

Paper for Presentation at the
2007 EAST ASIA ACTUARIAL CONFERENCE
October 2007
MAYA BALTAZAR HERRERA, FASP
Actuarial Society of the Philippines
Asian Institute of Management
Solutions Incorporated

INTEGRATED RISK MANAGEMENT: A COMPREHENSIVE APPROACH TO MANAGING ENTERPRISE VALUE

The traditional approach to risk management has focused on the minimization either of risk or its consequences. Hence, the language of risk management tends to focus on mitigation, containment and insurance.

While protection is obviously a valuable function of risk management, the focus on the downside obscures one of the more compelling rationales for engaging in risk management – that of managing opportunity.

At the heart of the modern approach to risk management is the central definition of risk. Risk equals uncertainty. Once we define risk as uncertainty, we clearly begin to understand that risk poses both an upside as well as a downside.

In this paper, we present a framework for an integrated approach to risk management – one that focuses not only on enterprise value protection but also on enterprise value enhancement.

The Objective of Risk Management

Once we begin to define risk as simply uncertainty, we need to revise our thinking concerning the objective of risk management. Our objective must go beyond protection and extend to value enhancement.

In the financial industries such as banking and insurance, this more holistic approach to risk management seems obvious. After all, neither banks nor insurance companies could make money if they were not willing to take on risk. In fact, the entire foundation for creating enterprise value in these industries lies in ensuring that an appropriate return is earned for the risks that are taken. And this, in fact, is the primary objective of the modern approach to risk management – to ensure that the company earns a return appropriate to the risks that it takes.

In order to achieve this objective, we need to define the term reward. For purposes of this paper, we shall define reward to be an increase in enterprise or shareholder value. We take this approach because the straight return on equity approach obviously ignores the fact that riskier enterprises require not only larger amounts of capital, they also require more expensive capital. Other approaches such as residual return (returns after

cost of capital) or return on risk capital, while recognizing the cost of taking on risk, are short-term measures and would de-emphasize investments in long-term growth.

Again, for purposes of this paper, we shall use the approach of the discounted cash flow method as a basis for measuring enterprise value. This is appealing for the reason that it is the method that allows managers to model strategic decisions and policy directly to effects on enterprise value. Using this method, the value of an enterprise is equivalent to the present value of cash flows the enterprise can generate from operations.

Using the discounted cash flow approach to enterprise valuation, enterprise value creation is dependent on three things: its ability to generate profitable growth, its risk profile and market sentiment (Herrera, 2007). For a life insurance company, for example, this would be analogous to understanding that the value of the enterprise is composed of at least two components: the embedded value represented by the existing book of accounts and the discounted value of the stream of future business that can be expected to be generated in the future (measured each year by the value of new business). Each of the two components – embedded value and the stream of value of new business – take into account cash flows and risk profile.

Once we have defined both risk and reward, we can begin to turn to the role of risk management in enterprise value management.

Value and Risk

A comprehensive approach to managing enterprise value must take into consideration the reality that the enterprise is managed within an environment of uncertainty. This means not only that value must be protected against loss, but also that the enterprise must be ready to take advantage of opportunity when it is presented. Risk management must become part of the enterprise value management process.

This means that risk management must be embedded in both the strategic planning process as well as in the operations of the business.

At the enterprise-level, the risk management function must address all of the factors that affect value. Risk management systems must include the protection of business cash flows. A company's risk management function is expected to lower cost of capital (lower risk, lower cost of capital). Risk management systems are also designed to protect all the assets of the business, including reputation - hence, market sentiment concerning the company.

This means that a strategic approach to managing stakeholder value must include not only directly managing for incremental gains but also in protecting everything that affects value: cash flows, physical assets, distribution systems, relationships, reputation, etc.

Planning for Robustness

As strategy needs to be dynamic, one thing managers can do is to look at the competitive situation and consider how this could change in the future. They can then review their existing capabilities in order to develop a plan for ensuring that they are working towards building capabilities that would be appropriate for the future. When this is done, it is important for management to anticipate the ways in which competition might deal with these future changes.

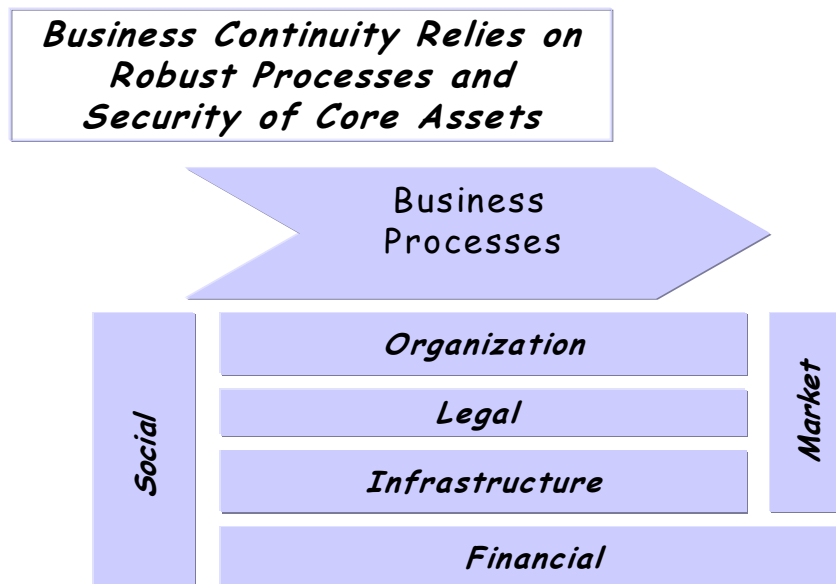
Finally, it is important to test the strategy for robustness as well as optimality.

Both the environment that allows the company to create value, the assets that are used to create value and the processes that create value must be reviewed for vulnerability to major uncertainties. Also, it is important to ensure that the company has identified opportunities that may occur should certain events occur. A complete risk management program must be designed to manage the upside as well as the downside.

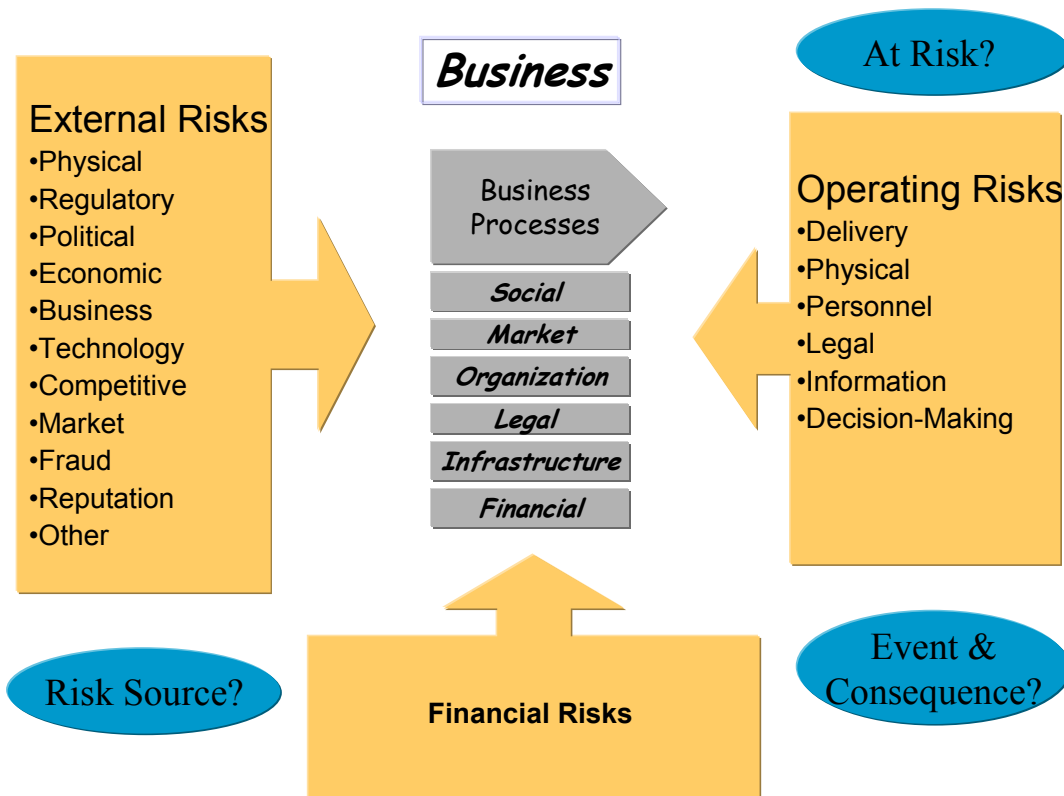
The risk management process is a three stage process: a) identification and assessment; b) management; and c) monitoring.

For risk management purposes, it is often easier to collapse the company's asset map into the larger categories of: financial, infrastructure, market, organization, legal and intellectual and social.

During the risk identification phases, it is important to understand that both processes and assets can be at risk. Assuring business continuity requires both that process be robust and that assets be secure



Risks can typically be classified into three: a) External Environment Risks, b) Operating Risks, and c) Financial Risks. In reviewing risks, the corporation must be able to identify the risk or uncertainty (i.e. what could happen?) as well as the process or asset at risk. Also, it is important to understand the source of the risk as well as the degree of impact of the consequences of a risk event occurring.



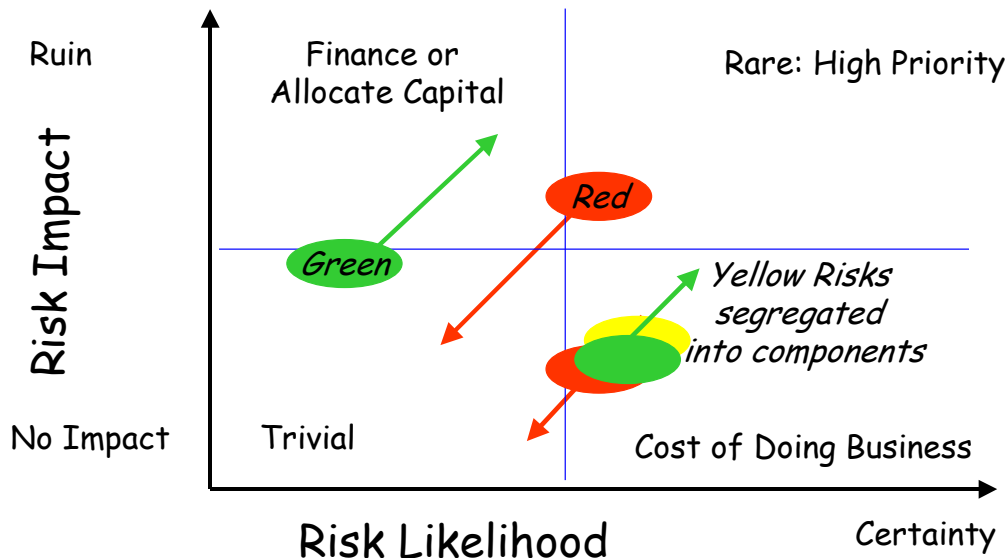
Once risks are identified, it is useful to assess and prioritize them through a simple likelihood vs. impact map. Both opportunity as well as loss events should be mapped.

It is useful to color-code these maps so that uncertainties that produce predominantly negative effects such as natural calamities or fire are colored red; uncertainties that produce predominantly positive effects such as the impending availability of useful technology or passing of favorable laws are colored green and risks that have significant downsides as well as upsides (a not insignificant proportion of risks) are colored yellow.

This allows managers to see at a glance the complete risk situation of the company.

The risk map also allows managers to prioritize risks and segregate them in terms of preferred handling. For example, risks that have a low likelihood and a low impact would tend to be trivial and be off the main radar for most managers. An exception would be risks that might have the tendency to change in characteristic over time. These latter types of risk would be monitored during regular risk evaluations.

Risk Mapping and Management



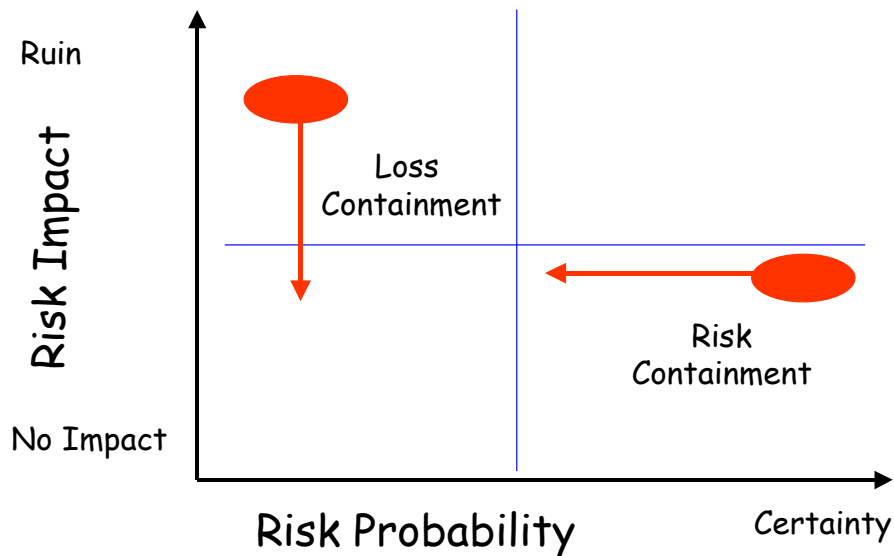
Source: M.B. Herrera, Solutions Incorporated, AIM

By contrast, downside risks that have a high likelihood but a low severity would normally be considered part of the cost of doing business and are absorbed in budgets and become part of product or service costs.

Events that are high likelihood and high impact should almost never occur in a healthy, well-managed company. When they do occur, they must be very high priority and addressing them typically would require a major strategic response. A classic example would be the effect of SMS technology on the pager industry.

Once risks are characterized and prioritized, the first priority for response must be those alternatives that are relatively cost-free – e.g. natural hedges and operational changes. For loss events, mitigating alternatives must be explored. Mitigation can address likelihood or impact or both. Mitigation at both the preventive as well as the contingency phases are useful in creating robustness.

Risk Mitigation

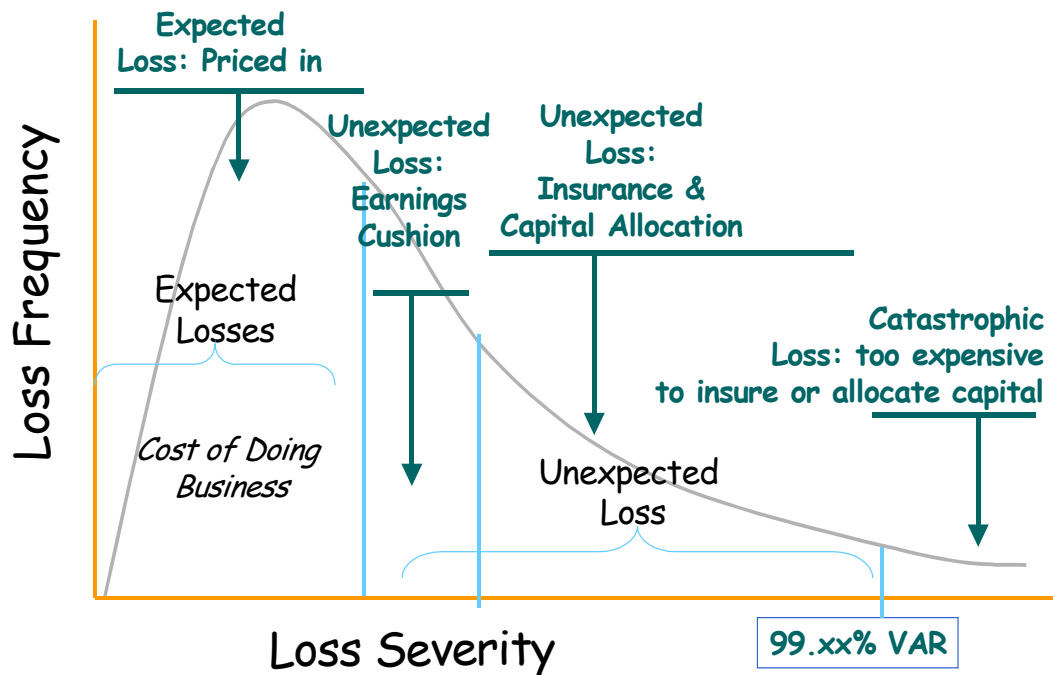


Source: M.B. Herrera, Solutions Incorporated, AIM

Residual risks can either be accepted or financed. Risks that are expected typically are built directly into the pricing models of the firm. Unexpected losses can be financed either through financial engineering methods such as options or through insurance. As neither of these responses is cost-free, the cost of managing risk would eventually be reflected in pricing.

Unexpected losses that are not financed are addressed by capital allocation. Both insurance as well as banking enterprises directly reflect this in the way they estimate risk-based capital requirements. When risk-based capital is estimated, enterprises make an implicit decision concerning the level of risk that the enterprise can absorb and still survive. The method that most companies use to establish this level of capital is based on the value at risk (VAR) concept. To a layman, a company that sets its risk management systems, including risk-based capital to a VAR of 99.99% is setting a policy that will allow it to weather all but a 1 in 10,000 probability risk event.

Financing the Downside



Managing for Robustness

While the focus for managing loss events is to decrease likelihood and impact, the focus for opportunity events is to increase likelihood and impact. Like loss events, contingency plans must exist. For opportunities, one of the most important contingency plans is the mobilization program – both financing, infrastructure and organization plans must exist for the highest priority opportunities.

The risk management plans must then be implemented and monitored. The monitoring program is crucial as the degree of impact is often heavily influenced by early detection.

Tools such as a risk dashboard allow risk owners to keep track of the levels and trends of risks in relation to key performance indicators (deLoach, 2000).

Mainstreaming Robustness

Risk management must be embedded in the full strategic planning exercise. While it is clearly included in the external and internal scanning phase, it is important to do a final check once the strategic and operating plans are drafted because those plans also have their own set of uncertainties.

It is also at this phase when management can ensure that the full risk management processes and indicators are embedded in its plans and in its performance indicators. This provides management with the foundation for understanding both the cost as well as the protective value of risk management activities.

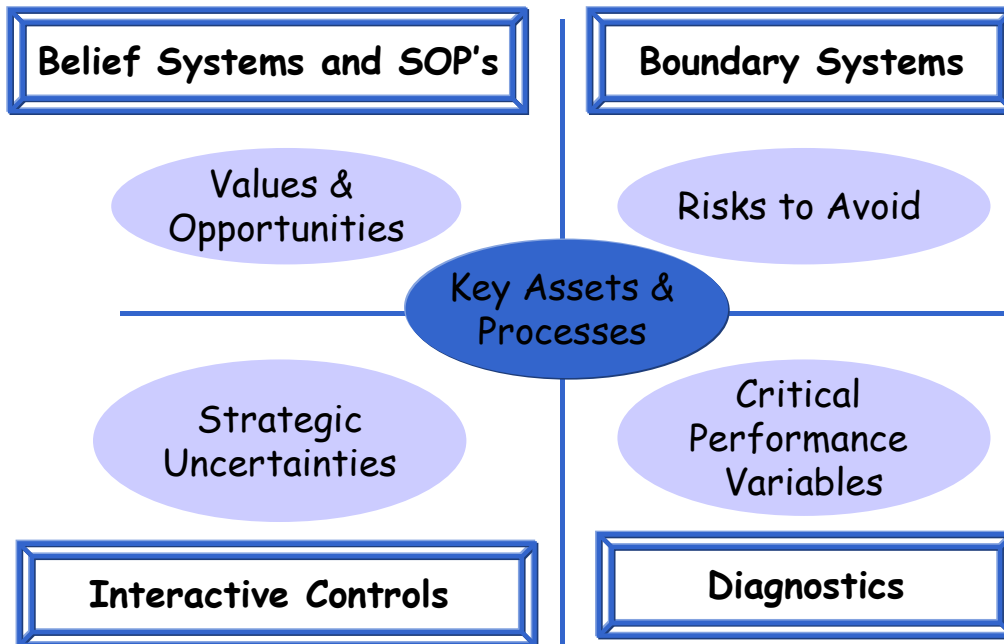
The wide availability of powerful analytic tools now allow management to model alternative strategies not only for expected value creation but also for robustness. Each strategic alternative can be reviewed not just for expected value created but also for the range of possible values given the range of possible scenarios. These ranges are developed using stochastic simulation. This is particularly helpful in industries that are exposed to major systemic fluctuations such as, for example, oil companies that are vulnerable to oil price fluctuations or even insurance companies that are vulnerable to both interest rate fluctuations as well as pandemics.

The power of modern computing has allowed risk management professionals to provide better information in terms of risk metrics, an area long seen as a major challenge in risk analysis.

The real challenge to comprehensive risk management, though, is the mainstreaming of risk management. In the same manner that the pursuit of enterprise goals and the creation of enterprise value should be the responsibility of each manager, the protection and enhancement of value should be at the forefront of management decision-making.

Simons (1995) proposes a framework for control mechanisms that encompasses both the traditional technical approach to control as well as the less tractable albeit equally important softer aspects of control. I have found an adaptation of this model to be useful in helping executives understand how risk management can be embedded in day-to-day operations.

Mainstreaming Control



Adapted by M.B. Herrera from a model by R. Simons, "Levers of Control"

Many actuaries will probably see the application of traditional actuarial concepts with modern computing tools in order to provide a better assessment of risks and possible approaches to managing risk. However, I suspect that the true challenge lies in finding ways to embed risk management in day-to-day operations.

References:

Boulton, Richard E.S.; Libert, Barry D. and Samek, Steve M. Cracking (2000), 'The Value Code', Harper Collins, New York.

DeLoach, James W., "Enterprise-wide Risk Management", Prentice Hall, London, 2000.

Herrera, Maria Elena B., Series of articles on risk management and Integrated Strategic Management from the column 'Integrations', Fridays on The Manila Standard Today, www.manilastandardtoday.com or www.mayaherrera.com or 360.yahoo.com/integrations_manila, 2007.

Herrera, Maria Elena B., Reading on "Integrated Risk Management: A Framework", The Asian Institute of Management, 2007.

Herrera, Maria Elena B., Reading on "Valuation as an Integrating Mechanism", The Asian Institute of Management, 2007.

Luerhman, Timothy A., "Strategy as a Portfolio of Real Options", Harvard Business Review, September-October 1998, p 89-99.

Simons, Robert, "Levers of Control: How Managers Use Innovative Control Systems to Drive Strategic Renewal", Harvard Business School Press, Boston, 1995.

Van Putten, Alexander B. and Ian C. MacMillan, "Making Real Options Really Work", Harvard Business Review, December 2004, p 134-141.

Rappaport, Alfred (1998), 'Creating Shareholder Value, A Guide for Managers and Investors,' The Free Press, New York.