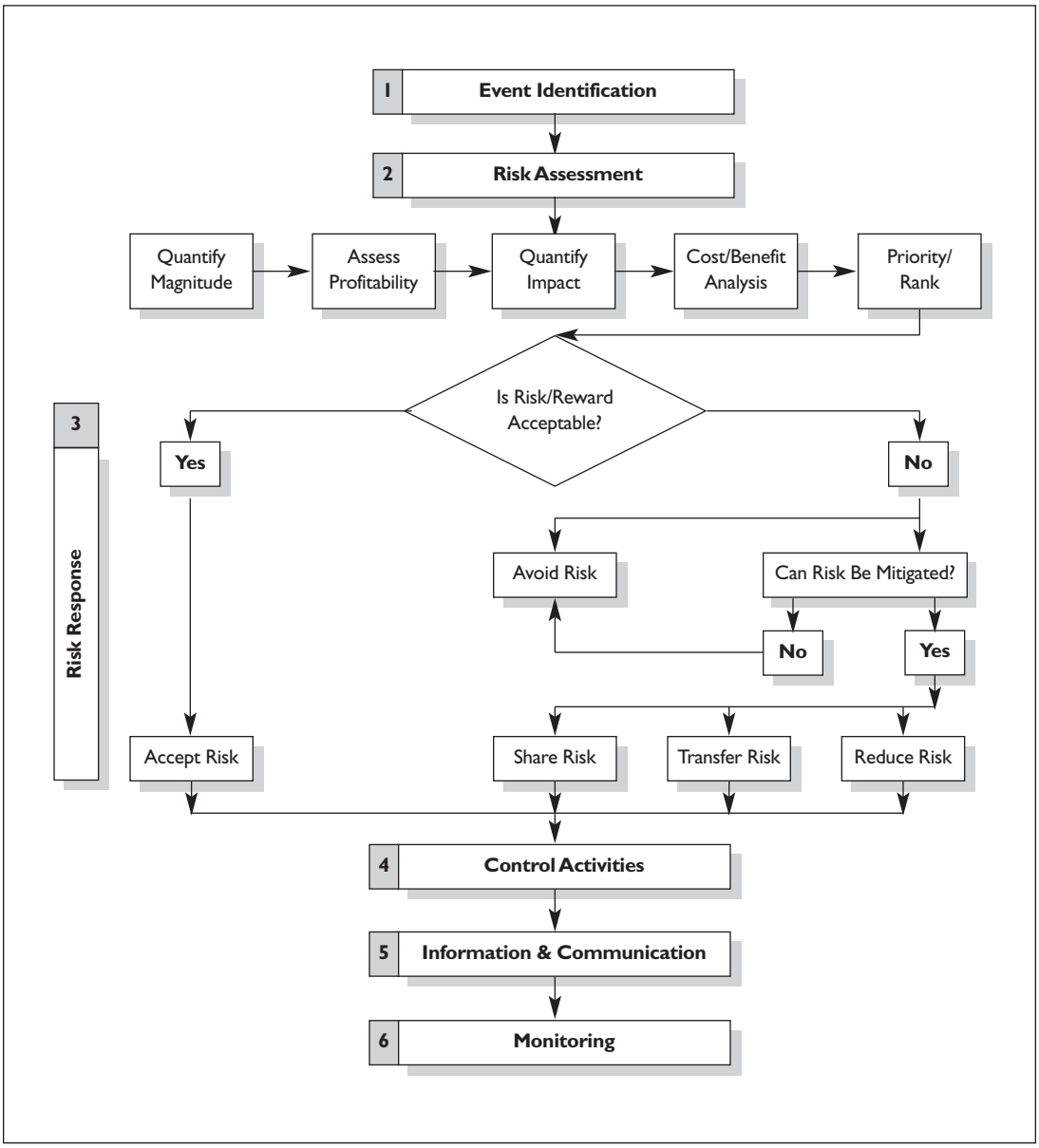
Epstein and Rejc-Buhovac demonstrated that increased measurement of a broader set of risks is necessary, both to meet recent regulatory requirements and to improve managerial performance and stakeholder confidence. They provided a six-step risk assessment model, illustrated in Exhibit 2, which builds on the 2004 COSO *Enterprise Risk Management – Integrated Framework*, and includes:

1) Event Identification
2) Risk Assessment
3) Risk Response
4) Control Activities
5) Information & Communication, and
6) Monitoring

This Guideline builds on the previous guidelines on risk, expanding the risk assessment model to include opportunities and innovation, and provides the needed tools and techniques to capture the positive side of risk while rigorously managing its downside impacts. It outlines strategies for identifying risks and opportunities, techniques that organizations can use to alter their risk appetite to capitalize on opportunities, and methods to manage risks and innovations that stem from the recognition of these opportunities.

Although identifying opportunities that ignite innovation is often considered a lucky coincidence occurring when smart and creative people come up with a good idea that happens to spark market

Exhibit 2: Risk Management Process



interest, in reality innovation is a process. It includes a good idea that is embedded in established policies, procedures, and information mechanisms that allow for innovation to thrive within and across organizations.[4] Where opportunity is concerned, often it is the ability to identify and manage risks that others cannot, that leads to innovation and market success. These risks—which can be to a particular business (such as declining market share), an industry, or society at large (such as global warming) —can spur innovation. Some risks faced by organizations or society provide significant opportunities for innovation and growth where superior organizational knowledge and capabilities enable innovation. Some of these are summarized in Exhibit 3.

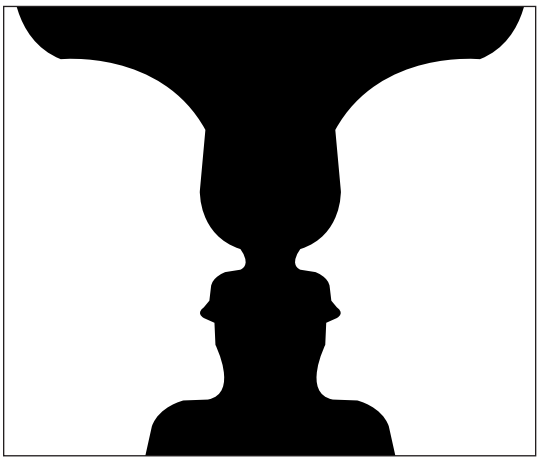
The ability to use tools to simultaneously recognize and assess risk and opportunity can enable a company to manage offensively as an opportunity rather than defensively as a hazard, which is the more typical response.

Exhibit 3: Examples of Risks and their Potential Opportunities

Risk Type	Risk	Opportunity	Example
Social Risk	Obesity litigation	Develop new products for healthier eating.	McDonald's innovates to provide sliced apples, treated with natural product to ensure freshness, in Happy Meals. Creates more appealing salads and partners with Newman's Own to provide high quality salad dressing.
Human Resources Risk	Aging Workforce	Develop creative solutions to retaining retirement-age workers in more flexible positions.	Southern Company, the large power company, devises a "Retirement Reservist Pool" to allow an aging workforce to transition into retirement over time and still provide expertise to the company on a part-time basis, thus retaining institutional memory.
Innovation Risk	Demand for core product diminishes	Project 10-20 years into the future and think about where the industry is headed; compete in advance.	Toyota develops Prius hybrid gas-electric car years before competition. GE develops a variety of energy efficient appliances including water-saving washing machines and high efficiency light bulbs.
Business Continuity Risk	Market gets saturated	Ensure ongoing and increasing consumption in existing markets if cannot expand to other markets.	Wal-Mart lobbies for increased Federal Minimum Wage to boost disposable income of rural Americans, its core market, and ensure continued success.

Being able to see risks and opportunities simultaneously is similar to perceiving both the vase and the two faces in the optical game in Exhibit 4.

Exhibit 4: A Vase and Two Faces



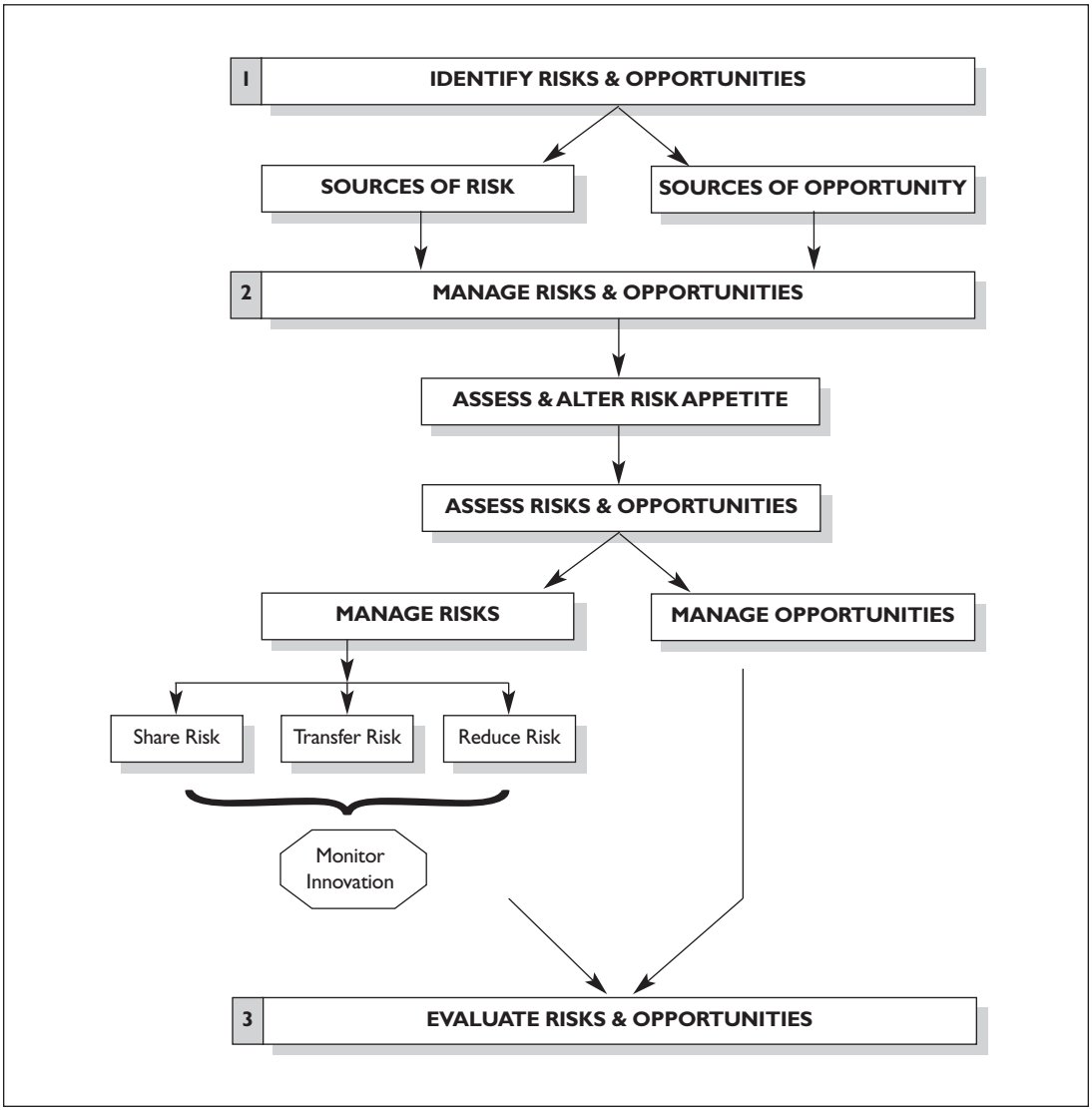
The capacity to see both the faces and the vase, or risks and opportunities, allows companies to develop flexible organizations that can manage value protection and value creation simultaneously. Developing the capability to recognize such opportunities requires a change in the risk management mindset and is critical for financial professionals interested in helping their organizations to better manage and benefit from risk.

MODEL FOR RISK & OPPORTUNITY MANAGEMENT

Companies that are successfully exploiting and protecting present opportunities and exploring future innovations, all the while managing risk, have been called "ambidextrous organizations."[5] These organizations are able to attend to the products and processes of past successes while capturing the opportunities that will define the future. Creating an ambidextrous organization that 1) manages the downside risks and 2) focuses on value creation by capitalizing on opportunities, requires a system to identify, manage, measure, and monitor both risks and opportunities within the existing management structure. Such a system includes:

1) Effective identification of risks and opportunities, including,
   - Sources of risk
   - Sources of opportunity
2) Effective management of risks and opportunities, including,
   - Assessing and altering risk appetite
   - Assessing risks and opportunities
   - Managing risk
   - Managing opportunity
   - Monitoring and a management control system to review the strategy, costs and benefits, structure, systems, and appetite for risk.

Exhibit 5: Risk & Opportunity Management Process



3) Effective evaluation of risks and opportunities through ROI coupled with real options analysis and / or scenario analysis

Aggressively seeking opportunities can be considered a "play to win" (PTW) strategy. PTW has the explicit goal of investing in innovation to produce significant advantage that the competition will not be able to easily or quickly match. In the PTW innovation mode, a company invests in changes in technology, products, and business models, intending to outpace its competition. The company uses innovation as a key part of its business strategy, taking risks and managing them effectively. However, when the main objective is to preserve value and bring risks back within an acceptable range, this can be considered a "play not to lose" (PNTL)[6] strategy. Although innovation is acknowledged as important, high risks and rampant uncertainty may not warrant as aggressive an investment as might be appropriate in PTW. PNTL is not a long-term strategy. Rather, it is a method of preserving value during periods of flux. Regardless of whether a company is following a PTW or PNTL strategy, formal analysis can aid in managing risk and in identifying and capitalizing on opportunities.

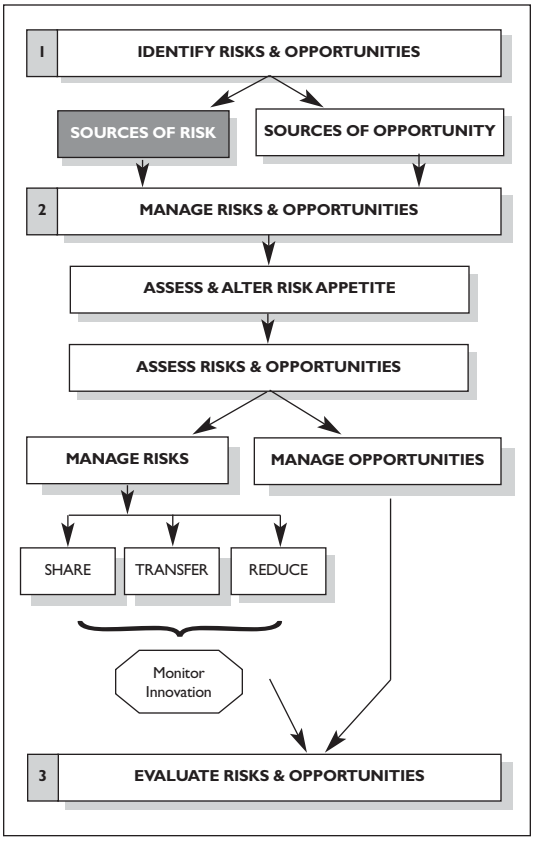
Exhibit 5 depicts the process of risk and opportunity management. It builds on and modifies the Risk Management Process model in the 2005 Management Accounting Guideline "Identifying, Measuring and Managing Organizational Risks for Improved Performance"[7] (Exhibit 2), by including opportunities and offering additional tools and techniques to foster and manage innovation within the risk management context for improved decision making.

1. IDENTIFYING RISKS & OPPORTUNITIES

With the seemingly endless stories of natural and man-made disasters and corporate missteps that devastate earnings gracing the front page of major newspapers, risk has increasingly been considered a negative that must be managed. Although true, this is but one side of a two-sided coin. In fact, companies prosper by taking risks and lose money by failing to manage them.

Sources of Risk

The first step to managing unrewarded* risk and capitalizing on opportunities is to identify the issues that are relevant to one's organization. This identification can then assist in developing countermeasures or seeking hidden rewards.



* Unrewarded risks are those that have little or no upside even when handled perfectly.

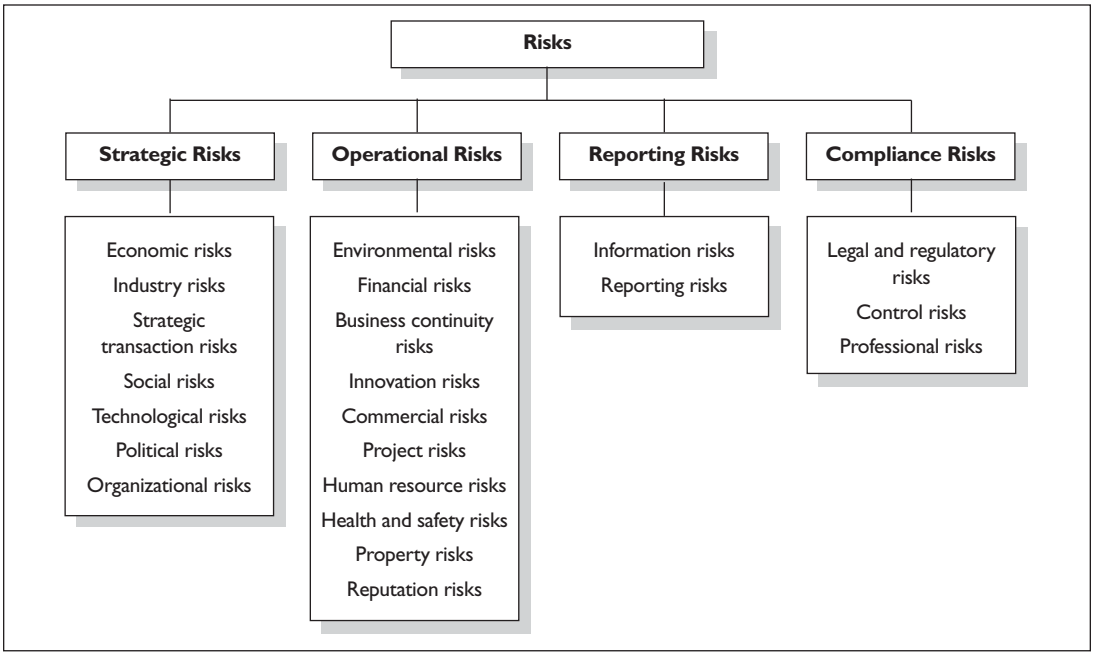
As outlined in the previous risk-focused Guidelines, risks are often placed in four categories—strategic, operational, reporting, and compliance.

- *Strategic risks* relate to an organization's choice of strategies to achieve its objectives. By their nature, these risks endanger the achievement of an organization's high-level goals that align with and support its mission. Strategic risk assessment identifies the risks associated with specific strategies.
- *Operational risks* relate to 1) threats from ineffective or inefficient business processes for acquiring, financing, transforming, or marketing goods and services, and 2) threats of loss of firm assets including its reputation.
- *Reporting risks* relate to the reliability, accuracy, and timeliness of information systems and to reliability or completeness of information for either internal or external decision making.
- *Compliance risks* address the presence or lack of systems to 1) monitor communication of laws and regulations, internal behavior codes and contract requirements, and 2) provide information about failure of management, employees, or trading partners to comply with applicable laws, regulations, contracts, and expected behaviors.[8]

Exhibit 6 illustrates this risk classification scheme and lists some of the issues that fall within each category.

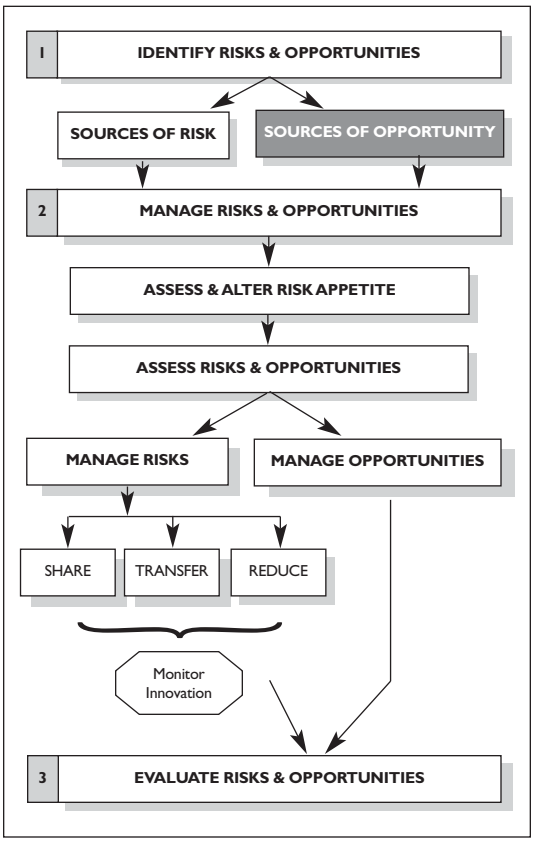
Each of strategic, operational, reporting, and compliance risks have a number of subcategories. Organizations should establish their own list of risks that are most relevant to their businesses and business environment. Those included in Exhibit 6 represent a selection of some of the most critical issues organizations face today. The risk classification scheme thus does not attempt to be comprehensive; rather it provides a general listing of risks and a sample of relevant risks facing organizations.

Exhibit 6: Sources of Risk Classification Scheme



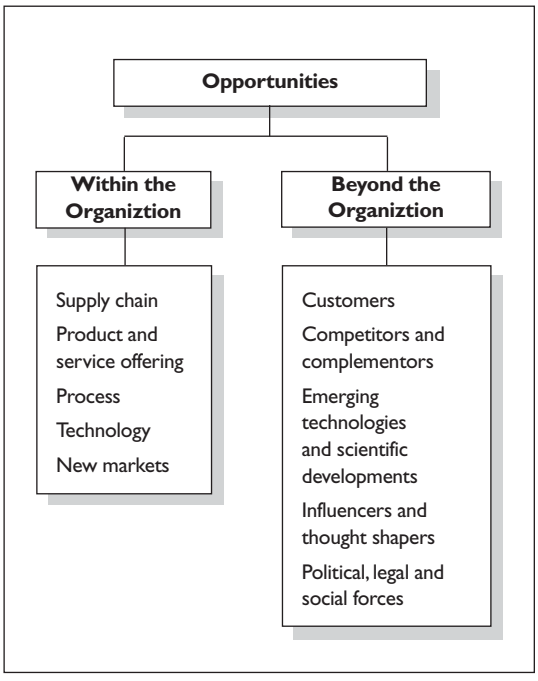
Sources of Opportunity

In addition to identifying threats to the organization, it is also critical to identify opportunities, both as they relate to risk and beyond. Expanding management awareness into these areas may yield fruitful insight into 1) potential opportunities for which innovation may be appropriate, and 2) which risks should be mitigated.



Opportunities can emerge not only from within the organization, but also from outside the narrow focus of day-to-day business. Exhibit 7 illustrates some other potential sources of opportunity.

Exhibit 7: Sources of Opportunity Classification Scheme



This list is not meant to be comprehensive. Rather, it represents a selection of potential sources from which to identify opportunities and innovation.

Sources of Opportunity Within the Organization

Supply Chain: Supply chains, or how value is created and delivered to the market, can be a source of opportunity and innovation. How a company structures itself, partners with other entities, and operates to deliver its products and services can be examined for opportunities. Perhaps bundling services can secure above-average margins, as was GE's experience when it began to couple service contracts with its manufactured electric turbines. Maybe a new approach to outsourcing can create value, similar to the value Sun Microsystems gained when it created strategic partnerships with other organizations. The vastness of many corporate supply chains means that innovation is possible at many of the links along the chain.

Product and service offering: The search for opportunities and innovation can also concentrate on new products and services, or changes to existing products and services. Increasingly, customers are coming to expect these types of innovations, and companies that can identify and deliver on these expectations often achieve great success. New models of cars, mobile phones, iPods, and computer software are but a few of the successful innovations that repeatedly bring customers back for more. Other examples of product and service innovations to capture new market segments include 1) Coach bags expanding from offering elegant bags marketed to mature women to designing small wrist pouches for twenty-something women going clubbing in response to a potential reduction in market share; and 2) famous concert halls offering discounted tickets to dinner and "introduction to music" evenings for singles in large cities worldwide in response to shrinking audience size.

Process: Process improvement opportunities can lead to faster, better, and less expensive products. Examples include innovations in petroleum refining that save energy and costs, electricity generation, and equipment like telephone routers and mail sorting machines.

Technology: Technology provides another source of opportunity by allowing companies to execute strategy quickly, thereby making time a source of competitive advantage. For example, communications technology can speed up planning and the exchange of ideas, while information technology can help to improve systems for managing supply chains and finances. Beyond technology's ability to hasten and streamline operations and communication within companies, the Internet has dramatically impacted the marketplace. Recent commoditization of a range of products—from shopping to banking online—has changed how we do business.

New markets: New markets often create opportunities to source products differently or tap into new consumer groups. For instance, companies like the piano manufacturer Steinway & Sons that twenty years ago may have seen China as beyond the scope of its businesses are now sourcing from, manufacturing in, and selling their products to this enormous market.

Sources of Opportunity Beyond the Organization

Customers: Sensitivity to customer needs or trends can open vistas of opportunity. Companies that focus on shifts in customer behavior and their needs can sometimes anticipate changes, and through innovation, meet needs before the competition does. For example, nightclubs in major U.S. metropolitan areas recognized that a growing share of their clientele were becoming parents and could no longer attend late night shows. This new generation of parents was reluctant, however, to relinquish their identities as hip club goers or stop listening to the cutting-edge music to which they were accustomed. Further, these young parents expressed an interest in exposing their children to such music, albeit in a calmer, quieter, environment. This resulted in "Baby Loves Disco"—a loose affiliation of clubs nationwide that open their doors on Saturday mornings to put on rock and disco shows at a lower volume, with diaper-changing stations, clowns, food and drink for kids and alcohol for their parents. Using the space that was empty during daylight hours, these clubs are running wildly successful add-on businesses with relatively low overhead and have re-captured an audience they were losing to other entertainment providers.

Competitors and complementors: Although being sensitive to the opportunities seized by the competition can provide important learning, developing sensitivity to what competitors avoid because of perceived insurmountable risk can yield opportunity. Identifying how one's own organization is better equipped to deal with these issues than the competition can unlock opportunities. This is illustrated in a later section by the Belgian chain, Kinepolis' experience in the seemingly stagnant European movie theater industry.

Emerging technologies and scientific developments: Technologies and scientific developments, even when not apparently related to one particular industry, can also be a source of opportunity. For instance, the Internet revolutionized grocery shopping in urban areas when supermarkets began offering online shopping and delivery. Some markets went a step further, with innovations like providing clickable recipes where the appropriate ingredients and amounts are automatically placed in a virtual shopping basket. Electronic in-house medical records have also changed how doctors 1) collaborate to treat patients, 2) share information with the public health department, and 3) ensure data is available to all caregivers.

Political, legal and social forces: Opportunities can be found in the political, legal, and social landscape in which business is conducted. For instance, the increasing concern over climate change and human impact on the environment in Europe, Canada, and the United States has led many companies to develop "green" products to meet both consumer demand and increased legislative pressures. For example, General Electric's product line of energy-saving equipment under the Ecomagination umbrella, with offerings ranging from light bulbs to appliances, has allowed it to capture $12 billion in market share. Likewise, the niche market of eco-friendly cleaning products like Seventh Generation and Ecover is growing rapidly.

Each organization should establish its own list of opportunity sources that are most relevant to its businesses and its business environment. The prior list is not meant to be exhaustive, rather it is provided to aid organizations that engage in the process of listing opportunities.

Strategies for Identifying Risks & Opportunities

To hone in on potential risks and opportunities, managers should return to the list of key risks and opportunity subjects applicable to their company.

Organizations can use a variety of methods to identify risks and opportunities, and to overcome barriers to pursuing opportunities that had been neglected due to perceived but unexamined risk. Techniques to encourage such thinking include:

- Learning from the past
- Developing Customer sensitivity
- Learning from others
- Scanning
- Scenario planning
- Seeing the market gaps and change the game
- Developing idealized designs and competing in advance
- Developing Market sensitivity

Learning from the Past

One method of identifying risks and opportunities is learning from the past. Although past experience cannot necessarily predict future performance, signals that were ignored, missed opportunities, and business surprises can provide insight into organizational blind spots. To detect these, some suggest beginning a few decades back and systematically listing the social, technological, economic, environmental, and political changes that occurred in and around one's industry.[9] Then identify those that were missed that had a big impact on the organization. This process, similar to maintaining a loss or near-miss database, enables organizations 1) to grasp how they have reacted to external changes and 2) to identify persistent blind spots in certain areas. This process assists in shifting focus from competitors to alternatives and from customers to non-customers to broaden the scope in which to innovate. This, in turn, can lead to value innovation that moves beyond just beating the competition to providing customers (old and new) with value that far outpaces the competition.[10]

Customer Sensitivity

Customer sensitivity can be a key to identifying risks and opportunities. Understanding customer taste and retaining customers, by delivering on what often seem to be highly variable demands, habitually poses a huge risk to companies. However, this area of risk also provides an enormous opportunity. Trying to understand customers in a way that the competition does not, and creating systems to exploit this understanding, can lead to great gains. Creating a customer-sensitive company by focusing on proprietary information can help to achieve this goal.

The first step to achieving customer sensitivity is to cull information on what they value, what they need, their interests, and shifts in their taste. Creating a system to collect and use this information is critical to maximizing opportunity in the value-creation process.

Tsutaya, Japan's premier distributor of entertainment and information (often likened to Blockbuster, Amazon, and Barnes & Nobles rolled into one) has done just this. In 1984 Tsutaya was

simply a video rental company. However, the company's CEO, Muneaki Masuda, envisioned creating a cultural resource driven by understanding customers' new needs in an increasingly affluent Japan awash with material goods. One of the first Japanese companies to invest in technology to manage and mine customer data, Tsutaya initially used information collected from its membership cards—like many supermarket chains internationally—to track sales and inventory patterns across the whole retail chain. This allowed the company to see who was buying what, where, and when. The information helped Tsutayato predict what customers may next be interested in. Tsutaya then took a further step, using the Internet and later cell-phone-based technology to dramatically expand its relationship with, and data gathered about, customers.

Through its use of proprietary information, Tsutaya has built itself into a "cultural convenience" providing 1) Online shopping, product reservation, and availability confirmation—these services also serve the company by ensuring less unused inventory and providing an early warning system that shows a ground swell of popular demand for a product, thus guaranteeing that stores are appropriately stocked, 2) E-mail magazines sent to mobile phones or computers enabling tracking which cultural categories are shrinking, growing, or changing, 3) Electronic coupons sent to the mobile phone that attract customers to the stores; the company has found that coupon users shop 22% more often and spend 7% more than those without coupons, and (4) Online recommendations that drive over 60% of online sales. Tsutaya's sophisticated customer tracking system enables it to avoid excess inventory, delivers an accurate product mix to each store, and serves as an early warning system about shifts in customer tastes. It allows the company to change with, or even earlier than, their customers. There are now 1,273 Tsutaya stores in Japan, and almost 40% of Japanese twenty-somethings are members. The company is ranked number one in music sales and movie rentals and number three in books and computer games. In 2006, the company's revenues were $1.9 billion, with $120 million in profits and a $2.3 billion market capitalization.[11]

Tsutaya saw that it could beat the competition by developing keen customer sensitivity and innovating with data collected on customer taste and shopping habits. It transformed what others saw as customer risk into an opportunity to capture huge market share and continuously serve customers in ways they never imagined. In a market that has found customer taste to be fickle and very difficult to keep pace with, Tsutaya saw an opportunity to combine technology and insight into people's everyday lives to make customer taste—the very thing others saw as risk—the keystone of its success.

Creating a focus beyond specific products to examine the entire user experience can also lead to business model innovation. This is what Starbucks did when it focused on creating a "third space" outside the home and the workplace for people to convene and socialize. Its stores are designed to encourage customers to spend time in them—from the round tables that have been shown to make people look less alone to the free Wi-Fi hotspots that allow customers to go online from their laptops at any Starbucks. Although it earns most of its profits from the take-out coffee business, the company has created a business model based on people's social behaviors. As a result, it can charge a premium for a product that not long ago the public thought was a commodity readily available at a lower cost. Starbucks saw a market space to combine social behavior with a commodity that was commonly considered un-alluring. Before Starbucks came along and transformed coffee into a luxury to which most working people could treat themselves, the coffee market in the U.S. had remained, for the most part, within the four walls of the supermarket and the convenience store. Starbucks created opportunities where others saw no potential.

Observing customer behavior has become a practice in a range of companies that hire ethnographers to examine customers' underlying values, thus helping to identify unmet needs.

Beyond sensitivity to current customers, considering the needs of those who are not yet customers also has the potential to drive innovation.

Learning from others

The adage, "A wise person learns from experience, but a wiser person learns from the experience of others," holds as true in business as it does in life. In 1999 the Institute of Medicine, an arm of the National Academies, released the report "To Err Is Human", estimating that 98,000 patients die annually from preventable medical errors—the release of this data coincided with several high profile medical errors including amputation of an incorrect limb. As a result, there was a wake-up call among many health care providers regarding patient safety. They realized that the majority of adverse events in health care

are the result of human error—particularly failures in communication, leadership, and decision making.

Realizing that devising solutions to the grave risks related to human error could take years to develop, leaders in the health care industry began looking to other sectors for solutions and models of innovation. A few top health care managers recognized the similarity between the structures of medical and aviation teams, as well as the causes for medical errors and plane crashes. As a result, health care organizations began to innovate around patient safety, guided by the aviation industry, which has a similar structure of captain (surgeon) and crew (nurses and anesthesiologist).

Research found that hospitals that instituted aviation-inspired practices like pre- and post-operative briefings, simulator training, checklists, annual competency reviews, and incident reporting systems, had fewer malpractice suits and post-surgical infections, as well as shorter patient recovery times and higher employee satisfaction. The health care industry is successfully learning from an industry very far from its core competency, thereby leapfrogging decades of potential mishaps that would come only from trial-and-error learning.[12] This process of learning from another industry allows health care providers to efficiently address a major risk and save costs by quickly honing in on solutions for patient safety instead of taking years to develop them.

One company, Vista Medical Technologies, took a step beyond risk mitigation, seizing on the similarities between surgery and aviation, when it invented a minimally invasive cardiac surgery using fighter pilot technology. Vista devised a helmet, similar to the one that fighter pilots use, fitted to meet the needs of heart surgeons. The aviation helmets have pop-up display technology that project all of the gauges and targeting information pilots need on a transparent screen in front of the pilot's eye. This means they do not need to look down, avoiding distraction when split-second decisions are required. The helmet modified for heart surgeons provides a stereoscopic image of the inside of the chest from two lenses of a probe threaded into the chest cavity prior to surgery. The rest of the cardio-thoracic team gets the same view thanks to television screens that display the images inside the operating theater. With this technology, the surgeon no longer has to crack the patient's chest to perform surgery, and the surgical team is assured that they are all seeing the same image of the surgery. This streamlines information and cooperation under high pressure. The success of endoscopic coronary bypass using aeronautical technology has expanded into other microsurgical fields.

Looking across industries to a seemingly totally unrelated sphere allowed the medical field to mitigate one of its central risks, as well as devise innovative technology that could drastically change the practice of microsurgery.

Scanning

Active scanning of the business environment, potential competitors, or rival technologies is critical to successfully seizing opportunities and combating risk. Although all managers who are cognizant of the environment in which their company is doing business passively scan to some extent, the data from this scanning may be flawed. Passively receiving information from customary channels usually reinforces managers' assumptions. Active scanning, however, is often driven by a hypothetical threat, such as how a new technology could disrupt the current business model.[13]

Had the music industry stopped to reflect on the power of the Internet and the allure of peer-to-peer sharing of single songs using this technology, it could have innovated before Napster stole such a large part of its market. At its zenith, Napster boasted 60 million users swapping three billion MP3 music files, while album sales dropped 30%.[14] At the same time the music industry suffered setbacks and resorted to suing illegal file-sharing companies, Apple Computers saw an opportunity at the periphery of its business and quickly innovated to create the iPod and iTunes, a computer-based music library.

iPod was created because Steve Jobs realized that a missing component of digital music and the experience of listening to it was the ability to make it portable. The iPod was rolled out within nine months and was quickly followed by iTunes Music Store to store and play music on the computer. Although the iPod and iTunes were technological innovations, the iTunes Music Store was a business model innovation that changed the way people purchased music. Apple recognized that instead of buying entire albums, consumers wanted access to individual songs for easy loading onto their iPods. The company had hoped to sell a million songs in the first six months, but did that in the first six days. Where others only saw threats, Apple saw an opportunity and expanded its business significantly. By 2005, Apple's share price and profits had tripled[15] and it still continues to

dominate the market. As a result of scanning the peripheries of its business, recognizing opportunities, and innovating, Apple catapulted itself from a boutique computer maker to a multi-platform company that changed the rules of the game for three industries—PCs, consumer electronics, and music—and it has not stopped innovating.

Scenario Planning

Once mainly the domain of crisis management teams, scenario planning is a powerful tool for identifying both risks and opportunities. Identifying the factors that could weaken or decimate one's business allows for 1) early action to avert catastrophe, and 2) the creation of well thought-through action plans in case the risk materializes. Likewise, this identification can lead to innovative thinking that can generate new ideas.

In 2002, weak signals of a possible supply chain disruption began to emanate from the increasingly acrimonious labor negotiations concerning the west coats ports of the U.S. between the International Longshore and Warehouse Union and the Pacific Maritime Association. When the union staged a work slowdown, the ports were locked for 10 days in late September to early October. This lockout froze a massive flow of containers through the 29 ports that accounted for $320 billion in annual imports and exports. Because freight could not be offloaded at nearby ports which were unable to handle the huge container ships, a vast inventory of goods was marooned offshore. Those companies that had a plan, and were sensitive to the weak signals of deteriorating labor negotiations, successfully avoided huge negative impacts on their businesses. Large retailers like Costco were able to get their holiday inventory shipped in September, averting a loss of millions of dollars of revenue. Wal-Mart provided for early shipments, and "was able to clear port on most of (their) Christmas items before the shutdown began… (they) had a contingency plan and it worked."[16] In contrast, the companies that did not have, or implement, a contingency plan reported reduced sales as a consequence of the lockout. Mattel reported that even three weeks after the lockout it had $75-$100 million in wholesale goods stuck on the water due to a logjam of ships waiting to unload.[17]

Scenario planning can also help managers identify potentially disruptive competitive technologies, helping to spur innovation to stay ahead of the competition and new market entrants. Scenario planning was a tool used by Jim Manzini, CEO of Lotus, to recognize the threat posed by Windows in 1992. That year Lotus was at an apex, having launched Lotus 1-2-3, which grabbed 70% of the global spreadsheet market. Although stock price, revenue, and profits were soaring, Manzini recognized that this could be his company's moment of maximum risk. New market entrants and other companies would likely try to innovate and beat Lotus at its own game. In addition, the computing world was shifting from an MS-DOS platform to Microsoft applications that ran on Windows. Manzini drove through the design and launch of Lotus Notes, the world's first collaborative software program, despite resistance from most of his senior management. Customers flocked to use Notes and as a result, Lotus survived, and thrived, while other software makers that failed to anticipate the disruptive technology of collaborative software posed by Windows collapsed. By 1996, Lotus' revenues grew from $1 billion to $3.5 billion thanks to Lotus Notes, while its competitors, Borland and WordPerfect, lost 90% of their value.[18]

See the Market Gaps & Change the Game

Instead of continuously trying to compete with other businesses in one's category, particularly when there seems to be a large, unbeatable competitor, companies can change the parameters of the game. What gaps exist in the current industry model? Are there different customers to serve, another type of business model to generate? Are there complementary products or services that hold value?

Consider Kinepolis,[19] a Belgian movie theater operator that entered the market when cinema audience numbers were in steep decline and cinema operators across Belgium were closing down. The first Kinepolis opened on the ring road outside of Brussels—a location challenging the conventional wisdom that movie theaters needed to be centrally located to capture foot traffic and spontaneous movie watchers. It also entered the market when most observers believed that a movie theater could not be successful. The world's first megaplex, with 25 movie screens and 7,600 seats, provided superior screens, sound, and seats, the latest movies, and free parking in a city notorious for its high parking cost and scarce parking in the downtown area. Kinepolis achieved spectacular growth, capturing 50% of the market in Brussels in the first year, expanding to France, Spain, Poland, and Switzerland, and posting a 14.6 million Euro profit in 2006.[20] It created opportunities where others only saw insurmountable risk.

Idealized Design & Competing in Advance

Much like a well-played game of chess, idealized design formulates best outcomes by envisioning an ideal solution, and then works backwards to the present. A master chess player sees the board and imagines a multiplicity of scenarios to achieve checkmate, then works backwards move-by-move to the current state of the board. As in chess, business strategizing that projects to an imaginary future and then moves back to the present allows for free thinking without allowing present constraints to impede potential breakthrough ideas. This constructs a much wider canvas on which to envision risks and opportunities.

This method was used when, in 1951, the Vice President at Bell Laboratories challenged his management team to imagine the future of telephony and re-invent the telephone with none of the then current technological constraints. Given this wide scope, the group anticipated all but two changes to the telephone system, including touch-tone phones, consumer ownership of phones, call waiting, call forwarding, voice mail, caller ID, conference calls, speaker phones, speed dialing of numbers in memory, and mobile phones.[21] Free of the technological limitations of the day, the team at Bell Labs envisaged our modern day telephone 50 years before most of the equipment was invented. Releasing people from the constraints of what is possible in the present can lead to inventiveness that produces breakthrough innovations.

Consider also the story of the Toyota Prius gas-electric hybrid car,[22] the concept that was born when Toyota was at the pinnacle of its unrivaled market supremacy. Trying to envisage what might transform its industry and threaten its market share in the future, Toyota's leaders convened a team to create the first great car of the 21st century in 1993, nearly a decade before that century arrived. Toyota's leadership pushed the team beyond the technological limits it had previously worked within, and created a new equal access system of communication and information sharing to replace the traditional hierarchical model. It also brought engineers normally based at production plants to the planning floor to work out glitches at the blueprint stage, before the new car ever started on the assembly line. As a result of a series of technological breakthroughs, manufacturing innovations, and careful marketing, Toyota has sold more than 1 million hybrid cars—five times as many as its nearest competitor—since introducing them in 1997, and has tripled its U.S. monthly sales to 24,000.[23]

Market Sensitivity: Seeing opportunities where others are blind

When Cirque du Soleil, the Montreal-based entertainment empire, burst onto the circus scene, Ringling Bros., Barnum & Bailey and other smaller circuses were busy competing with one another for an ever-shrinking market. Audience sizes were decreasing, and with them, revenues as alternative forms of entertainment and increased concern about use of animals in traveling circuses eroded the mass appeal of the traditional big-tops. However, as revenues and audience sizes declined, the traditional circuses missed the signals that the market was changing rapidly and that they were quickly becoming outdated. Had any of these companies taken stock of the situation and seen beyond their direct competitors, they may have identified the opportunity to capture a new market beyond the children and families who were no longer interested in sitting through a three-ring circus. These companies could have shifted their focus to adults who were willing to pay a premium for a theater experience, or changed their offerings to appeal to an audience that was enthralled with movie stunts and video games. Instead, two street performers, Guy Laliberté and Daniel Gauthier, recognized this shift and innovated to create a hybrid circus/theater that has been viewed by over 60 million people in 90 cities globally. Cirque du Soleil's Annual revenue now tops well over half a billion U.S. dollars.[24] It not only provided a new way to increase revenue, however, it also devised a new way of reducing costs by eliminating a major cost component—the animals. In so doing, Laliberté and Gauthier changed the very definition of the circus and with it, the market.

As in the case of Cirque du Soleil, thinking beyond the boundaries within which companies in an industry traditionally compete allows for breakthrough innovation. In *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant,* Kim and Mauborgne advocate looking systematically across alternative industries, strategic groups, buyer groups, and service offerings to innovate and tap into unclaimed "blue oceans" of new market space. In so doing, a variety of opportunities can be seized and their risks minimized.

One way of spurring innovation is to focus on customer conditions that might stimulate changes in technologies or industry. Three groups of customers can be sources of this information:

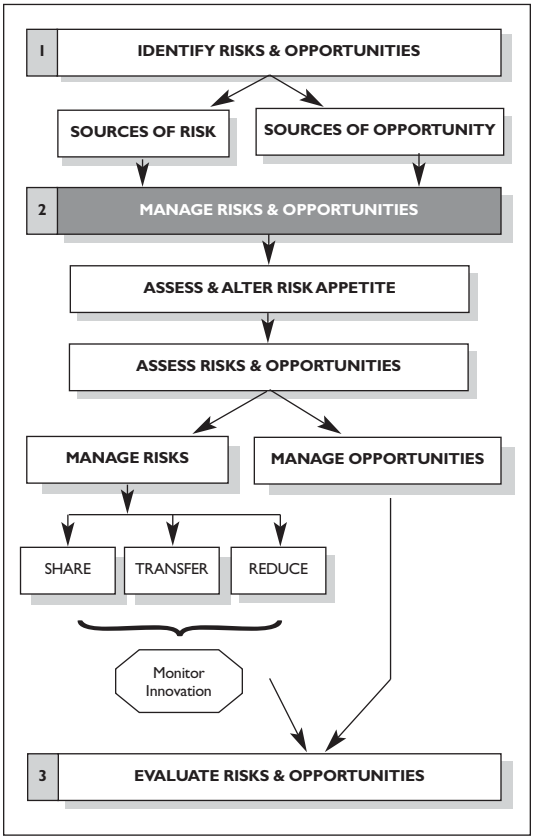
- Those who are over-served and consider the existing solutions to be more than they need;
- Those who are under-served by these solutions; and
- Those on the fringe who lack the skills and resources to benefit from these solutions.[25]

Intuit, the developers of Quicken, TurboTax, and QuickTax (for the Canadian market) — personal finance and tax software tools—recognized a huge under-served group of potential consumers of personal finance and tax preparation technology. The company's founder, Scott Cook, recognized that many people were interested in preparing their own taxes and organizing their finances but that the complexity of the existing software was a barrier to its use. Intuit, the company he founded, researched the software tools that financial advisors and tax preparers were using, gleaning insight into which components were critical and which parts were add-ons and under-used. The company then created a simplified version of this tax preparation software, stripped of the financial jargon, with a user-friendly interface and provided excellent customer service. Today, Intuit is one of the largest software companies in the world, with approximately $2.3 billion in annual revenue and a $10.4 billion market capitalization.[26] Intuit examined customer conditions around personal finances and recognized a need that could be filled with some relatively simple technological innovation. So simple, in fact, that Intuit cites the pencil as one of its main competitors.

Financial professionals have a critical role at the stage of identifying risks and opportunities. Developing a well-defined process for identifying and categorizing risk and opportunity factors within a framework that includes financial evaluation falls within the purview of these professionals. Their involvement at the strategic planning stage to ensure that major changes are considered within such a framework ensures more rigor from the outset. In addition, after risks and opportunities have been identified, they should be prioritized by means of strategic grid analysis or a similar method. The Chartered Institute of Management Accountants has developed a tool—the CIMA Strategic Scorecard—that can assist in prioritizing risk and opportunity.[27] Financial professionals can play a critical role in this process because of their experience implementing such scorecard methodologies.

2. MANAGING RISKS & OPPORTUNITIES

After risks and opportunities are identified and prioritized, they must be assessed and managed to see if the risks pose a large enough threat, and the innovations a big enough opportunity, to implement mitigation techniques or bring an innovation to market.

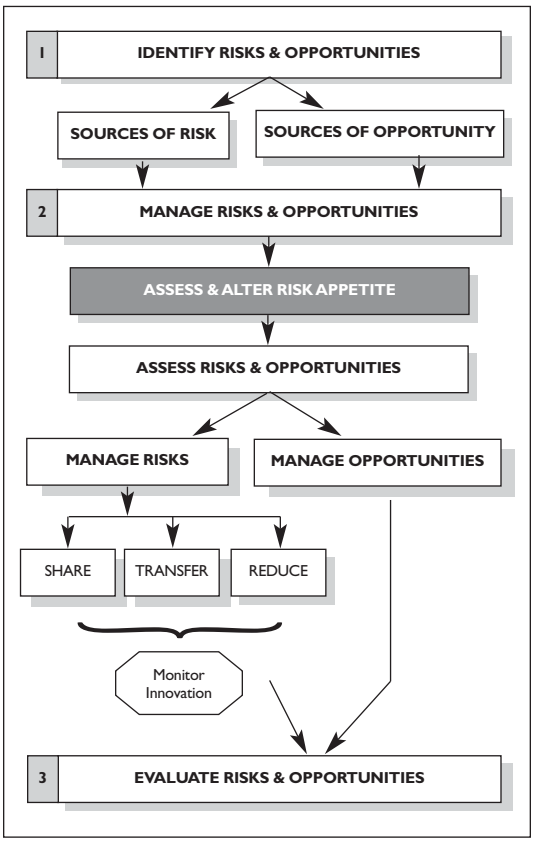


Assessing, and potentially altering, the organization's risk appetite is the first step to managing risks and opportunities. Evaluating its risk appetite allows an organization to decide how best to respond to the opportunities and risks it has recognized. Risk appetite should be defined and agreed upon at least annually, well ahead of assessing individual risks and opportunities.

Assess and Alter Risk Appetite

Risk appetite is generally defined as the amount of risk exposure, or potential adverse impact from an event, that an organization is willing to accept without taking action.[28] Once the risk appetite threshold (also termed the risk tolerance) has been reached, measures can be taken to bring the exposure level back within the accepted range, thus matching risk exposure with risk appetite.

Risk appetite can also be described as intelligent risk taking, coupled with disciplined risk management.



Assessing Risk Appetite

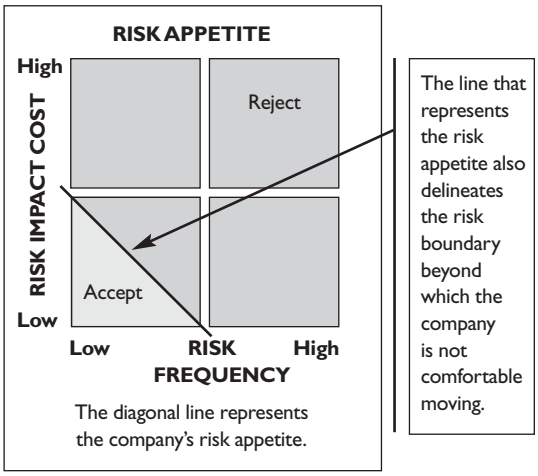
A company's risk appetite is heavily influenced by its culture and changes over time. The formal enablers of a company's culture—and determinants of its risk appetite— include the CEO, other company leaders, and the strategy these leaders implement. Informal processes and enablers also influence corporate culture and the company's attitude towards risk, including the company's human resources and other factors. One way that senior financial executives can influence managing risk and capturing opportunity is to develop formal mechanisms to determine and adjust risk appetite.

Risk appetite guidelines should be established by senior management and agreed upon by the board. Each major opportunity and risk must usually be examined to evaluate whether it falls within tolerable limits. To assess and determine risk appetite, it can sometimes be useful to begin with asking the following questions:

1. Where should the organization allocate its limited time and resources to maximize opportunity and minimize risk exposure? Why these opportunities and risks, and not others?
2. Which opportunities and what level of risk exposure require immediate action? Why? Is quick capture of the opportunity driven strictly by fear that the competition may move first? Have other issues such as alternative opportunities, market reaction, and resource allocation been evaluated? Are reputation, regulatory interference, and impact on credit rating being included? The priority given these issues should be based on predetermined risk tolerances.
3. What types of opportunities and what level of risk require a formal response strategy? Why this type/level? What happens if the type/level is higher/lower? These levels should be predetermined for the organization based on authority and delegation limits approved by the board.
4. What opportunities has the organization missed, and what risks affected the organization in the past? How were they handled and who managed them?

The answers to these questions can help companies understand where in Exhibit 8 the organization's risk appetite is drawn, often reflecting the cost impact of a risk and the frequency that it materializes. Everything that falls within the light gray triangle is within the risk boundary, and is acceptable to the company. Everything beyond the risk appetite line, in the gray section, represents risks at a level beyond the risk boundary, and therefore not acceptable to the organization. These risks require risk mitigation activities.

Exhibit 8: Organizational Risk Appetite[29]



A variety of factors influence an organization's level of risk appetite and its ability to accept more risk. These can include:

- Willingness to Bet
- Organizational Size
- Financial Health
- Reputation
- Superior Tools
- Experience
- Agility

Willingness to bet: Some organizations are simply more willing to bet; they are risk takers while others are more risk averse. This can often be attributed to their leadership or structure—the propensity towards risk is often in the DNA of the organization. Such organizations may also have less to lose than their competition. Companies with an increased willingness to bet may have a higher tolerance than their more cautious counterparts.

Organizational Size: Size of the organization can influence risk appetite. Larger more diversified companies are exposed to a wide variety of risks. They are often comfortable with this because risks and exposure are spread across the business and, thus, any one event is likely to have a smaller impact. This also holds true for the size of the investment compared to the overall portfolio. Take, for instance, a large company that has 5% of its investments in a country that is becoming increasingly politically unstable. This company may be more willing to stay and see how the situation plays out than a small company with 25% invested (with similar liquidity of the investment and rates of return). Thus larger organizations may have a higher risk appetite, because exploiting opportunities will affect them less overall. However, some large organizations may have a diminished risk appetite as they move from being entrepreneurial to wanting to ensure their longevity. In fact, some small companies may have a high risk appetite as a result of greater agility and entrepreneurial spirit.

Financial Health: A financially healthy company is often in a strong position to take on more risk, because it can withstand potential losses more easily than a less healthy firm. The healthy organization, therefore, has a higher risk appetite than its less healthy competition. This higher risk appetite due to financial health can encourage companies to take advantage of innovation opportunities that another company might not be able to take. In some cases, however, companies that have achieved a financially healthy position because of their caution and risk aversion would continue to avoid risks deemed too great.

Reputation: Companies with strong reputations often have a higher risk appetite because their stakeholders and shareholders sometimes have more confidence that the company will take risks without putting the business at stake. This is not true, however, for businesses based on trust where product safety is central, often called franchise risk. Contrast a pharmaceutical company with an apparel company, both with international supply chains that produce inferior products. The pharmaceutical company with a sub-par (and therefore unsafe) product could be put out of business while the apparel company with clothes that came apart at the seams would likely only lose market share. In some cases, however, a strong reputation may derive from a history of being risk averse. Understanding how much damage taking a risk could have on reputation is important to consider.

Superior Tools: Some companies have developed superior risk management capabilities that allow them an increased risk appetite. These can include 1) rigorous risk identification and evaluation methodologies, 2) access to risk mitigation instruments such as insurance, 3) joint venture partners, and 4) superior access to networks of stakeholders, advisors, and local contacts. These networks can both alert the company to risks and provide some protection against risk impact. For instance, access to the foreign minister in a developing country where transfer payments are the norm—for a company ethically comfortable with and legally allowed to engage in such payments—can buffer a business willing to make transfer payments from being targeted by a predatory government. On the other hand, lack of access to the minister can open a similar company up to risk of nationalization.

Experience: A history of dealing with specific risks often helps organizations to improve risk management and responses over time. A company with significant global experience, for instance, is often better able to analyze, capitalize on, and react to opportunities and risks in its international operations than a new entrant unfamiliar with the political or supply chain challenges inherent in such operations. This enables the experienced organization to have a bigger risk appetite than its inexperienced competition.

Another type of experience is gained from launching a product in a limited market, or prototyping to test its reception before releasing it to the wider marketplace. Toyota did this with the original Prius hybrid car, first releasing it only in Japan, and then refining its offering before its

wider launch in the United States. This is also a common practice among computer companies who launch version 1.0 of software to a limited market, then refine the product before launching a much-improved version 2.0. Prototyping allows companies to test their products on a small scale, where potential losses would have a smaller impact. The practice of prototyping reduces the risk of introducing new products, thereby leaving additional capacity for other risks in cases where the company perceives less potential loss from innovation.

Agility: An agile corporation is one that predicts risk well and can respond quickly and effectively to risks as they present themselves. These organizations can measure risk early and therefore plan for it. Establishing protocols for events ranging from supply chain disruptions to inclement weather can help a company withstand the impact if risks materialize. Consider the experience of UPS, the parcel delivery company, during the Louisville, Kentucky blizzard of 1994. Louisville happened to be the company's central U.S. package sorting center, and when the snow shut down the roads and airport, 100 UPS planes around the country were ready to take off laden with packages bound for Louisville. While the planes were re-routed to other sorting centers, UPS implemented its emergency response plan to deal with the hundreds of thousands of packages at the Louisville site. The airport runways were cleared within a day, while the roads in and around the city were closed for five days. This meant that UPS employees in the Louisville area were unable to get to work. So UPS flew other workers from around the country to work at the sorting facility. The company's uniform machinery and standardized processes allowed workers to step in on an emergency basis. Such standardization can reduce risks whether due to a blizzard, a Teamsters strike, or because of an unexpectedly high volume during the holiday season.[30] Establishing a plan to deal with business disruptions and creating standardized methods of doing business as part of contingency planning has made UPS an agile organization with an increased risk appetite and a better capability for capitalizing on opportunities related to risk than its competitors. The company delivers packages to all of the world's countries and territories not embargoed by the U.S. government, and has consistently outperformed the Dow Jones Industrial Average, the S&P500, and its major competitors.

Altering Risk Appetite

Although the board sets the overall risk philosophy, sometimes there is a sense within organizations that capturing opportunities poses too many threats, preventing organizations from capitalizing on identified prospects. If the goal is to capture an opportunity, and risk appetite is a hurdle, altering the risk appetite might be desirable. This can be accomplished by developing the capacity to accept more risk, thereby shifting the risk appetite boundary as depicted in Exhibit 9.

Organizations can alter their risk appetite in a variety of ways. Some of these include:

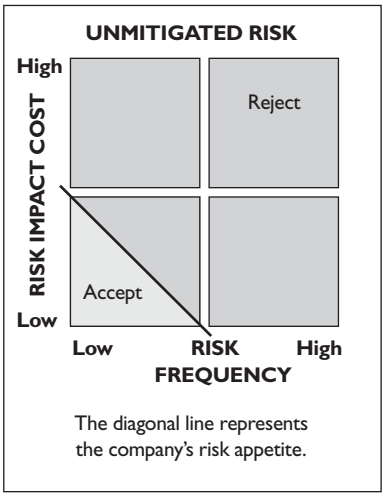
Through experience by:

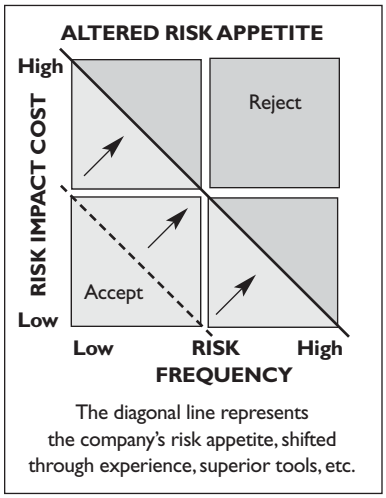
- Improving organizational learning
- Using networks for increased learning

Through superior tools, including:

- Expanding the time horizon
- Expanding the breadth of stakeholders considered in the analysis

Exhibit 9: Risk Appetite Tolerance[31]





Experience

Improving organizational learning: Developing the ability to learn from effective and ineffective risk experiences, and incorporating this learning into control system policies and procedures, can help organizations increase their risk appetite. This can be done through building a corporate knowledge base and regularly improving business processes.

Using networks for increased learning: Incorporating stakeholder knowledge and management strategies into learning systems leads to a larger pool of knowledge to tap, both for risk mitigation and for innovation design. Gathering this information can also foster more support and trust from a wider network. For instance, the advisors who can give insight into socio-political risk can also be a good resource for testing ideas about innovations in less stable markets.

Superior tools

Expanding the time horizon: Evaluating risks and opportunities over short-term horizons can lead to overly conservative behavior in some circumstances, and overly risky behavior in others. Expanding the time horizon allows for thorough examination of potential risks, and provides more lead time for planning to generate creative, systematic responses to risk. The result of a longer time horizon is that, overall, the organization becomes more comfortable with risk. This increases its risk appetite because adequate response strategies are in place. This is preferable to responding in the moment to put out emerging fires, which drain the capacity to approach issues strategically. However, an overly long time horizon can mean less clarity and greater risk of error, so the horizon must be set at a place that balances these issues consistently with the nature of the business.

Expanding the breadth of stakeholders considered in the analysis: Firms that focus only on immediate financial returns cannot fully explore the effect of the risk/opportunity management decision. In some cases an affordable cash loss can signal a loss of control with a more important impact on reputation, regulatory interference, and a credit rating that would far outweigh the financial risk. Understanding who will be affected by your organization's methods of dealing with risk, their reaction, and in turn what impact this may have on the company, can expand both the understanding of risk and the possibilities for innovation.

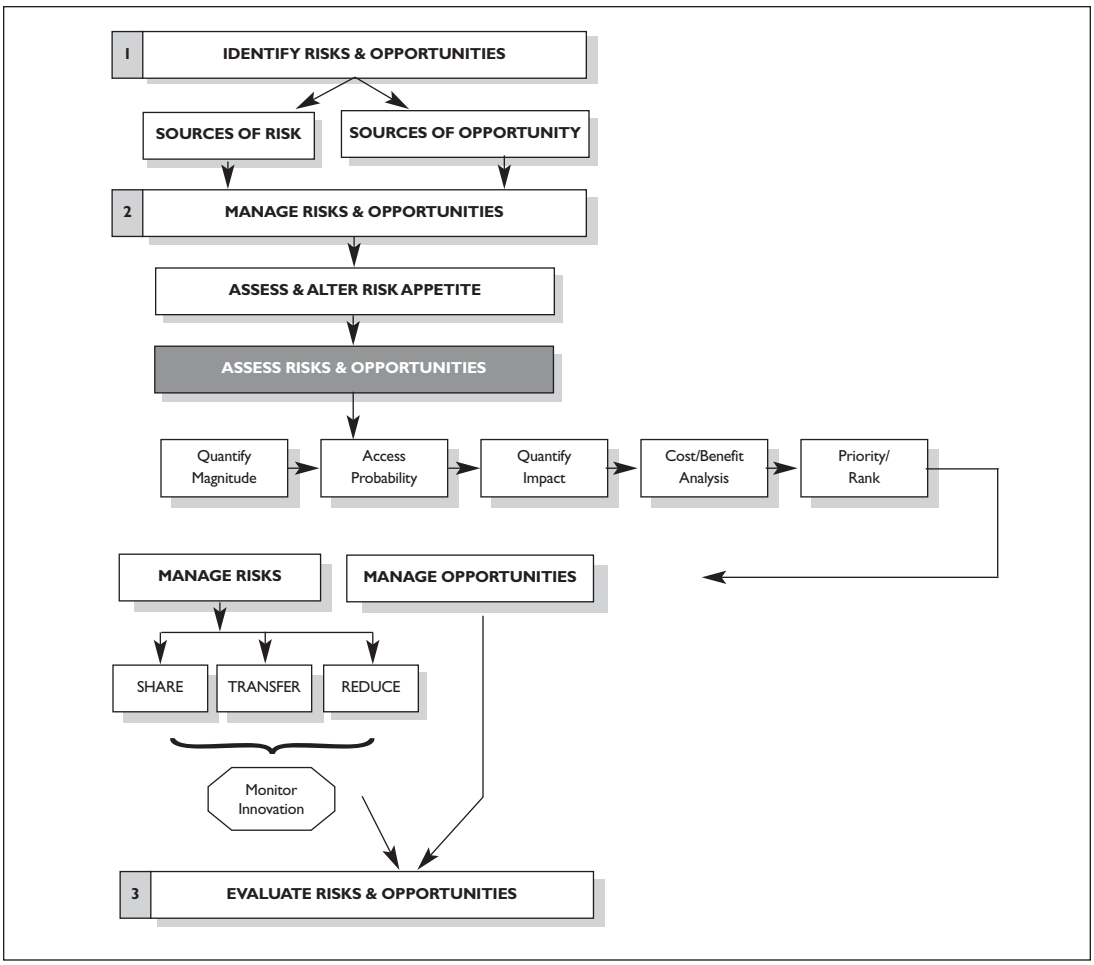
Likewise, innovations can capture new markets but also ostracize existing customers, suppliers, and others. For example, when the market of high fashion bag manufacturer Coach began to shift, the risk of innovating to keep up with women's changing lifestyles had the potential to upset the delicate task of serving its already devoted clientele. Although some in the company were resistant to changing the iconic brand, the company's CEO, Lew Frankfort, recognized the need to include more stakeholders in the company's customer analysis. This led to 1) tracking customer behavior in Japan, deemed the most "fashion forward" market, 2) developing new techniques to track and serve Latinas who were quickly becoming core Coach customers, and 3) creating new products like the wristlette (a small wrist pouch to hold lipstick, keys, and money) aimed at a much younger set of customers. Through expanding its focus to stakeholders beyond its core of mature women, Coach was able to capture opportunities and stay ahead of the competition.

Financial professionals—including risk officers, financial officers, and internal auditors—play a key role in supporting the organization's risk management philosophy by promoting compliance with its decisions on risk appetite and managing risks within their areas of responsibility. After determining risk appetite, the organization must assess identified risks and opportunities and decide on a response to capitalize on opportunities and mitigate risk.

Assessing Risks & Opportunities

Previous Management Accounting Guidelines emphasize the importance of assessing risks, both in terms of the cost if they materialize, and the benefits flowing from appropriate risk response. Of particular relevance to understanding, measuring, and managing opportunities and risks is the capability to quantify their potential benefits and impacts.

Often when risks are well managed, opportunities that formerly appeared too risky will be seen as more attractive. In addition, an organization may come to see that developing a greater capacity to identify and mitigate risk allows it to capture opportunities that the competition cannot. Even without an apparent opportunity to seize, risk mitigation practices bring risks back within the tolerance boundary of the organization's risk appetite and are still important to undertake.



Assessing Opportunities

Traditional methods can usually be applied when assessing the potential benefits of opportunities. These assessment methods can include 1) assessing the increased market share that can be captured, 2) calculating the likely profit from the innovation, 3) quantifying the number of new customers, 4) calculating the potential sales growth that could stem from capturing the opportunity, or 5) measuring the residual income (accounting income – capital charge) to calculate value added as a result of capitalizing on the innovation. Calculations of this sort make it easier for managers to include potential opportunities in ROI or other calculations and thus to assess if the identified innovation is worth pursuing.

Assessing Risks

Measuring risk can be done in five steps:

1. Quantify the magnitude of the impact of the risk.
2. Assess the probability that the risk will emerge and affect the company.
3. Quantify this impact on the company. (Magnitude) x (Probability)
4. Analyze the cost/benefit of taking action to mitigate risk.
5. Prioritize various risks in a ranking to understand which are most critical.

For example, a video/DVD rental company begins to get weak signals that the Internet is playing an ever-increasing role in retailing goods ranging from clothing to groceries. Executives suspect that video rentals may be affected by the availability of movies from online sources and estimate that there is a 15% chance that DVD rental via the Internet will emerge and cannibalize its business. Is this an underestimation? An overestimation? Analysis of other markets that have lost business to online sales may help to confirm the estimation. Lost sales from a potential online presence are estimated at $2 million when calculating losses from customer migration; this includes losses of membership dues, DVD rental charges, and overdue fines. The expected lost revenue for a traditional video/DVD rental

company to an Internet-based rental company is valued at:

Expected Lost Revenue: ($2,000,000) x (0.15) = $300,000

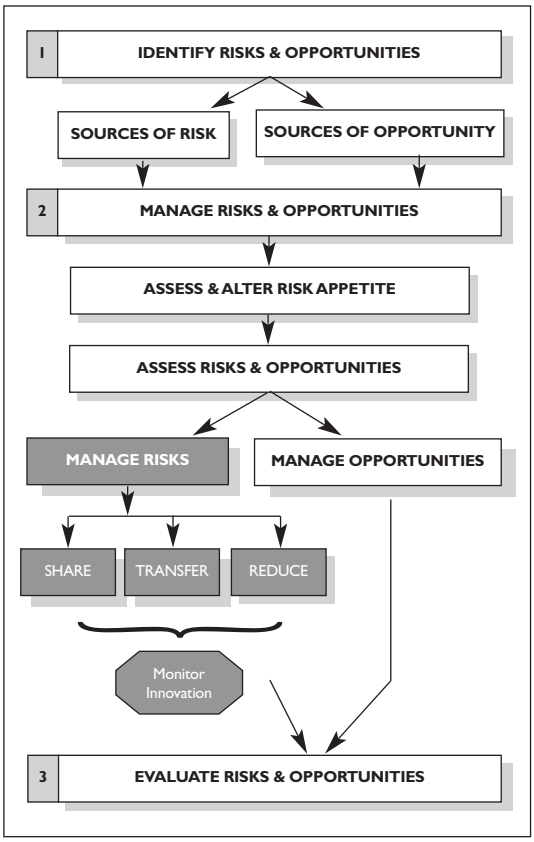
Does this justify a response? How does this potential loss stack up against other identified risks?

All of the risks outlined in Risk Classification Scheme (Exhibit 6) can be quantified and monetized, even if only by a rudimentary estimate. In fact, risks should be monetized for inclusion in ROI or other calculations, thereby improving resource allocation and investment decisions. Like other estimates used in financial analysis, these estimates are often imprecise. The assigned numbers may vary significantly, depending on the assessment of the market and conclusions various decision makers draw from this analysis. However, through proper estimation and disclosure, these estimates certainly aid decision making and are relevant to management discussions.

Managing Risks

Effective risk management practices and tools are necessary for companies to seize opportunities and gain competitive advantage over companies that do not know of these practices and tools, or cannot effectively implement them. Often, taking a portfolio approach to risk is valuable—managing some risks well creates the opportunity to take risks in other areas.

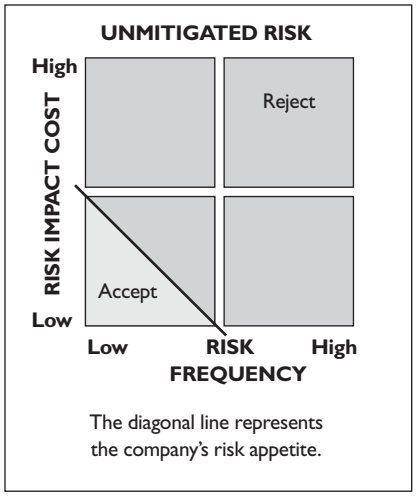
Establishing rigorous risk management capabilities can decrease project risk and spur the process of capitalizing on strategic risk and opportunity. Sometimes companies can take on initially risky-seeming projects by applying risk mitigation techniques, thereby reducing the project risk level.



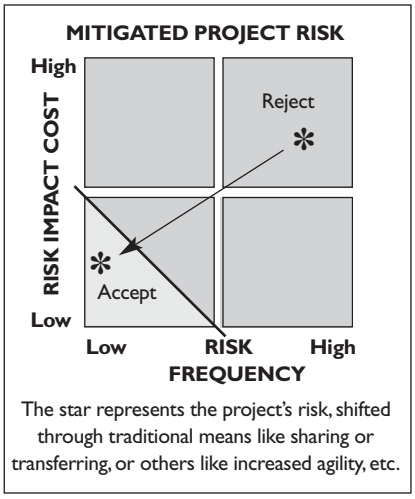
So, instead of increasing risk appetite (moving the risk appetite line out in Exhibit 9), mitigation strategies lower the level of risk and move the project within an acceptable range, as illustrated in Exhibit 10.

Some of the techniques to move the project within an acceptable risk range include traditional risk mitigation strategies such as sharing, transferring and reducing risk, as well as less conventional ones described below, such as becoming more agile, double betting, and viewing risk through a difference lens.

Exhibit 10: Altering Project Risk[32]



The diagonal line represents the company's risk appetite.



The star represents the project's risk, shifted through traditional means like sharing or transferring, or others like increased agility, etc.

Sharing Risk

This method of risk mitigation distributes the possible consequences of risk among two or more parties. Risk sharing can be accomplished with a joint venture partner. For instance, when Danone wanted to enter the Chinese market, it established a joint venture with Wahaha Food & Beverage, one of China's most popular brands of water, ready-made tea, and fruit juices, hoping to ease its transition into this challenging market. Buyback agreements in the book industry are another example of risk sharing—publishers agree to buy back unsold books from retailers, thus encouraging substantial purchases and stocking of titles in bookstores, while ensuring that the retailer does not have to shoulder the entire risk of overstock by itself.

Transferring Risk

Shifting the responsibility or burden for loss to another party through insurance, contract, or other means, can play a key role in helping to minimize losses from risk. Under such an arrangement the organization passes a risk to an independent, financially capable third party at a reasonable economic cost under a legally enforceable arrangement. One mechanism for risk transfer is insurance, which is increasingly in demand. The growth in trade investment, the increasingly visible instances of asset confiscation, soaring prices in global commodities markets, heightened political unrest in certain areas of the world, and trade between emerging markets, all contribute to the increased popularity of insurance as an instrument to protect investments.[33] Political risk insurance is a progressively more prevalent, and expensive, mechanism sought by companies doing business in potentially unstable countries.

Another common instrument for risk transfer is natural hedging, a popular method of reducing financial risk through normal operating procedures. For example, a company with a high sales volume will have a natural hedge to part of its currency risk if it also has operations in that country generating expenses in the local currency. Companies may increase natural hedges by changing sourcing, funding, or operational decisions.

Other popular methods of risk transfer include hedging risk in the capital markets, sharing risk through joint venture investments or strategic alliances, outsourcing arrangements accompanied by a contractual risk transfer, and obtaining risk indemnities through contractual agreements.[34]

Reducing Risk

Actions to reduce the likelihood of risk, its impact, or both, can take several forms. Risk avoidance—ceasing the activities that give rise to risk—is the most radical of these, and can deliver the best results when trying to mitigate a risk that is taken without a commensurate possibility of reward. Barring this radical move, engaging in internal hedging—by diversifying products or location—can also reduce risk. Increasing organizational resilience by creating and testing business continuity plans is another approach to reducing risk. Such planning is based on identifying risks to operations and creating pre-emptive solutions. These risk-reduction activities are undertaken in order to seize opportunities for growth or to maintain risk from ongoing operations at acceptable levels.

The increase in global terrorism and the recent outbreak of the avian flu pandemic have focused attention on high-impact risks to companies and the need to prepare for them. However, more mundane risks such as data loss, fires, or IT failures can also wreak devastation on a company. According to recent studies, 25% of U.S. companies that experienced an IT outage of two to six days went bankrupt soon after.[35] In addition to planning for major incidents, thoroughly understanding and establishing sound internal controls for day-to-day operations is critical. In a world where increased supply chain efficiency has meant establishing highly complex networks of suppliers and partners in a host of geographic locations, even minor disruptions can cause major impacts. Understanding the critical components of ongoing business operations, and planning for disruptions in these processes increases organizational resilience. For instance, many companies based in lower Manhattan had back-up work sites and data storage facilities in New Jersey, just a few miles away, and were able to switch their operations to these locations just following the terrorist attacks that devastated their financial district offices on September 11, 2001.

Becoming more agile in responding to risks:
Organizations that develop plans before a risk emerges can act more nimbly if the risk materializes. This makes the risk response more integrated and allows the company to be more comfortable with taking on greater risk, because there is a plan in place to deal with it. In the previous example of UPS and the Louisville blizzard, the fact that the company had a tried-and-true method to deal with disruptions in its transportation fleet and overcapacity in its system

meant that it could deal with the risk it faced and be confident in taking on future risks, either natural or man made.

Double Betting: This practice hedges the bets of investing in a product by putting money into two or more outcomes, thereby improving the odds of a payoff. It allows companies to invest some time, effort, and money into alternative, non-core innovations based on weak signals from the marketplace. This is what IBM did at the height of its domination of the calculator market in the 1950s. Recognizing the potential impact (as yet undeveloped) that the computer could have on the business, Tom Watson Jr., the CEO's son, convinced his skeptical father and the board of directors to invest research dollars in both calculating machines and computers. Within a decade, the computer industry had grown and IBM was able to secure the leadership of this new industry.[36] Double betting is based on a premise similar to Markowitz, Miller and Sharpe's portfolio theory. Following portfolio theory, investors diversify their portfolios to maximize return and minimize risk based on the portfolio's overall risk/reward balance, rather than on an individual security's risk/reward characteristics. This is done because the risk on a well-diversified set of investments tends to fall below the risk of each individual component.

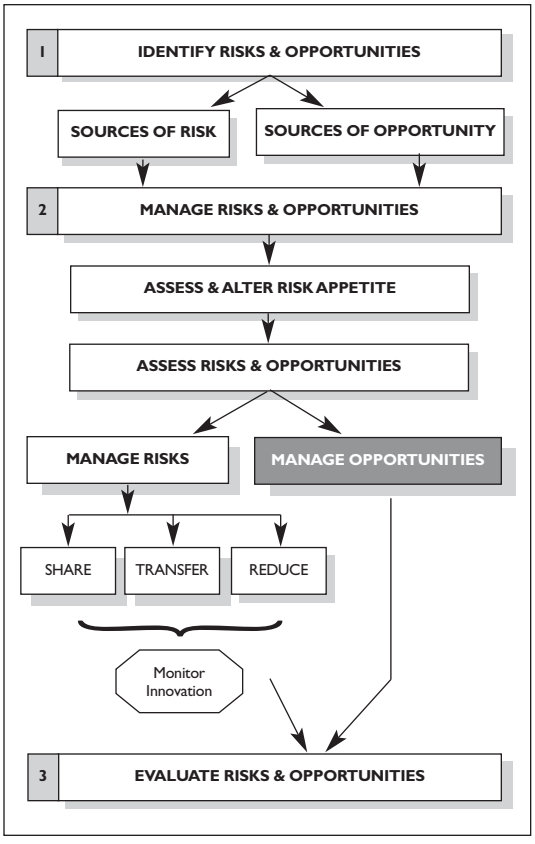
Viewing Risk through a different lens: Studies have found that people evaluating risk have different attitudes towards gains and losses. According to Daniel Kahneman and Amos Tversky—two of the most influential researchers on how people manage risk and the conceptualizers of Prospect Theory[37]—"loss aversion" guides most decisions. People generally care more about potential losses than about potential gains. In addition, their research found that valuing a risky opportunity was far more dependent on the point at which the possible gain or loss would occur than on the final resulting value of the assets. For example, a group was surveyed on the issue of high employment and high inflation versus lower employment and lower inflation. When the issue was framed in terms of a 10% or a 5% unemployment rate, accepting more inflation to decrease unemployment was heavily favored. However, when respondents were asked to choose between a labor force that was 90% employed or 95% employed, low inflation was more important than raising the employment rate by five points. Therefore, when an organization assesses risk, shifting the risk appetite can be accomplished by changing the reference point at which the risk is being evaluated.

In addition to these methods of risk mitigation, innovation is a critical component of mitigating risk and creating value. Creating an innovation strategy and the management control systems for developing this innovation is part of the process that balances defensive risk mitigation with offensive opportunity capture.

Managing Innovation[38]

Companies that can identify and seize opportunities (often where others only see risk) often do so through innovation. Innovation can include a breakthrough idea that leads to a winning product, like the iPod; a new model of doing business in a seemingly saturated market like Kinepolis or Cirque de Soleil; partnering with the right firm in an unstable market; or many other iterations of inventiveness that optimize the value of strategic opportunities related to risk.

Financial professionals contribute to managing innovation by creating the techniques to manage the structures, systems, reward mechanisms, and evaluation methodologies that underpin innovation systems. In addition, financial professionals develop and maintain the key performance indicators that keep innovation systems on course.



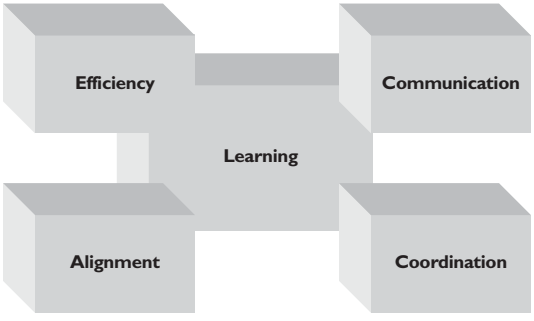
An innovation system fulfills five critical roles:

- Efficiency
- Communication
- Coordination
- Learning
- Alignment

The first role of an innovation system is to increase efficiency, swiftly moving great ideas from concept to commercialization with minimal use of resources. The second role of the system is to facilitate communication within the company and with outside constituencies. For instance, the technology development team will need to know what customers want; this knowledge will guide its effort. The manufacturing team will need to inform the technology development team about what is practical and cost-effective in terms of manufacturing, etc. Coordination between various teams and projects is the system's third role. This coordination creates efficiencies across the organization, particularly those that span the globe and depend on harmonization between time zones and various locations to keep projects flowing efficiently. The fourth role of the system is learning—allowing for information capture throughout the innovation process. This can lead both to improvements to the current project and to the innovation process itself. Finally, the innovation system enables alignment of objectives, helping everyone in the organization to understand the strategy and its implications for operations. With such a system, the right people and ideas can converge to generate innovation.

Exhibit 11 illustrates the five roles of an innovation system.

Exhibit 11: The Five Roles of an Innovation System



Although an innovation system is critical to transforming creativity from an exercise in "herding cats" to strategic alignment with corporate objectives, also important to the process of capturing opportunities is assessing the value of the potential project, investment, or initiative.

Innovation is based on three significant ideas that, when applied by senior managers, transform innovation from a fortunate accident to a rigorously applied business skill.

1. **Innovation is a management process necessitating particular tools, rules, and discipline—it is not a mystery.** After implementing formal processes and establishing tools such as strategy, organizational design and structure, management systems, performance evaluation, and rewards, the payoffs from innovation can be dramatically increased. (The innovation management system is discussed in a later section.)
2. **Measurement and incentives are required to deliver sustained, high yields.** Metrics and incentives at the various stages of innovation from idea generation to commercialization can be used to effectively manage and capitalize on innovation.
3. **Companies can use innovation to redefine an industry by combining business model innovation and technical innovation.** Innovation is not restricted to creating a new product through research and development, also known as "technical innovation". Innovation can also manifest in inventing a new way of creating, selling, or delivering value to customers.

Three types of innovation can help companies capture opportunities:

- *Incremental innovation* results in small enhancements to existing products, services, or business practices.
- *Semi-radical innovation* results in significant shifts in either the product or the business model.
- *Radical innovation* leads to new products or services that are delivered to customers in a completely new way.

Although capturing opportunities often focuses on radical innovation, semi-radical and incremental innovation also allow organizations to mitigate risk and create offerings that beat the competition. For example, incremental innovations in computing—issuing a new version of software, or in the food industry—launching a new version of a soft drink or snack food, can help companies stay ahead without investing as heavily as would be required to come up with a radical new product.

Implementing an Innovation Management System

Innovation is a key part of capturing opportunity from risk. After an opportunity has been identified, moving the idea to market requires an innovation system. Contrary to popular belief, innovation is not just having a good idea at the right time, it is a *system* to improve the likelihood that these ideas will flourish within the organization and lead to market success. Innovation systems are aided by established policies, procedures, and information mechanisms that facilitate innovation within and across the organization.

When pursuing opportunities, it is critical to have an innovation system to manage the process of developing these ideas and bringing them to market.

The six components of an innovation system are:

- Identification of potential innovations
- Structure
- Measurement
- Incentives & Rewards
- Learning systems
- Alignment

Identification of potential innovations

In addition to innovating around risks using methods mentioned earlier—including customer sensitivity, seeing the gaps, and idealized design—it is important to understand why your competitors are avoiding risks and to consider what your organization can do to accept these risks. This may involve examining whether the competition lacks the characteristics that contribute to a high risk appetite mentioned above—agility, learning from the organization's experience with risk, sound financial health, or strong risk mitigation tools. If the competition lacks these characteristics, your organization can capitalize on its own strengths in these areas. For instance, the competition may decide not to invest in a country that is becoming more oriented towards socialism, like Venezuela or Bolivia, for fear of property expropriation. However, if your company has access to insurance, or to members of the government who can alert you to radical policy changes that the competition does not have, you may capitalize on their weakness and your strength, deciding to take the investment risk because of your better risk mitigation tools and recognition of opportunities. Innovation and opportunity management depend on realizing that something is missing somewhere in the network that produces value for customers—the key to identification is figuring out your strengths (sometimes by pinpointing the competitions' weakness, sometimes by identifying gaps in the market) and capitalizing on this systematically. Innovation is not a one-time activity, rather it is a longer process of effective management of risks and opportunities as they arise, and includes a mechanism for monitoring the market even when the decision is made not to capitalize on a market gap.

Structure

Creating an organizational structure and culture to encourage innovation and opportunity management is critical. Although there is some debate in the academic literature about the best structure to foster innovation within companies,[39] sustained innovation excellence is predicated on building innovation platforms and networks of individuals who can 1) share ideas with each other, 2) be managed, and 3) grow. Innovation platforms are people networks nestled within a company that direct resources toward specific areas of innovation. These people networks contribute to different aspects of innovation—idea creation, selection, development, and implementation—that span the range of business and technical challenges. Such networks ensure that innovators are not divorced from the realities of operations, markets, and finances, which could lead to novel, but unmarketable, ideas.

Measurement

Research has found that measurement is one of the most critical elements of successful innovation. What is measured, however, must be aligned with the innovation strategy or managers lose a key source of information. This translates into lower performance and decreased pay-offs from investments in innovation. Measurement plays three key roles:

1) Planning: It helps to define and communicate strategy and facilitates agreement within innovation teams, streamlining day-to-day activities and enabling people to understand where their contribution adds value to the mission.
2) Monitoring: It helps to measure progress and deviation from the plan that might require management intervention.
3) Learning: It facilitates an ongoing dialogue among people within the organization, and galvanizes thinking about better innovations and execution of strategy.

In this Guideline we concentrate on the role of measurement at the project level to seize opportunities and drive value creation. This is discussed in further detail in an upcoming section.

Incentives & Rewards

Motivating employees to 1) succeed, through incentives and rewards, 2) capture opportunities and 3) thrive within the innovation system are powerful management tools that drive original thinking. Understanding the various components of motivation is critical to formulating an incentives and rewards program that reinforces the organization's innovation strategy. People are generally motivated by four factors: economic incentives that encourage an activity; their passion for the activity; the belief that they will be recognized for accomplishing the endeavor; and a vision that provides a clear sense of purpose.

Incentives link performance measures to rewards, and are generally planned before innovation efforts begin. For example, informing a team that they will receive bonuses if they meet a product's target release date is an incentive. Recognition, on the other hand, rewards the outcome of the project. Striking the right balance between incentives and rewards is important in motivating teams and individuals to work together to accomplish innovation. Distinct goals for each project, performance metrics, and defining the actual rewards are other significant factors of an effective incentives system. Such incentives and reward structures must also be aligned with the corporate culture.

Learning systems

The organizational ability to learn faster, better, and more cheaply than the competition is critical to market success, particularly when it comes to capturing opportunities. Organizations that can make mistakes and learn from them 1) save the frustration of repeating the same errors and 2) can continue to seek out opportunities, decisively mitigate risk, and innovate. On the other hand, "non-learning" organizations often stagnate when it comes to these skills. Establishing a system that enables people to learn quickly at relatively low cost is the key to organizational learning that efficiently drives projects to capture opportunities. According to studies, this type of learning is critical to innovating and seizing opportunities. Systems to capture information on innovation performance throughout the life of the initiative can be used to identify problems and potential solutions. For instance, when Toyota was working on the design of the Prius, managers from the manufacturing plant gave input to the design team about what could create glitches in manufacturing. This information was then immediately factored into the designs, saving critical time in taking the Prius from idea to market. Beyond the specific project, capturing information about the innovation system itself can then inform the next innovation project. This helps organizations to retain the knowledge that they develop throughout the innovation process and enables more efficient production when the next opportunity is identified.

Alignment

Through a system of clear messaging, a company can ensure that people in the organization are aware of the link between innovation strategy and operations, and their contribution to the process. This can serve as an incentive as well as reinforcing the link between opportunities, innovation, and corporate objectives. For instance, new hires at one Fortune 500 company are taken on a tour, shown some of the "innovation labs", and told that although the company values new ideas, it is only interested in those that are truly marketable.

Exhibit 12 summarized the components of an innovation system.

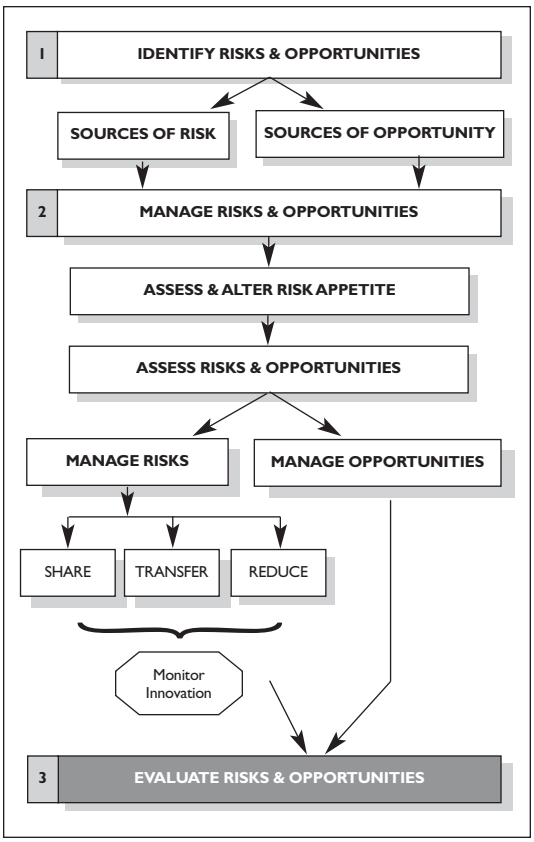
Exhibit 12: Components of an Innovation System

Components of an Innovation System
Identification of potential innovations
Structure
Measurement
Incentives & Rewards
Learning systems
Alignment

Financial professionals play a critical role in the creation, implementation, and smooth operation of an innovation system. They are charged with creating structures, measures, and incentives and rewards systems that keep the innovation system streamlined and goal oriented rather than allowing a diversion into innovation for its own sake. Financial professionals are also in the unique position of including both risks and opportunities in financial calculations for more rigorous project planning and corporate strategy.

3. EVALUATING RISK & OPPORTUNITY THROUGH ROI AND OTHER METHODS

After an opportunity has been identified as both aligned with corporate strategy and viable within the organizational structure, it is important to evaluate it. Some evaluation methods can be more informal than others, yet we believe it is critical to evaluate opportunities **for inclusion in financial calculations**. This can be done in a variety of ways, including calculating expected profits or expected value added (profits minus the cost of capital involved in developing and running the opportunity project), or using more common measures such as ROI.



We propose putting numbers to the assessment of risks and opportunities. Measurement, although it may lack precision, forces decision makers to address their underlying assumptions, identify the variables that can impact a project, and weigh the risks of their assumptions when considering the opportunities of a particular investment. Better forecasting of both risks and opportunities can lead to improved decisions on process, product, and capital investment. Financial professionals can contribute greatly because of their ability to undertake such measurement, thereby making risk and opportunity management more rigorous.

We suggest using ROI, including NPV calculations, modified to include real options theory. This allows for flexibility in investment appraisal options and for the inclusion of the costs of risk mitigation actions, both of which can be central to capitalizing on opportunities. Real options are a complement to, and an extension of, traditional NPV calculations and should be included as a step in applying the ROI method.

Real options

An option is a right, but not an obligation, to take an action—like buying, expanding, or deferring—at a predetermined price for a predetermined period. Real options embed an option value in otherwise static NPV calculations, thereby adding flexibility to the calculations necessary for decision making. Traditional discounted cash flow evaluation assumes that after decisions are made about a project, these plans are fixed and will be followed, regardless of additional information, changes in the market, or newly presented opportunities. In addition, traditional methods assume that investment is a one-time choice, rather than an ongoing process informed by new information and ongoing evaluation. By contrast, real options allow for the uncertainty and continuous learning inherent in project planning and successful business strategy. Real options thinking forces decision makers to explicitly consider the value of a new investment and the options it creates. It also allows for an initial investment with a longer time horizon for a return on that investment, and builds in the possibility of a variety of outcomes and responses to information as it unfolds. The traditional ROI method, on the other hand, might yield a negative result and a decision not to invest because it captures a different type of return using a fixed time horizon.

Exhibit 13 illustrates a catalog of some real options.

It is easy to see how real options apply to a number of industries in which it is important to invest in an array of products, knowing that many of them will fail. These industries include pharmaceuticals (where money is invested in research and development for a host of drugs, many of which will never enter the market) and the oil and gas sector (where it is critical to explore for product, yet often locations do not yield fruit). Such industries invest in a portfolio of options that have different risk-return characteristics for all of the reasons discussed earlier (*Double betting*).

Exhibit 13: Catalog of Real Options[40]

Type of Option	Description
Enter & Exit	Exit investment at a market low and re-enter when market conditions have improved
Delay or Defer	Delay or defer investment expenditure until it is deemed more profitable
Abandonment or Shut-down	Cease use of an asset or shut down operation if deemed unprofitable and capture salvage value
Growth	Capitalize on earlier investments or enter into related projects
Adjust	Adjust or modify input mix or outputs in response to demands, costs, or price
Staged investment	Make investments in successive stages as information unfolds, retaining the right to abandon the project

A lot of evidence suggests that financial options are being applied heavily throughout the financial industry (using methods such as Black-Scholes), and that real options theory affects thinking. Not much evidence exists, however, that real options calculations are being used in the non-financial setting. Rather, when real options are included, it is often done using ranges or as a discussion of underlying assumptions rather than by including point estimates.[41]

Real options thinking allows for more nuanced analysis and flexibility for decision making as new information emerges that static NPV calculation lacks. In addition, real options incorporate financial insights at the strategic stage of project planning, rather than as an afterthought. Financial professionals can add greatly to corporate strategy by contributing their insights, using real options thinking at the early stages of evaluating opportunities and risks.

A modified ROI calculation that includes real options is a seven-step process that includes:

1) Generating options using real options thinking
2) Estimating the opportunity benefit
3) Evaluating the costs of capturing the opportunity (including required risk mitigation activities)
4) Estimating the probability that the risks needing mitigation will actually emerge
5) Calculating the expected impact/value of the risk
6) Calculating the NPV of the opportunity and the risk
7) Calculating the expected value of the ROI

Like other estimates used in financial analysis, these estimates are often imprecise. However, through proper estimating and disclosure, they certainly aid decision making and are relevant to management discussions. Often, decision makers will estimate ranges of costs and choose a point estimate for use in the analysis. The ranges, along with the measurement techniques used in the ROI analysis, would then be included as a footnote or appendix to the ROI calculation. Discussion of these ranges, and decisions on a certain point estimate, assists personnel in thinking about and communicating opportunities and risks. Although the output of this practice is important, just as critical, ultimately, is the process for deciding on the appropriate issues, their associated costs, and the probabilities of occurrence. Ultimately, it is the board, the CEO, or the CFO, who must choose the appropriate metric. The quantitative analysis, ranges, point estimates, and ensuing discussion are critical elements in decision making. The assumptions, decisions, and measurement techniques that lead to quantification of risks and opportunities and risk mitigation techniques must therefore be included as a footnote or appendix to the modified ROI analysis. This seven-step modified ROI calculation, the last of the three steps in the process described in Exhibit 5 and throughout this Guideline, is illustrated in Exhibit 14.

Exhibit 14: Modified ROI calculations

1. Generate options using Real Options thinking	
2. Calculate Benefit of seizing the opportunity	After a potential opportunity has been identified, calculating its potential benefit to the company is the first step in evaluating whether or not to fully invest in the innovation. Calculating the benefit should include monetizing any gains the company could make as a result of pursuing the opportunity. These could include, among others: • Increased market share ($ of added revenue) • Increased price premium • Savings resulting from locating in less expensive location ($ of operating costs saved) • Other reduced costs • New products • New markets • New channels • More efficient operations Since some of these benefits would appear over time, a net present value (NPV) of each issue should be calculated. This can be done in step 5 when risk NPV is also calculated.
3. Calculate Costs	When the opportunity's benefits have been estimated, the next step is to estimate the costs inherent in capturing the opportunity and mitigating its associated risks. The fact that the company sees an opportunity means that likely it has superior knowledge or access to risk mitigation tools that the competition lacks. This knowledge and access, however, comes with a price tag, which should be listed and monetized.
4. Estimate Probability	After calculating the potential costs of each risk to the company, the potential likelihood, in percent, that each risk would occur and cause damage to the company, is approximated. This number is the estimated probability. (Later we calculate the impact on the company in expected value.) However, a footnote can be included to the ROI analysis that indicates that these numbers are midpoints (which would most likely settle within a range). An estimated probability should be assigned to each identified risk.
5. Calculate Expected Risk Value	After approximating the estimated probability, the **expected value** for each risk is calculated by multiplying the **estimated impact (cost)** of the risk by the percent **estimated probability** of its occurrence. For example, if the costs of sub-par quality leading to lost sales are estimated to be $1 million, and the likelihood that this risk would materialize is estimated 25%, then: **Expected Value**$_{\text{sales loss}}$ = ($1,000,000) x (25%) = $250,000
6. Calculate NPV **Opportunity** **expected value** **NPV benefits – PV[(gain$_1$) x (% likelihood$_1$) + (gain$_2$) x (% likelihood$_2$)…Opptn$_N$] = cost of opptn.** ***net*** ***calculate NPV of issue*** **Risk** **expected value** **NPV benefits – PV[(cost$_1$) x (% likelihood$_1$) + (cost$_2$) x (% likelihood$_2$)…Risk$_N$] = cost of risk** ***net*** ***calculate NPV of issue***	After steps 1-5 have been completed, the NPV of each opportunity and risk is calculated. Note that each issue has opportunities and risks that emerge at different times. NPV is calculated on the outcome of: NPV calculations for opportunities and risks are completed in the same way as traditional NPV calculations. Therefore, companies can use a table to input the cost that the risk will incur, and the year that it will arise. Discounting back, using a set discount rate, is done in the traditional manner. These calculations are carried out for each identified opportunity and risk.
7. Calculate Expected Value of ROI	Once all NPVs for the opportunities and risks have been calculated, they should each be added together. The aggregate opportunity NPV and risk NPV should then be inserted as line items in the normal ROI calculation. Schedules should be provided that show the calculations of benefit, expected value, likelihood, and costs. It is critical that senior management see both the process and the output of doing these calculations.

An Example

An example of integrating real options into traditional ROI calculations could play out as follows:

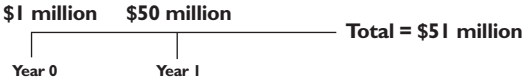
A company wants to enter South America because it sees this part of the world as a potentially good market. However, the company is not familiar with places, profiles of customers who would be interested in their products, the range of products that could succeed, or suppliers in the region. Instead of investing large amounts of money to build a factory immediately, company leadership would like to spend $1 million to open an office in Buenos Aires, Argentina, engage a workforce, and learn more about the market. The company believes that it is important to penetrate the South American market and would like to position itself for the long term. It expects that after a year it will have a much better idea of location, customers, market size, and suppliers. If, however, an ROI calculation was done on this $1 million investment, it would likely be significantly negative because most of the output for the first year would be learning about the market rather than sales. Therefore, the project would not qualify under any ROI calculations. In such a case, ROI calculations are inadequate. The $1 million investment could not be treated using a traditional ROI appraisal; it has to be evaluated as a real option that allows for market assessment, market penetration, and organizational learning. Depending on what is learned in the first year, decision makers in the company may request $20 million, $50 million, or $100 million for expansion into South America.

Four scenarios could emerge using real options thinking:

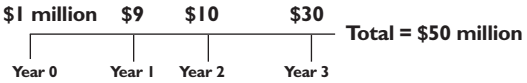
Scenario 1: The company invests $1 million in year zero to develop a sales force, explore production facilities, suppliers, get a better understanding of customers, and evaluate if South America is a good option. After the first year, the situation is deemed a disaster and the company realizes it can't make any money in South America.

Given that the company has decided South America is not a good option, it lost only $1 million, as opposed to having built a factory and losing much more money.

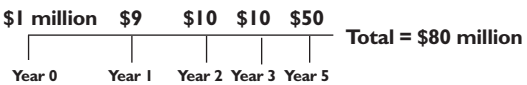
Scenario 2: The company decides to invest $1 million in year zero to explore the market. After the first year, the information collected leads the company to believe that South American is a terrific market, so it decides to invest $50 million to build a factory and begin manufacturing. Although this is a simple staged investment, an ROI of the initial $1 million would have been negative, potentially resulting in a decision not to invest. Through real options thinking, the initial $1 million investment preserved the option for the ensuing $50 million investment, without committing the company.



Scenario 3: The company decides to invest $1 million in year zero to explore the South American market. After the first year, the company sees great opportunity and decides to build a factory. While feeling confident that this is a good prospect, decision makers are not willing to put in the full $50 million in the early stages. Rather, they design the factory in such a way that gives them the option to build the first part for $9 million and then possibly expand, depending on results of the first year. This expansion will depend on the confidence level about how much growth is needed, and is affected by risk appetite. If results after year one are as expected, $10 million will be invested in a factory expansion in year two and $30 million in year three, for a total investment of $50 million.



Scenario 4: The company decides to invest $1 million in year zero to explore the South American market with an office in Buenos Aires. Through this initial investment the company realizes that South America is a terrific market and begins to invest aggressively, first with $9 million in year one, followed by $10 million in years two and three and $50 in year five for a total investment of $80 million.



After generating options using this real options thinking, financial managers should do an NPV of each option so that senior leadership deciding on a strategy has a better idea of the potential gain from investing $1 million. A traditional NPV calculation would be negative, and the assumption would be that it is unwise to invest in South America. The option value, however, converts the evaluation of the initial $1 million proposal from

negative to positive, and preserves the right and ability to enter the market. After calculating an NPV for each option, financial managers should do an ROI calculation as illustrated in Exhibit 14 and insert the calculated projected revenues.

CONCLUSION

Integrating risks and opportunities into project planning through modified ROI or other calculations enables managers to better understand 1) the full range of risks their operations face and the opportunities available to them, and 2) their costs. Although the output of the analysis is useful, the analysis process itself also allows strategizing for risk and opportunity management — to develop ways to avoid risk, to create risk mitigation plans, and to capitalize on opportunities. After risks and opportunities have been fully explored and calculations made, it is important to integrate these processes with a management control system, which serves as the backbone to mitigating risk and pursuing opportunity.

Moving beyond the traditional view of risk as a value destroyer to seeing risk as a potential value enhancer requires creativity and vision, as well as a management control system within which this creativity can flourish and lead to market success.

A management control system helps to:
1) more thoroughly identify and assess risks and opportunities, which are often linked, and
2) improve the company's ability to accept risks and pursue opportunities. Such a system includes a mechanism to:

1. Review the strategy: Establishing a strategy to identify and manage risks and opportunities—large and small, glaringly obvious and on the periphery. The approach to these issues must be revisited periodically to review whether these methods continue to be aligned with overall corporate objectives.
2. Review and, if necessary, alter the appetite for risk: As organizations mature and expand, often the risk appetite shifts. It is important to review risk appetite to ensure that it continues to keep pace with changes in the company, its strategy, and its presence in various locations. A mismatch between risk appetite and organizational size, scope, or project plans can often stymie innovation.
3. Assess and review the costs and benefits: Although opportunities and innovation can present game-winning strategies, it is critical that the potential gains outweigh the costs presented by the risks. Reviewing costs and benefits at various points in the identification and assessment cycle can ensure that innovation activities are on a course to market success, not simply generating good ideas for the sake of it.
4. Accept and manage risks and opportunities: After a risk mitigation and innovation project has been accepted, it is critical to ensure that the appropriate tools and systems are in place to manage them. Without sound management of these processes, even the best idea can flounder and fail to reach the market.
5. Review the innovation structure: As organizations become increasingly familiar with, and adept at, innovating they learn lessons from their experiences. Integrating these lessons into future innovation projects ensures that mistakes and glitches will not be repeated. Reviewing innovation structures and making certain that experience is informing methodology can save time, money, and frustration.
6. Monitor the environment: Whether or not the organization decides to pursue opportunities or simply concentrate on mitigating identified risks, it is critical to continue monitoring the environment for old and new risks and potential payoffs. This ensures that mitigation strategies are compatible with the current environment and that pursuing new innovations is integrated into the organizational fabric.

Financial professionals can add value throughout the creation and application of these management control systems by lending their expertise at each of the six steps.

In an increasingly complex world, business risk poses threats, but also provides opportunities to create new competitive advantage and new ways to satisfy customers. To garner these benefits, however, risks and opportunities must be evaluated and handled within a system that adequately identifies, quantifies, and mitigates them. This robust treatment of risk and opportunity allows for rigorous management practices enabling organizations to capitalize on their expertise to identify and capture opportunities that can help to beat the competition. Measures developed and applied to counteract business risks can, and often do, illuminate some of the greatest opportunities for innovation to companies that are ready to see and seize them.

ENDNOTES

[1] Rewarded and unrewarded risk is a concept described by James Quigly, CEO of Deloitte & Touche USA LLP in: James Quigly. "Risk Intelligent Enterprise: Gaining Competitive Advantage Through Smart Risk Management", *Fortune*, March 19, 2007: S4-S7.

[2] Basic diagram sourced from: "Enhancing Shareholder Wealth by Better Managing Business Risk", International Federation of Accountants, Study 9, June 1999: p. 9.

[3] For more on the role of financial professionals, please see: Hugh Lindsey. "20 Questions Directors Should Ask About Risk", The Canadian Institute of Chartered Accountants, 2006.

[4] Much of the work on innovation in this Guideline is taken from: Tony Davila, Marc J. Epstein, and Robert Shelton. *Making Innovation Work: How to Manage It, Measure It, and Profit from It*. Upper Saddle River, NJ: Wharton School Publishing, 2006: 120.

[5] Charles A. O'Reilly and Michael L. Tushman. "The Ambidextrous Organization", *Harvard Business Review*, April 1, 2004

[6] *Ibid*, p. 65-67.

[7] Marc J. Epstein and Adriana Rejc Buhovac. "Identifying, Measuring, and Managing Organizational Risk for Improved Performance", Risk Management Accounting Guideline. Toronto, Ontario: CMA Canada and AICPA, 2005.

[8] *Ibid*.

[9] George S.Day and Paul J.H. Schoemaker. "Scanning the Periphery," *Harvard Business Review*, November 2005.

[10] W. Chan Kim and Renée Mauborgne. *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Boston, MA: Harvard Business School Press, 2005.

[11] Adrian J. Slywotzky, *The Upside: The Seven Strategies for Turning Big Threats into Growth Breakthroughs,* New York, NY: Random House. 2007, pp. 70-84.

[12] Kate Murphy. "What Pilots Can Teach Hospitals About Patient Safety", *New York Times*, October 31, 2006.

[13] George S. Day and Paul J.H. Schoemaker. *Peripheral Vision: Detecting the Weak Signals That Will Make or Break Your Company*. Boston, MA: Harvard Business School Press. 2006.

[14] Paul Hansel. "Putting the Napster Genie Back in the Bottle", *New York Times*, November 20, 2005.

[15] Brent Schlender. "How Big Can Apple Get?" *Fortune*, February 21, 2005.

[16] Tom Williams, Wal-Mart spokesperson in: Doug Desjardins. "Effects of West Coast Port Lockout Expected to Linger", *DSN Retailing Today*, October 28, 2002. <http://findarticles.com/p/articles/mi_m0FNP/is _20_41/ai_93917318>

[17] Gary Gentile, "Backlog at West Coast Ports Still Maddens Merchants, Exporters", AP Business Wire.

[18] Adrian J. Slywotzky, *The Upside: The Seven Strategies for Turning Big Threats into Growth Breakthroughs*, New York, NY: Random House. 2007: 108.

[19] W. Chan Kim and Renée Mauborgne. "Value Innovation: The Strategic Logic of High Growth", *Harvard Business Review* 1997: 2.

[20] Kinepolis Group Annual Report.

[21] Russell L. Ackoff, Jason Magidson, and Herbert J. Addison, *Idealized Design: How to Solve Tomorrow's Crisis...Today*, Upper Saddle River, NJ: Wharton School Publishing, 2006. And Knowledge@Wharton, "Idealized Design: How Bell Labs Imagined — and Created — the Telephone System of the Future", August 9, 2006. <http://knowledge.wharton.upenn.edu/article.cfm?articleid=1540&CFID=16401333&CFTOKEN=72511220&jsessionid=a830544ff4a2635a14e6>

[22] Adrian J. Slywotzky, *The Upside: The Seven Strategies for Turning Big Threats into Growth Breakthroughs*, New York, NY: Random House. 2007, pp. 19-32.

[23] Chris Cooper and Naoko Fujimura, "Toyota Says Worldwide Hybrid Car Sales Top 1 Million", *Bloomberg.com* June 7, 2007. <http://www.bloomberg.com/apps/news?pid=20601101&sid=atAqPjvDSm4k&refer=japan>

[24] *Cirque du Soleil CEO Guy Laliberté named Ernst & Young Entrepreneur Of The Year® 2006*. <http://www.ey.com/global/content.nsf/Canada/Media_-_2006_-_EOY_National_Recipient>

[25] According to Clay Christensen, Professor of Business Administration at the Harvard Business School in: George S. Day and Paul J.H. Schoemaker. "Scanning the Periphery", *Harvard Business Review*, November 2005.

[26] Intuit Company Data <http://money.cnn.com/quote/quote.html?symb=INTU>

[27] Chartered Institute of Management Accountants. *CIMA Strategic Scorecard* <www.cimaglobal.com/strategicscorecard>

[28] The Committee of Sponsoring Organizations of the Treadway Commission. "FAQs for COSO's *Enterprise Risk Management — Integrated Framework*" <http://www.coso.org/Publications/ERM/erm_faq.htm>

[29] Basic diagram sourced from: Brian Ballou and Dan Heitger. "A Building Block Approach for Implementing COSO's Enterprise Risk Management – Integrated Framework", *Management Accounting Quarterly*. Winter 2005. 6:2, p. 9.

[30] Yossi Sheffi. *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*. Cambridge, MA: MIT Press, 2007: 190.

[31] Basic diagram sourced from: Brian Ballou and Dan Heitger. "A Building Block Approach for Implementing COSO's Enterprise Risk Management – Integrated Framework", *Management Accounting Quarterly*. Winter 2005. 6:2, p. 9.

[32] Basic diagram sourced from: Brian Ballou and Dan Heitger. "A Building Block Approach for Implementing COSO's Enterprise Risk Management – Integrated Framework", *Management Accounting Quarterly*. Winter 2005. 6:2, p. 9.

[33] Russ Banham, "Concern Over Political Unrest: Companies Insure Foreign Investments", *The Wall Street Journal*, June 5, 2007, special section.

[34] Deloach, J.W. *Enterprise-wide Risk Management: Strategies for Linking Risk and Opportunity*. London: Prentice-Hall, 2000.

[35] Economist Intelligence Unit. "Business Resilience: Ensuring Continuity in a Volatile Environment", 2007: 4.

[36] Adrian J. Slywotzky, *The Upside: The Seven Strategies for Turning Big Threats into Growth Breakthroughs*, New York, NY: Random House. 2007, p. 99.

[37] Amos Tversky and Daniel Kahneman. "Prospect Theory: An Analysis of Theory Under Risk", *Econometrica*. 47:2, 1979. "Advances in Prospect Theory: Cumulative Representation of Uncertainty", *Journal of Risk and Uncertainty*, 5: 1992, 297-323. Peter L. Bernstein. *Against the gods: The Remarkable Story of Risk*, New York, NY: John Wiley & Sons, 1996: 270-283.

[38] This section draws heavily from: Tony Davila, Marc J. Epstein, and Robert Shelton. *Making Innovation Work: How to Manage It, Measure It, and Profit from It*. Upper Saddle River, NJ: Wharton School Publishing, 2006.

[39] Some organizational structures discussed include: A completely separate structure (Clayton M. Christensen. *The Innovators Dilemma: When New Technologies Cause Great Firms to Fail*. Boston: Harvard Business School Press, 1997). A new venture division (Robert A. Burgelman. "Designs for Corporate Entrepreneurship in Established Firms", *California Management Review*, 1984, 26(3): 154-166), or Within existing divisions (Hollister B. Sykes and Zenas Block. "Corporate Venturing Obstacles: Sources and Solutions", *Journal of Business Venturing*, 1989, 4:159-167).

[40] Sourced from: Chatham Research Alliance. *An Introduction to Real Options*, August 2003.

[41] For more discussion of real options please see: Timothy A. Luehrman. "Strategy as a Portfolio of Real Options", *Harvard Business Review*: Sept-Oct 1998, and Timothy A. Luehrman. "Investment Opportunities as Real Options: Getting Started on the Numbers", *Harvard Business Review*, July-August 1998.

BIBLIOGRAPHY

Bernstein, Peter L. (1996). *Against the Gods: The Remarkable Story of Risk*. New York, NY: Wiley & Sons.

Davila, Tony, Marc J. Epstein, and Robert Shelton. (2006). *Making Innovation Work: How to Manage It, Measure It, and Profit From It*. Upper Saddle River, NJ: Wharton School Publishing.

Day, George S. And Paul J.H. Schoemaker. (2006). *Peripheral Vision: Detecting the Weak Signals That Will Make or Break Your Company*. Boston, MA: Harvard Business School Press.

Day, George S. And Paul J.H. Schoemaker. (May 15, 2006). "Scanning for Threats and Opportunities". *Harvard Business School Working Knowledge*.

Day, George S. And Paul J.H. Schoemaker. (November 2005). "Scanning the Periphery". *Harvard Business Review*.

Deloitte & Touche USA LLP. (March 19, 2007). "Risk Intelligent Enterprise: Gaining Competitive Advantage Through Smart Risk Management". *Fortune*. S4-S7.

Joachimsthaler, Erich. (2007). *Hidden in Plain Sight*. Boston, MA: Harvard Business School Press.

Kim, W. Chan and Renée Mauborgne. (2005). *Blue Ocean Strategy: How to Create Uncontested Market Space and Make the Competition Irrelevant*. Boston, MA: Harvard Business School Press.

Kim, W. Chan and Renée Mauborgne. (January-February 1999). "Creating New Market Space". *Harvard Business Review*.

Kim, W. Chan and Renée Mauborgne. (January-February 1997). "Value Innovation: The Strategic Logic of High Growth". *Harvard Business Review*.

McGee, Kenneth. (2004). *Heads Up: How to Anticipate Business Surprises and Seize Opportunities First*. Boston, MA: Harvard Business School Press.

Mitroff, Ian I. (2005). *Why Some Companies Emerge Stronger and Better From a Crisis*. New York, NY: American Management Association.

Roberto, Michael A., Richard M.J. Bohmer, and Amy C. Edmondson. (Nov 1, 2006). "Facing Ambiguous Threats". *Harvard Business Review*. p.106—113.

Sharp, David. (1991). "Uncovering the Hidden Value in High-Risk Investments". *Sloan Management Review*. 32:4. p.69—74.

Sheffi, Yossi. (2007). *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*. Cambridge, MA: MIT Press.

Slywotzky, Adrian J. And Karl Weber. (2007). *The Upside: The Seven Strategies for Turning Big Threats into Growth Breakthroughs*. New York, NY: Crown Business.

Slywotzky, Adrian J. And John Drzik. (April 2005). "Countering the Biggest Risk of All". *Harvard Business Review*. 83:4. p.78—88.

Tversky, Amos and Daniel Kahneman. (1979). "Prospect Theory: An Analysis of Theory Under Risk". *Econometrica*. 47:2. p.263-291.

Tversky, Amos and Daniel Kahneman. (1992). "Advances in Prospect Theory: Cumulative Representation of Uncertainty". *Journal of Risk and Uncertainty*. Volume 5. p.297-323.

"Weathering any Storm". (March 19, 2007). *Fortune*. Retrieved June 2007, from http://www.competeresilience.org/upload/Weathering.pdf

This *Management Accounting Guideline* was prepared with the advice and counsel of:

Bill Connell, FCMA
Past Chair, IFAC Professional Accountants in Business Committee

Gordon Cummings, MBA, CMA, FCMA
Board Director and Business Consultant

Mark Dixon, ACMA
European Investment & TOC Finance Lead
Hewitt

James Duckworth, BA (Hons), FCMA., MIIA
NED and Chairman of Audit Committee of Control Risks

Michael Fortini, CPA
Director of Compliance
Pearson plc

John Fraser, CA, FCCA, CIA, CISA
Chief Risk Officer
Hydro One

Jasmin Harvey, B.Comm, B.Econ, ACMA
Innovation and Development Specialist
Chartered Institute of Management Accountants

William Langdon, MBA, CMA, FCMA
Knowledge Management Consultant

Mike Lewis, MSc, FCMA, AMCT, MIRM
Senior Vice President and Head of Risk Assurance
EMI Group Ltd

Philip Linsley, BA (Hons), CA
Lecturer in Accounting and Finance
The York Management School

Nigel Higgs, MA, FCMA
NJH Consultants Limited

Kenneth W. Witt, CPA
Technical Manager, Business, Industry and Government
American Institute of Certified Public Accountants

Margaret Woods, B. Comm., MSc., FCCA
Associate Professor in Accounting and Finance
Nottingham University Business School

The views expressed in this Management Accounting Guideline do not necessarily reflect those of the individuals listed above or the organizations with which they are affiliated.

ABOUT THE AUTHORS

Marc J. Epstein is Distinguished Research Professor of Management at Jones Graduate School of Management at Rice University in Houston Texas and was recently Visiting Professor and Wyss Visiting Scholar at Harvard Business School. Formerly a professor at Harvard Business School, Stanford Business School, and INSEAD (European Institute of Business Administration), Dr. Epstein has written previous Management Accounting Guidelines. He has also written other articles on strategic management systems and performance measurement, and over 100 articles and 15 books. In 1999, he wrote the award winning "Counting What Counts: Turning Corporate Accountability to Competitive Advantage". He has recently co-edited a four volume series "The Accountable Corporation."

Tamara Bekefi is Principal of Daedalus Strategic Advising, a firm focused on the strategic management of corporate social and political risk, opportunity and sustainability issues. Until recently she was the Manager of Business and International Development Research and a Research Fellow at Harvard University's Kennedy School of Government. Previously, Ms. Bekefi worked for the oil industry group IPIECA, ExxonMobil, Phillips-Van Heusen, KLD, a social investment research and analysis firm and Orientation Global Networks, an international telecommunications firm. She received her M.A. from the Fletcher School of Law and Diplomacy and her B.A. from McGill University.

Kristi Yuthas is Swigert Endowed Information Systems Management Chair at Portland State University. Dr. Yuthas has a background in IT consulting, focusing primarily on business process improvement and knowledge management. Her research explores the strategic, organizational and social consequences of management, accounting, and marketing information systems. Dr. Yuthas currently sits on the editorial boards of accounting information systems journals and has over 100 publications and presentations covering a broad range of topics in accounting and information systems topics.

For more information on other products available contact:

In Canada:	The Society of Management Accountants of Canada Mississauga Executive Centre One Robert Speck Parkway, Suite 1400 Mississauga, ON L4Z 3M3 Canada Tel (905) 949 4200 Fax (905) 949 0888 www.cma-canada.org
In the U.S.A.:	American Institute of Certified Public Accountants 1211 Avenue of the Americas New York, NY 10036-8775 USA Tel (888) 777 7077 Fax (800) 362 5066 www.aicpa.org Visit the AICPA store at www.cpa2biz.com
In the United Kingdom:	The Chartered Institute of Management Accountants 26 Chapter Street London SW1P 4NP United Kingdom Tel +44 (0)20 7663 5441 Fax +44 (0)20 7663 5442 www.cimaglobal.com Email Technical Information Services at tis@cimaglobal.com