

The Strategic Implications of Enterprise Risk Management: A Framework

Ezeosa Dafikpaku MBA B.Eng(Hons) PRINCE2 MIET MCFI

ABSTRACT

The dynamic and highly competitive business environment in recent times has seen numerous debacles, from natural disasters to financial crisis, not forgetting frauds and scandals. This has brought to the lime-light risk management, a discipline that has in the past focused on mostly hazardous risks, and is most recognized in the finance and insurance sectors. All these; including the numerous measures taken to mitigate the current and emerging risks, have given governments, businesses and stakeholders a new view of the environment; the risk environment.

The intervention by what is considered the evolutionary discipline of the traditional risk management, known as Enterprise Risk Management (ERM), takes a new and holistic approach towards the management of risk. Experts describe ways of implementation through the use of frameworks, one of which is discussed in this work – The COSO ERM Integrated Framework.

This study is carried-out using a case-study research design looking at two (2) cases; Infosys and Rolls Royce Corp. The research is aimed at developing an explanation on how ERM brings about the strategic implications or its ‘promise’ as it is popularly known the ERM circle.

Reported findings, herein, show that a simple linkage exists between the ERM processes and its benefits (the strategic implications), apparently influenced by numerous factors including the risk appetite, risk culture, management competence, etcetera..., which go a long way to show the value of ERM; even though not quantified. Analyzing the cases, questions answered by this paper include: why is the risk perceived differently? Why is the impact of the same risk different? Why the difference in risk responses? Why is the *proposed* response sometimes different from the *actual*? How are all these linked together?

In concluding this research paper, the influential factors and how they are linked to the ERM process of achieving these strategic implications are highlighted.

Key words: enterprise, holistic, risks, management, COSO, framework, integrated, ERM.

INTRODUCTION

The Risk Environment

In today's competitive business environment, business entities are faced with greater uncertainties (risks and opportunities) as they strive to create value. And in the wake of the current global economic crisis, businesses in a bid to stay competitive have taken several crucial measures. Some businesses have cut-down on the number of staff tremendously to save cost in a bid to survive (one of such businesses is British Telecom; a Telecom giant which cut 15,000 jobs after making a £1.3bn loss¹), some shut-down offices, branches, divisions, or plants within their business enterprise due to drastic reduction in the demand for their products/services (such is the case of Honda motors which shut-down its plant at Swindon for four months from February to May 2009²), and the going 'burst' of several businesses due to the inability to repay their debt (an example is Woolworths which closed-down, closing its 807 British outlets and leaving over 27,000 people unemployed³). These have led managers and investors in recent times to pay more attention to managing the risks inherent and emerging in their businesses.

It is therefore of great importance for businesses to take advantage of making appropriate strategic-decisions on uncertain outcomes, as at worst it would cut-down losses due to disaster and at best, improve profitability in cases of opportunities. "Uncertainties present both risks and opportunities, with potential to erode or enhance value."⁴ The sources of uncertainties with adverse effects/outcomes (the probability of which is defined as risk) are described as due to the volatility/complexity/heterogeneity of risk; the impact of external events (such as customer preferences, competitors strategies, and so on), the response to external events /developments (such as compliance to policies/regulations/standards, development of strategies, and so on), and the behaviour of employees is as well crucial. Some of the risks covered in this research include capacity expansion risk, diversification, vertical integration, financial, marketing, and human resources.

The 2009 Risk Management survey⁵ carried-out by the Aon Corporation presents its findings in four key components; Top ten risks, Overall risk preparedness, Business losses related to risk, and key business topics/functions. And the top ten risks are published as follows:

1. Economic slowdown
2. Regulatory/legislative changes
3. Business interruption
4. Increasing competition (new addition to top ten since 2007 report)
5. Commodity price risk (new addition to top ten since 2007 report)
6. Damage to reputation
7. Cash flow/liquidity risk
8. Distribution or supply chain failure (new addition to top ten since 2007 report)
9. Third party liability

¹ Sky news (2009) *BT cuts 15,000 jobs after £1.3bn loss May 14, 2009*

² BBC news (2009a) *Honda's four month break begin January 29, 2009*

³ BBC news (2009b) *Final Woolworths stores shut down January 6, 2009*

⁴ The Committee of Sponsoring Organisations of the Treadway Commission (2004)

⁵ Aon Corp. (2009) *Global Risk Management Survey results 2009*

10. Failure to attract or retain top talent

The Relevance: A Need for Enterprise Risk Management

The recession has forced businesses to place more focus on the management of risks relating to all aspects of their businesses. Such management is broadly defined as “Enterprise Risk Management” ERM, which describes the set of activities that businesses undertake to deal with all the diverse risks that face it in a holistic/strategic/integrated method. These risks include financial, strategic, operational, hazardous, and compliance risks, spanning through the organization. Many of such risks have significant impact on the profitability, effectiveness, and reputation of business enterprises.

In the 21st century, there are several checkpoints that have considerably driven the need for enterprise risk management, which today is referred to as drivers of ERM, this includes increase in the following⁶:

- Greater transparency (Corporate Governance)
- Financial disclosures with more strict reporting and control requirement
- Security and technology issues
- Business continuity and disaster preparedness
- Focus from rating agencies
- Regulatory compliance (laws and regulations)
- Globalization in a continuously competitive environment

The ‘what’ ERM provides for Businesses (the benefits) has been highlighted in many publications, but as any critic (manger) would say, “this is not enough; anyone could lay claims that lofty”. The ‘how’ this is achieved is what these critics are interested in knowing now that it has caught their attention. They need very good reasons, why they should apply such a process looking at its associated cost and effect on the bottom-line of their businesses. The ‘how’ is what links the process of ERM to the benefits it is said to give. This explanation may very well be the incentive that businesses (management) need to implement the ERM process towards realizing, with reasonable assurance, their strategic objects.

UNDERSTANDING ENTERPRISE RISK MANAGEMENT

The Concept of Risk Management

Let’s start by understanding the simple concept of risk and progress gradually towards managing enterprise risks. The renowned ‘father of modern management’, Peter Drucker is quoted to have said, and I quote, “a decision that does not involve risk, probably is not a decision”⁷. Thomas Stewart says; “Risk – let’s get this straight up front – is good. The point of risk management isn’t to eliminate it; that would eliminate reward. The point is to manage it – that is, to choose where to place bets, and

⁶ SOA, 2009 “*Enterprise Risk Management (ERM): fact sheet*”

⁷ NERAM (2003) *Workshop Report: Basic Framework for Risk Management*

where to avoid betting altogether”⁸. We see the same school of thought in the words of Dan Borge, former director of Bankers Trust; “Many people think that the goal of risk management is to eliminate risk – to be as cautious as possible, not so. The goal of risk management is to achieve the best possible balance of opportunity and risk. Sometimes, achieving this balance means exposing yourself to new risks in order to take advantage of attractive opportunities.”⁹.

Again, Peter Drucker makes it clear what an attempt to eliminate risk completely would lead to; “A business has to minimize risk. But if its behaviour is governed by the attempt to escape risk, it will end up taking the greatest and least rational risk of all: the risk of doing nothing.”¹⁰. Dr Vedpuriswar adds that risk can neither be avoided nor eliminated completely¹¹. The theme of risk management is clearly highlighted as the minimization of risk in a bid to keep it within controllable limits, as well as the acceptance of risk in order to gain reward – the definition of a risk appetite.

Uncertainty in business and life in general is said to exist due to the futuristic nature of outcomes. The outcomes of business operations are to be reached at sometime in the future after the tasks have been performed. G. Monahan agrees to this in his work stating that businesses face risk due to the uncertainty of possible outcomes of the actions taken in the course of doing their business¹².

And even in situation where a high level of certainty exists towards the achievement of positive outcomes, a sudden disastrous event may occur to change this fate. Barton T. L. et al. sheds light on the ‘risk’ debacles which the business community has witnessed that have resulted in considerable decrease in shareholder value, financial loss, damage of company reputation, so on¹³. They point out that such events may include environmental disaster, mergers destroying shareholder value, organisations trading in complex derivative instruments without the understanding of the ‘risks’ involved, traders lacking oversight and have inadequate controls for the enormous risks they assume, etcetera, while placing emphasis on the attention and handling of such ‘risks’.

G. Monahan argues on the notion that risk is the same as uncertainty, by defining risk as anything that produces a distribution of various probabilities for various outcomes¹⁴. COSO on the other hand, defines uncertainty as that which presents both risk and opportunities, with potentials to erode or enhance value. Risk is the possibility that the occurrence of an event will adversely affect the achievement of objectives, and opportunity is the possibility that an event will occur and positively affect the achievement of objective. The author has adopted the COSO definitions in this paper.¹⁵

⁸ Thomas A. Stewart, (2000) cited in Thomas L. Barton, et al (2002) *Making Enterprise Risk Management Pay off*

⁹ Dan Borge cited in Vedpuriswar A V (2006) *Enterprise Risk Management: Industry Experience*

¹⁰ (Peter Drucker cited in Vedpuriswar, 2006)

¹¹ Vedpuriswar A V (2006) *Enterprise Risk Management: Industry Experience*

¹² Monahan, G. (2008) *Enterprise Risk Management: A Methodology for Achieving Strategic Objective*

¹³ Thomas L. Barton, et al (2002) *Making Enterprise Risk Management Pay off*

¹⁴ Monahan, G. (2008) *Enterprise Risk Management: A Methodology for Achieving Strategic Objective*

¹⁵ The Committee of Sponsoring Organisations of the Treadway Commission (2004)

What is Enterprise Risk?

Currently, the need for corporate governance, internal control (as well as the compliance to rules and regulations) and risk management have been of critical concern to businesses as experts call for the integration of all three with a single management approach referred to as the integrated GRC.¹⁶ However, the solution came as ‘Enterprise Risk Management’, as it emphasizes on all three aspects within its process of application. Experts point at the recent financial crisis and the related economic downturn, and the failure of risk management to help the situation as further backing for the re-evaluation of the discipline for a change to a more co-ordinated (wider scoped) risk management approach that recognizes the interdependencies of risks¹⁷. Again, Enterprise Risk Management is described as the solution to this challenge.

Enterprise risk is the aggregate of all functional and process risks a business entity faces in the course of carrying out its business activities. Such risks would include the types described by Casualty Actuarial Society¹⁸ listed below:

1. Hazard risk
2. Financial risk
3. Operational risk
4. Strategic risk

Enterprise Risk Management (ERM) approach is a first attempt to recognize the interdependencies among risks and the treatment of risks across all business operations.¹⁶

About Enterprise Risk Management (ERM)

The holistic approach that characterizes the present trend of risk management, referred to in some text as enterprise-wide risk management, enterprise risk management (ERM), strategic risk management, or integrated risk management, is aimed at dealing with uncertainty for the organisation.¹⁹

The rationale behind this approach is that value is maximized when the decision-makers sets strategy and objectives to strike an optimal balance between growth and return goals, and the related risks, and efficiently and effectively allocate resources in pursuit of the entity’s objectives.²⁰ Barton et. al. stated that the goal of this new approach is to create, protect, and enhance shareholder value by managing uncertainties that could influence the achievement of organisational objectives.²¹

Enterprise Risk Management is clearly distinguished from risk management and financial risk management in the RIMS Executive Report, 2009. While risk management is described as a broad term for the business discipline that is concerned with the protection of the assets and profits of an

¹⁶ (Dittmar, L (ND) *What are the Primary Challenges and Trends in Governance, Risk and Compliance?*

¹⁷ Jablonowski, M. (2009) *Risk Management: The Bigger Picture*

¹⁸ Casualty Actuarial Society (2003) *Overview of Enterprise Risk Management*

¹⁹ Monahan, G. (2008) *Enterprise Risk Management: A Methodology for Achieving Strategic Objective*

²⁰ The Committee of Sponsoring Organisations of the Treadway Commission (2004)

²¹ Thomas L. Barton, et al (2002) *Making Enterprise Risk Management Pay off*

organisation by either reducing the potential before it occurs, mitigating the impact of a loss if it occurs, and the execution of a swift recovery after a loss occurs; Financial risk management is the term often used by non-financial institution to describe the mitigation process for their financial exposure; Enterprise Risk Management on the other hand, is said to represent a revolutionary change in the risk management discipline that broadens the scope of risk management behaviours.²²

By definition and contrast, ERM is seen as the new paradigm in risk management; while the old paradigm is characterized by avoiding losses within a limited scope, separated by function, and terminates at the end of the task (or project), this new approach covers all risks, both internal and external, integrates and views all risks from a board, creating awareness organisation-wide, with the goal of creating, protecting, and enhancing shareholder value by mitigating risks and seizing opportunities in a continuous process.

The authorities and expert of this emerging discipline have defined ERM in a number of ways that depicts their perception and the way they practice it.

The CAS committee definition is stated below:

“ERM is the discipline, by which an organisation in any industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organisations short and long term value to its stakeholders”²³.

The committee places emphasis on the following five parts of the definition:

1. ERM is a discipline
2. ERM applies to all industry
3. ERM exploits (value creating) as well as mitigate (manage) risk.
4. ERM consider all sources of risks
5. ERM consider all stakeholders of the enterprise

The COSO committee describes ERM as one that deals with risk and opportunities, and defines ERM as follows:

“Enterprise risk management is a process, affected by an entity’s board of directors and other personal, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.”²⁴

As before, the COSO committee also breaks the definition in to simple bits, it seems to be the most elaborate definition of the concept;

1. ERM is a process; it is ongoing and following through an entity.
2. ERM is affected by people at every level of an organization.
3. ERM is applied in strategy setting.

²² Risk and Insurance Management Society, Inc. (2006) *RIMS Risk Maturity Model*

²³ Casualty Actuarial Society (2003) *Overview of Enterprise Risk Management*

²⁴ The Committee of Sponsoring Organisations of the Treadway Commission (2004)

4. ERM is applied across the enterprise, at every level and every unit, and includes entity-level portfolio view of risk.
5. ERM is designed to identify potential events that, in the event of their occurrence, will affect the entity and to manage the risk within its risk appetite.
6. ERM is able to provide reasonable assurance to the management and board of directors of an entity.
7. ERM is general towards the achievement of objectives in one or more separate but overlapping categories.

Managing Enterprise Risks

According to Lexicon Systems, LLC, this new, strategic imperative has grown momentum, and in a single paragraph summarizes the activities of ERM which will take organisations years and years to accomplish, stating that: organisation can support ERM solutions when they reach a certain level of business and information maturity. When this occurs, they establish a “risk culture” and then gather risk intelligence. The adoption of a process focused on GRC as against the “siloes” issue-by-issue style follow. In addition to these, they suggest that the organisations establish a risk and compliance architecture that considers the business processes, the people and the information technology. And finally, the organisation commits and trains the members consistently on corporate policies and procedures.²⁵

The CAS committee states that this involves continual scanning of the risk environment and evaluating the performance of the risk management strategies, and the feedback into the context-setting step of the process and the cycle repeats again and again, continuously.²⁶

The ERM process in a generic sense is a reiterative process in which certain sequential activities are carried out starting with establishing a context, and then identifying events, analyzing and quantifying risks, integrating risks, assessing and prioritizing risks, and finally treating risks/exploiting opportunities. The monitoring and reviewing activities are continuous and concurrent with these other activities.

What is a Framework?

By definition a framework serves as a guide, an outline or overview of interlinked items (activities) to facilitate an approach towards achieving a specific goal. In this context, a framework would aid the implementation of ERM. It does so by aiding to organize and structure an approach that can both be measured and repeated. A risk management framework is described as an organisational specific set of functional activities and the associated definitions that define the risk management system in an organisation and also the relationship to the risk management organisational system.²⁷

²⁵ Lexicon (2007) *Enterprise Risk Management: The New Imperative*

²⁶ Casualty Actuarial Society (2003) *Overview of Enterprise Risk Management*

²⁷ NERAM (2003) *Workshop Report: Basic Framework for Risk Management*

The Enterprise Risk Management Framework

The “2008 ERM Benchmarking Survey” conducted by the Institute of Internal Auditors (IIA’s) and IIA Research Foundation’s Global Audit Information Network revealed in 2009 that the COSO’s Enterprise Risk Management – Integrated Framework is the most commonly used framework to guide risk management efforts. In the perspective of experts, the only rival to this is the revised ISO 31000 standards published in late 2009.

In managing risks, these ERM frameworks must identify and analyze it, and then take one of the following actions²⁸:

- Avoidance of risk by aborting actions that contributes to risk
- Reduction of risk by reducing the likelihood or impact of risk
- Share or insure risk by transferring or sharing a portion of the risk (impact)
- And Acceptance of risk by taking no action as a result of a cost/benefit decision

Some other ERM frameworks/standards include:

- ❖ Association (FERMA)
- ❖ ISO 31000
- ❖ British Standard
- ❖ AIRMIC
- ❖ Risk and Insurance Management Society (RIMS) Risk Maturity Model
- ❖ FAA Safety Risk Management and so on.

In this paper, the COSO’s ERM integrated framework will be examined, as it deals with ERM applicable to all industries and encompassing all types of risks.

The Enterprise Risk Management – Integrated Framework is a framework developed by the Committee of Sponsoring Organisations of the Treadway Commission (COSO) to meet the requirements of a robust framework that would effectively identify, assess and manage risk due to heightened concerns and focus on risk management. The aim was the development of a framework that would be readily usable by managements to evaluate and improve the Enterprise Risk Management of their organisations.²⁹

The effectiveness and efficiency of the implementation of the COSO framework’s concepts and principles will mostly be affected by an entity’s size, complexity, industry, culture, management style, and other attributes.³⁰ The Committee discusses that because of the availability of an array of approaches and choices, even similar organisations implement ERM differently. On pre-

²⁸ Ayse Kucuk Yilmaz (2008) *The Best Enterprise Risk Management Practice For Airline and Airport Business*

²⁹ The Committee of Sponsoring Organisations of the Treadway Commission (2004) Executive Summary.

³⁰ The Committee of Sponsoring Organisations of the Treadway Commission (2004) Application Techniques,

implementation, however, Jerry Micolism emphasizes on the need to develop a company-specific operation before diving in for a company-specific ERM program.³¹

In today's business world, the ultimate purpose of an ERM framework would be seen as the facilitation of the process to be described, automated, monitored and improved as part of the cycle of continuous innovation and responsiveness to the business dynamics.

The Business Case for Implementing Enterprise Risk Management

The society of architecture describes the drivers³² for this change and the development of the discipline of ERM to be due to:

1. Regulatory developments
2. Rating agency views
3. The COSO report
4. Basel
5. Economic capital
6. Conglomerates
7. Convergence of financial products, markets, globalization
8. Board attention due to public's demand for certain assurances

The challenges/issues of the traditional risk management approach

The major issue is the persistent contextual myopia in risk management, concentrated solely on hazard risk; risk management has been a disconnected function, risks do not always fit into categories quite neatly. An example would be business interruption at a plant, this has finance, marketing, and reputational implications beyond the effects on production and also, the applicability of the property insurance policy. The growing recognition that co-ordinating and financing all facets of organisational risk effectively, is critical for the maximization of success.³³ Scholars have observed that it cost much more to manage risk individually.

The challenge of having a focus on narrow concerns, a fragmented approach toward risk management has its solution in the understanding of the wider scope of risks being faced.³⁴

Establishing, maintaining, and implementing a new approach³⁵ having:

- ✓ An organisation-wide awareness of risk management
- ✓ The channels for communication of risks
- ✓ The methods, tools and practices for managing risk
- ✓ The ways to measure operational and financial risk
- ✓ The organisational risk map
- ✓ The risk financing mechanisms
- ✓ The measurements of risk management effectiveness

³¹ IRMIa (2003) *Implementing Enterprise Risk Management: Getting the Fundamentals Right*

³² Society of Actuaries (2006) *Enterprise Risk Management Specialty Guide*

³³ Busman, E. R. (1998) *Risk Management -The Challenge Ahead: Adopting an enterprise wide approach to risk*

³⁴ Jablonowski, M. (2009) *Risk Management: The Bigger Picture*

³⁵ Society of Actuaries (2006) *Enterprise Risk Management Specialty Guide*

The Enterprise Risk Management vision or promise

The benefits or what some would consider as the ‘promise’ of ERM are not farfetched,³⁶ COSO describes them as follows:

1. The aligning of risk appetite and strategy:
This ensures risks are within manageable limits.
2. Enhancing risk response decisions:
This ensures that the select alternative optimizes resources.
3. Reducing operational surprises and losses:
This ensures that potential events are identified, assessed, and responses are established thereby reducing the occurrence of surprises due to the changing business environment and related costs or losses.
4. Identifying and managing cross-enterprise risks:
This ensures that the risks the entity faced are identified, their relationships and their impacts known.
5. Providing integrated responses to multiple risk:
This ensures that all related risks are addressed cost effectively.
6. Seizing opportunities:
This ensures that not only are the risks identified, but also the potential opportunities as well.
7. Improving deployment of capital
This ensures that management has robust information on risks to effectively assess the overall capital needs and enhance capital allocation.

It is therefore right to say that the implementation of ERM strategically implies that, if effective, it helps ensure, with reasonable assurance, that with the understanding of the complete array of risks that an entity faces, it can best achieve its strategic, operations, reporting and compliance objectives.

The Business Value of Enterprise Risk Management

The strategic implications of ERM refer to the effects of the ERM process on setting strategic objectives and on strategy. As ERM is a process whose mechanisms should be/are built into the infrastructure of the entity with the goal of ensuring, with reasonable assurance, that the entity’s objectives, all four categories – strategic, operations, reporting and compliance, are achieved, the strategic implication may be described as follows³⁷:

1. That the board of directors and management have reasonable assurance that they understand to what extent the entity’s strategic objectives are being met or affected
2. The same as above goes for their operations objectives
3. That the entity’s reporting is reliable
4. That all applicable laws and regulations are being complied with

³⁶ The Committee of Sponsoring Organisations of the Treadway Commission (2004) Executive Summary.

³⁷ The Committee of Sponsoring Organisations of the Treadway Commission (2004) Executive Summary.

The points 1 and 2 simply imply that with risk information (i.e. risk intelligence) the board of directors and management at various levels have an understanding of their decision options and their strategic and operational effects on the organisation.

The Society of Actuaries (SOA) describes the organisational objectives for pursuing ERM as³⁸:

1. Competitive advantage
2. Strategic goals
3. Shareholder value
4. Transparency of management
5. Decision making
6. Policy holder as a stakeholder

In finer details, these are achieved in a more practical sense by the integration of ERM in an organisation that adequately supports its implementation in its day-to-day activities as follows:

- ✓ **Increased transparency** – through accountability, responsibility and performance management from Top-down
- ✓ **Increased traceability** – for the purpose of compliance, audit and analysis
- ✓ **Improved responsiveness and flexibility** – through monitoring, anticipation of events and definition of responses
- ✓ **Continuous business optimization** – through clear understanding of strategic options
- ✓ **Improved strategic alignment** – through de-risking of business processes
- ✓ **Improved business IT alignment** – through de-risking the links between Business and IT
- ✓ **Accelerated identification and effective management of risk** – through assessment of risk relationships and interdependence, and as a predictive tool
- ✓ **Improved ability to perform M&A or diversification** – through clear understanding of the risks and opportunities associated with such events
- ✓ **Cost reduction/savings** – through the reduction in business disruption and facilitating both the business rules and business continuity measures, shedding non-core activities (especially those with high risks), improve confidence and assure productivity leading to increase pace.

The list goes on and on, as the ERM process assures the profitability of core business processes.

Enterprise Risk Management helps run an Extended Business network

In recent times, it has become clear that it is not enough to manage the business supply chain effectively and efficiently as a disruption in business activities in remote points of a business' value chain may have substantial adverse effect on it due to the bullwhip effect. The management of both the downstream and upstream stakeholders of your supply chain become essential if you are to have a stable supply chain. Thus, by extending your business network you not only manage Supplier and Customer relationships, you also aim at monitoring, and supporting de-risking their activities as it affects your business. In such a case, we look at ERM as managing an enterprise that comprises of all the substantial enterprises that make-up the value-chain of the business.

³⁸ Society of Actuaries (2006) *Enterprise Risk Management Specialty Guide*

Implementation Requirements for Enterprise Risk Management

There are a number of still-emerging technologies³⁹ that will help firms to be holistic and forward thinking in operational risks, which include:

- Dashboards and scorecards
- GRC, BI and BPM platforms
- Software delivered via the web
- And others

Implementing ERM: Developing an ERM Program

Enterprise Risk Management requires a systematic and disciplined approach for implementation. Its fundamental requirement, according to Dr Ayse basically includes corporate, managerial, technical, and cost resources.⁴⁰ Jerry Micolis of Brinton Eaton Associates, Inc. says companies need to have a clear and company-specific “operational framework” in place first, and then use it to develop a company-specific ERM implementation plan.⁴¹

Micolis continues that to establish the correct operational framework, the answers to four key questions are required:

1. “What is the firm’s objective for ERM?”
2. “What will be the scope of the firm’s ERM?” (scope of risks and processes)
3. “What kind of organisation structure around ERM will work for the firm?”
4. And “What specific tools will be needed to implement it?”

Looking at the possible answers to the questions above, as steps toward developing an operational framework, we have:

1. Such objectives may include – strategic, compliance, operations and reporting. However prioritized, the objectives should be measurable and aligned toward the organisation (or pay-off).
2. Such a scope should cover all risks faced by the entity in whatever categories are used, such as financial, hazard, strategic risks, and so on. The second dimension to this relates to the management processes aimed at influencing decision-making, such as strategic planning, internal audit, performance measurement, and so on.
3. The structure describes the role and responsibilities of the players involved.
4. Such tools include risk audit guides, risk monitoring reports, stochastic risk models, and so on.

When these are in place, the development of the implementation plan begins. It further portrays the point that; it is not a stand-alone process; the implementation of ERM strategically implies that, if effective, it helps ensure that with the understanding of the complete array of risks an entity faces, and thus it can best achieve, with reasonable assurance, its strategic, operations, reporting and compliance objectives.

³⁹ Lexicon (2007) *Enterprise Risk Management: The New Imperative*

⁴⁰ Ayse Kucuk Yilmaz (2008) *The Best Enterprise Risk Management Practice For Airline and Airport Business*

⁴¹ IRMIa (2003) *Implementing Enterprise Risk Management: Getting the Fundamentals Right*

Challenges and Issues in Implementing ERM

According to the article titled “Implementing Enterprise Risk Management: Getting the fundamentals Right”⁴² by Jerry Micolism of Briston Eaton Associates, Inc. and published on the International Risk Management Institute, Inc., Micolism throws light to some of the major issues regards the implementation of ERM. He reports that while most companies believe in the concept of ERM, many are frustrated by the implementation issues which has apparently not made their ERM practice beneficial, as it potentially is.

The Committee of Sponsoring Organisations of the Treadway Commission (COSO) reports that amongst the most critical management challenges is the determination for how much risk an organisation is willing to take and does accept as it furthers its goal of value creation. They go further to state the limitations of ERM, (COSO – integrated ERM, 2004, executive summary).

The Limitations of ERM

The COSO committee clears the air by stating the observed limitations, discussing the misguided notion that with embedded internal controls, the organisation will achieve its objectives.

In the viewpoint of COSO, there are three distinct concepts that must be regarded:

1. Risk relates to the future, which is described as being inherently uncertain.
2. ERM can only provide reasonable assurance, and does not provide that the objectives must be met.
3. ERM cannot provide absolute assurance of outcomes with respect to any one of the objectives.

The COSO committee continues by identifying five limits:

1. Judgement

The existence of human frailty which can affect ERM decisions subject to the conditions at the time of decision making, including available time, information presented, and business pressures.

2. Breakdowns

There is also the possibility of breakdown of well-designed ERM programs due to misunderstood implementation of instructions by personnel which may be due to judgement mistakes or errors committed as a result of fatigue, distraction, or carelessness.

3. Collusion

Individuals may act together to cover the tracks of an action they carried out, and may need to alter some financial data or management information. This may not be detectable by the ERM process and may lead to its failure.

4. Cost versus Benefits

Due to the existence of resource constraints, it is always necessary to put cost against benefits of decisions especially when it relates to response to risk of failure, and control activities.

5. Management Override

There is the possibility of a manager deviating from prescribed policies or procedures of ERM. Reasons for this override may include personal gain, or to present an enhanced financially condition of the entity, or compliance status. Effective ERM will however improve the entity’s prevention and detection of override activities capabilities.

⁴² IRMIb (2001) *Modeling the Reality of Risk: The Cornerstone of Enterprise Risk Management*

Issues Encounter in Day-To-Day Practice of ERM

A look at recent times through the Global risk management survey⁴³ carried-out by Deloitte LLP in the later part of 2008, reports on various aspects of the implementation of the ERM program. On the challenges to the organization in implementing its ERM program the following results were obtained:

1. Data

45% of respondents rated data integration as very significant and 43% said it was somewhat significant.

2. Culture

57% of respondents rated the culture to be very significant against 27% that said it was somewhat significant.

3. Tools and supporting technology systems

31% of the 81% respondents rated it as very significant and the majority said it was somewhat significant.

As for the other aspects mentioned, which includes organisational structure, risk methodology, ability to demonstrate value form ERM, and human resources policies and practices, a range between 24% and 83% of the respondents in each case rated them as very significant, and the other remaining respondents said it was somewhat significant. This translates to issues worth paying attention to by the individual respondent firms.

The major issues noted in this report are:

1. The tough battle between business units and risk manager which may need to be managed, as business units may resist having their decisions questioned by the latter.
2. The inconsistent definitions of disparate information systems as the need to integrate data across the organisation for an effective ERM program.

Future Trend of ERM

Thomas Barton et. al on the aspect of the trend of ERM, expressed their view on the trend to be the seeming need for the development of more sophisticated non-financial risk measures. They argue that it would be difficult to build models that offer predictability for this, since many of the events in this area are random.⁴⁴

They also emphasize on the need for the Chief Risk Officer to be well informed on best practices as well as the need for business educators' teaching materials on the discipline to teach future CFOs, and ERM incorporated in existing graduate and undergraduate courses.

On the industry-level, RIMMS executive report⁴⁵ outlines the next step to be taken to achieve effective enterprise management. These steps are:

1. To truly adopt an ERM culture (which is emphasized to be the key)
2. To embrace and demonstrate appropriate ERM behaviours (or attributes)

⁴³ Corp. (2009) *Global Risk Management Survey results 2009*

⁴⁴ Thomas L. Barton, et al (2002) *Making Enterprise Risk Management Pay off*

⁴⁵ Risk and Insurance Management Society, Inc. (2006) *RIMS Risk Maturity Model*

3. To develop and reward internal risk management competencies, so as to motivate employees while showing management concerns
4. To use ERM to inform management decision-making (both in risk and opportunity taking)

ENTERPRISE RISK MANAGEMENT PROGRAM IN ACTION

Players in the Enterprise Risk Management program

The players in the ERM program of an enterprise comprise of everyone from top to bottom, from management to the lowest level of staff. While everyone is responsible for the effective and efficient running of the program, the ultimate responsibility rests on the Chief Executive Officer, CEO who assumes ownership of all the risks the enterprise is exposed to and reports to the Board of Directors. However, ownership of the individual, sectional, team, or departmental risks are associated with the staff/team/committee in charge of the processes or functions where the risks arise.

The players of the ERM program and the reporting flow are represented by the diagram below.

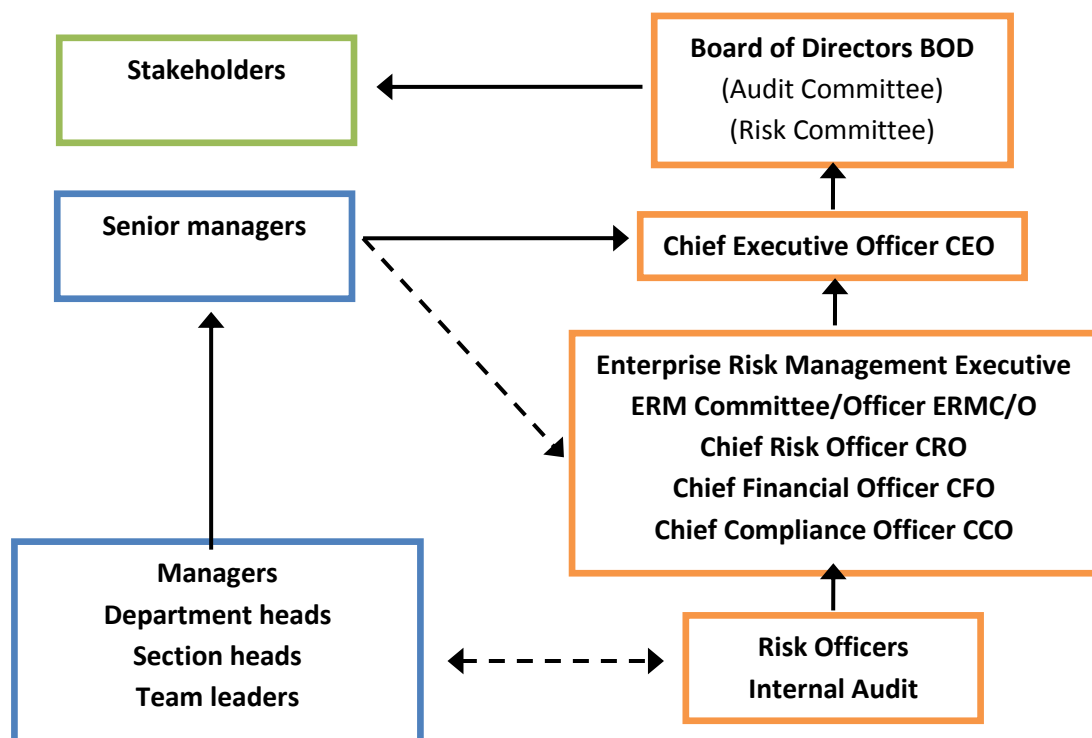


Fig: Illustrates the players in an ERM program

Starting from the top to bottom, the Board of Directors are responsible for the oversight of ERM as well as reporting to stakeholder on the risk management strategy and risk issues. They may decide to delegate specific aspects of their ERM duties to the Audit or Risk Committee, as the case may be. The Audit or Risk Committee therefore reports to the BOD.

The CEO provides leadership and direction to senior managers while seeing that all ERM components are in place. The CEO reports to the BOD. The CEO may also establish a committee to

carry-out its functions, such as ERMC/O. On the alternative, may delegate this function to the CFO, CRO, or CCO where applicable.

Risk Officers from the ERMO may be deployed to work within various sections to support the ERM processes by getting to closer the areas where risks exists and reporting to the centralized ERMO. The internal auditors may play a key role in monitoring the application and effectiveness of the ongoing ERM functions.

The Senior Managers, Managers, Department Heads, Section Heads and Team Leaders are responsible for managing the risks related to their objectives, and thus, they all have varying degrees of responsibilities according to their respective roles. They report to their immediate superior or as stated by policy.

Applying Enterprise Risk Management: A Brief Hypothetical Case

Working top-down

In this hypothetical case of a manufacturing business, the first step taken to implement the ERM technology was the establishment of context; identifying core business processes (this on the assumption the business is already implementing a process-centric business model as against the functional departments shown below). These include processes related to its NPD, Marketing, Manufacturing, and Finance functions that alignment or should be aligned to the business goals and objectives. Other key supporting processes such IT, HSE, ERM and so on are also taken into consideration.

The silo way

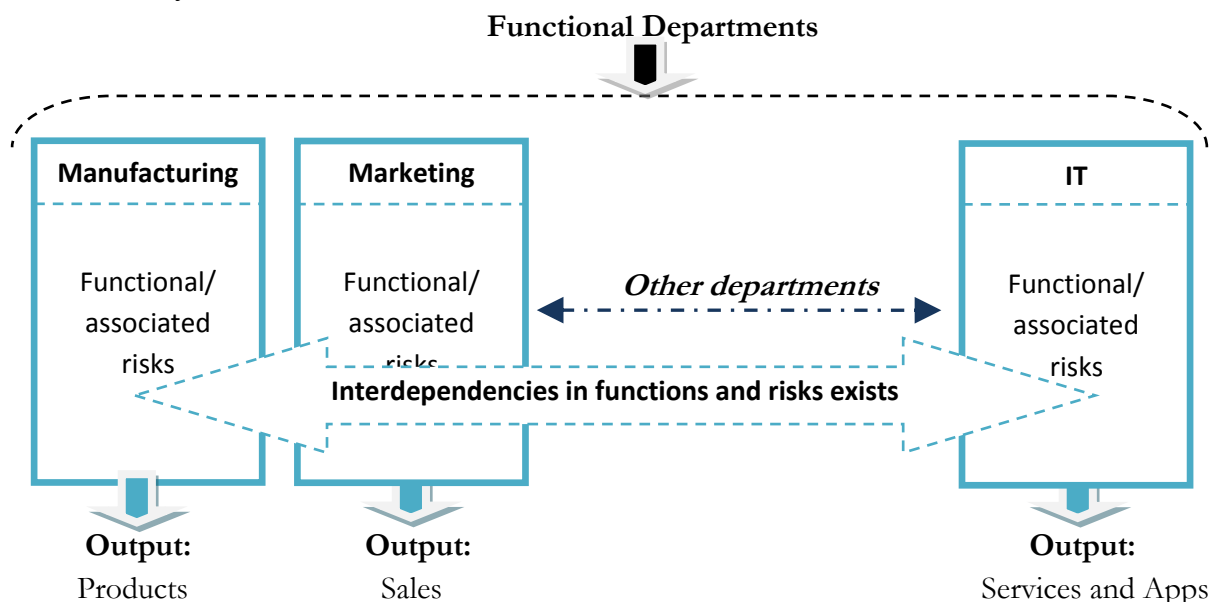


Fig: Illustrates the traditional functional departments

De-risking the strategic business goals provides outcome/solutions which are necessary for repositioning the entire business, therefore re-evaluating the core processes that are key to creating

value for the business. This will ultimately lead to the re-evaluation of supporting processes down to itemised tasks.

The process-centric way

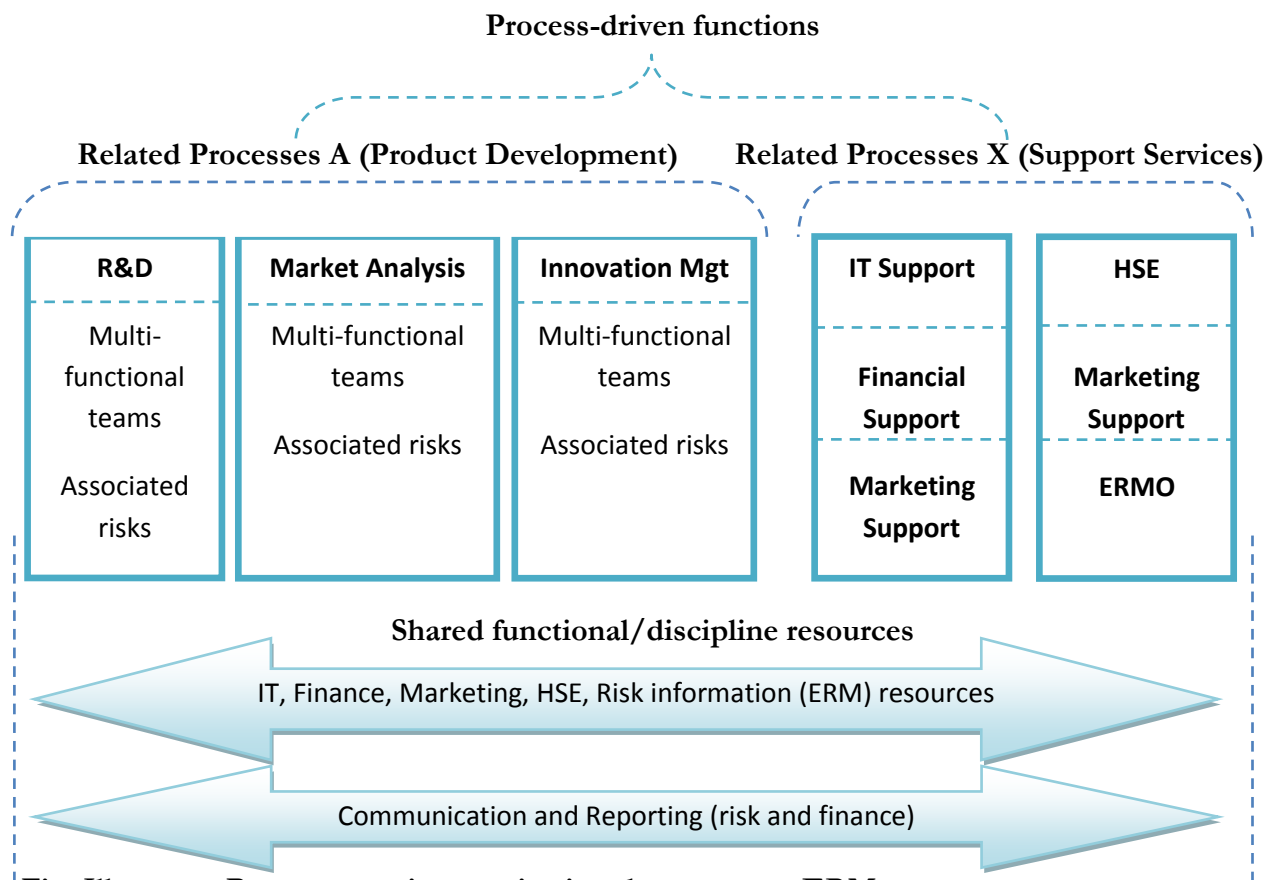


Fig: Illustrates Process centric organisation that supports ERM

As various processes cut across functions, the utilization of multi-disciplinary teams effectively and efficiently improves performance by reducing extra resources, time taken, and forward/backward information flow, as well as increasing the concentration of needed resources. It thus, makes performance management easier and more effective by improving traceability, clear accountability and responsibility definition. The internal control mechanisms are therefore easily monitored and controlled.

The process-driven organisation illustrated above describes a structure where functions related to achieving a specific objective through a defined process are co-ordinated within a section which is accountable and responsible for the outcome of such processes. Sections, however, may further be broken down into groups/teams. Such a case suggests the use of multidisciplinary teams within sections.

Other functional teams specializing in the various core disciplines in the organization may act as a small team of support service personnel providing advance professional support to staffs of that discipline within various teams in various process-sections. The communication and reporting systems are similar to every other, but its unique features lie in centralization of issues and lessons

learnt within disciplines reported periodically as defined while business-as-usual reporting within the organisation go on.

The visibility and management of risks within processes becomes relatively easier as the process owners account for and manage the risks within their processes which are borne from the various activities within the processes in question. Thus, we see that by addressing the risks within processes we manage all related and interdependent risks involved, thereby creating real value based on the assurance of positive outcomes.

Risk Owners are responsible for the risks within the processes they manage and are given appropriate authority, tools, and resources to manage and report such risks within certain levels of severity (as defined by the business policies on risk management). Otherwise, risk issues are escalated to the next higher level of management while informing the Enterprise Risk Management Office, ERMO, that an issue has been escalated to create a risk-awareness and support if deemed necessary at this point. Until, if not addressed by subordinate management levels, it gets to the level of the ERMO, the final stop, as at this stage it is brought to the table with the Board of Directors for appropriate action. The ERMO does not make the decisions, but offers Risk Information, RI, on the options available to be taken (this includes advice).

Risk Reporting is integrated into periodic reporting, but may be reported at anytime due to an exception – an emergence of risk which must be managed quickly either due to its severity or time dependence.

This thus, reaffirms that de-risking the enterprise not only helps mitigate risk it also aids taking opportunities as a measure of mitigating the risks of losing value-creating investments, thus saves cost and creates value.

Integration of Enterprise Risk Management into Business Processes

The role of technology in ERM cannot be overemphasized as information technology and business are becoming inextricably interwoven.⁴⁶ “Technology is going to integrate/embedded risk management to monitor, measure, and react to risk across the organisation, its processes, relationships, and industry.”⁴⁷

Lexicon (2008) reports that IT helps organizations:

- Identify the risks and opportunities for improvement
- To achieve transparency
- To streamline business processes
- To become more agile and more productive
- To make people accountable
- To make the right information available to the right people at right, with right level of detail
- To consolidate data from separate sources and transform it into useful information.

⁴⁶ Bill Gates cited in Lexicon (2007) *Enterprise Risk Management: The New Imperative*

⁴⁷ Forrester research cited in Lexicon (2007) *Enterprise Risk Management: The New Imperative*

Technology plays a relevant part in aiding the information flow in an organization, especially as regards information relating to enterprise risk management. The selection of technology to support an organisation's ERM is a function of;

- The approach towards ERM and how sophisticated it is
- The types of events relating to the entity
- Information technology architecture
- How centralized the supporting technology is

The Cases of Infosys and Rolls-Royce

The table shown below shows the key used in the rest of this paper for the purpose of risk assessment.

Table: Qualitative Risk Assessment Legend

LEVEL	COLOUR DESCRIPTION	LIKELIHOOD OF OCCURENCE	DESCRIPTOR	RELATIVE IMPACT
1		Very low	Rare	Insignificant
2		Low	Unlikely	Minor
3		Moderate	Possible	Moderate
4		High	Likely	Major
5		Very high	Almost certain	Catastrophic

Company Profiles

The observation and analysis of real cases illustrates most of what has been discussed up to this point. The secondary cases are obtained from the data collected by Dr Vedpuriswar⁴⁸ and are reused with a different objective defined, thus a unique analysis. The assumption the reader should have in mind as he/she follows is that all necessary data have been collected at the ERM office, and therefore, at this point data is being analyzed and lesson noted for future events.

Enterprise Risk Management at Infosys (Case 1)

The risk management framework used by Infosys was comprehensive and integrated; an integral part of it was its prudential norms which were aimed at limiting exposures. Its timely availability of information was assured by the use of formal reporting and control mechanisms.

Profile

Infosys is an Indian company that is well known for its transparency, its corporate governance that is of high standards and its innovations in financial reporting. It is one of the most admired and also one of the fastest growing companies in India in 2002. Their sales rose from less than rupees 15 Crores (Rs. 150,000,000 equivalent to approximately GBP 2,161.502 {GBP 2.2 m}) to rupees 2600 Crores (Rs. 26,000,000,000 equivalent to approximately 374,660,284 GBP {374.7m GBP}). Note: for simplicity and linearity of comparison both sales figures have been converted to British pounds using the exchange rate of March 2002 (the month used corresponds to the last month of the Indian Fiscal

⁴⁸ Vedpuriswar A V (2006) *Enterprise Risk Management: Industry Experience*

year), 69.3692INR to 1GBP, which represents the 21 days average. And therefore, may not represent the accurate information but only illustrates the magnitude and the range.

It had a turnover that represented a 72 percent per annum growth rate during the 1999-2002 period despite the technology slowdown, and profits at 81 percent. De-risking is an area where Infosys is considered a trend setter. Infosys' comprehensive and integrated risk management framework enabled the company react affectively to changes in the business environment, by facilitating the generation of predictable and sustainable revenue stream.

Components of the ERM Program at Infosys

INTERNAL ENVIRONMENT

➤ **Management Philosophy**

De-risking was one of the four pillars that the Infosys business model rested on (the others were: Predictability, Sustainability, and Profitability).

The management believed de-risking enabled the firm to react effectively to changes in the business environment. They also believed that de-risking facilitated the generation for a predictable and sustainable revenue stream for the company.

They used a comprehensive and integrated risk management framework. The Management believed that risk management was implemented for reducing uncertainty in delivering high-quality software solutions to clients within budgeted time and cost.

➤ **Risk appetite**

Judging from the Management's philosophy, it is clear that they had, in qualitative measures, a low appetite for risk as they carefully de-risked all their functions and activities.

➤ **Oversight by Board of Directors**

The board of directors were responsible for monitoring risk level throughout the organisation.

➤ **Integrity and ethical values**

Prudential norms aimed at limiting exposures; were an integrated part of the comprehensive and integrated framework.

➤ **Assignment of responsibility and authority**

The board of directors was responsible for monitoring risk levels. The management council ensured implementation of mitigation measures.

The audit committee provided feedback on the overall direction of the risk management policies.

The compliance officer reported to the board of directors from time to time. These mechanisms (Formal reporting and control mechanisms) were designed in such a way that risks at the transactional level were identified and steps were taken towards mitigation in a decentralized fashion.

➤ Organisational structure

They used formal reporting and control mechanisms to ensure timely information availability.

NOTE: The objectives have been set and likely events that may come-up in the course of achieving these objectives identified, and thus the assessment is shown below. A summary sheet of the risk categorization and description, objectives, assessment and response, monitoring and control as well as benefits at Infosys can be found in the Appendix section of this paper.

RISK ASSESSED

Table: Assessed Risk at Infosys

			RISK ASSESSMENT	
RISK CATEGORY	RISK ID	TOPIC	LIKELIHOOD	IMPACT
Concentration Risks	a	Service concentration		
	b	e-business	Moderate	Moderate
	c	Client concentration	High	Major
	d	Geographical concentration	Moderate	Major
	e	Vertical domain concentration	High	Major
	f	Platform concentration	Very high	Major
Legal and statutory Risks	g	Contractual liabilities	Moderate	Major
	h	Statutory compliance	Moderate	Major
	i	Intellectual property	High	Moderate
Human Resources Risk	j	Manpower development	High	Moderate
	k	Knowledge sharing	High	Moderate
Operational Risks	l	Project	Very low	Major
	m	Process	Very low	Major
	n	Disaster	Very low	Major
	o	Information system	Very low	Major
	p	Service	Very low	Major
	q	Communication	Very low	Major
	r	Technology	Very low	Major
	s	Category 1 Desktop environment (PCs and associated software)	Very low	Major
	t	Category 2 Proprietary System	Very low	Major
u	Category 3 Tools for software development	Very low	Major	
Financial Risks	v	Internal control	Very low	Major
	w	Foreign currency rate	Very low	Insignificant
	x	Liquidity		

	y	Leverage	Very low	insignificant
--	---	----------	----------	---------------

CONTROL ACTIVITIES

In such cases where the control activities are not stated, the control activities may either be the same as the response action or had been integrated into regular business activities.

INFORMATION AND COMMUNICATION

The effectiveness of their communication and the flow of information are evaluated from the “Assignment of responsibility and authority” part of section 1 – Internal environment.

MONITORING

Apart from the regular or periodic reviews, other monitoring activities which may be specific to the particular topic or risk in question may be stated. Where none is given in the analysis table, or where it is not explicitly stated that there is none, it is taken that the regular ongoing monitoring is in place.

ROLES AND RESPONSIBILITIES

Please, see the “Assignment of responsibility” part of section 1- Internal Environment.

SUMMARY

The company manages an array of risks with a mixture of its own management and standard risk management techniques. A risk culture is evident in its management philosophy. With a (Infosys) low risk appetite, Infosys carefully selected its businesses to achieve its strategic goals.

Enterprise Risk Management at Rolls – Royce (Case 2)

The board established a structured approach to risk management and the risk committee of the board had accountability for the system of risk management employed, as well as reporting the key risks and the associated mitigation actions.

Profile

The company is involved in four major sectors of industry; aero civil 48%, defence 24%, marine 17%, and energy 11%. It is a leading supplier of marine propulsion equipment and has a growing presence in energy sector (usage of gas fuel to generate electricity).

HISTORY

Company was incorporated in 1906 by Henry Royce and Charles Rolls building a wide range of engines for aircrafts ranging from jets to very large airliners. In 1914 it moved into the defence industry which brought about the design and manufacture of its first aero-engine, ‘The Eagle’. The next two decades saw Rolls Royce promoting gas turbine engine for civil and military aviation industry. It became one of the two major players in the UK-aero engine industry in the 1960s, along with Bristol Siddeley. It then strengthened its global presence in the 1990s by entering a joint venture agreement with BMW in 1990. In 1999, it acquired a series of companies including U.S’s Cooper Energy Services, Vickers Plc, and National Automotive Corp in California.

FINANCIAL FACTS

The turnover from the various sectors of investment of Rolls Royce in the years relevant to the case is shown in the table below.

Table: Rolls Royce Financial (Source: Rolls-Royce Annual Report 2002)

SECTOR	TURNOVER IN 2002 (£m)	TURNOVER IN 2001 (£m)
CIVIL AEROSPACE	2,739	3,443
DEFENCE	1,376	1,400
MARINE	984	827
ENERGY	639	608
FINANCIAL SERVICES	50	50
TOTAL:	5,788	6,328

Components of the ERM Program at Rolls Royce

INTERNAL ENVIRONMENT

➤ Management philosophy

Rolls-Royce management was heavily focused on safety and compliance. They proposed that all projects must attach a risk register that analyzes the key risks and their potential consequences. The risk registers are a review of business performance.

They established a structured approach to risk management, where risks were formally identified and recorded in a corporate register; which was viewed and updated on a regular basis and mitigation plans were proposed for all significant risks. External assessment carried-out showed that the risk management process at Rolls-Royce more satisfied the Turnbull compliance requirements (The Turnbull report was published by the Institute of Chartered Accountants in English and Wales on the implementation of the international control requirements of the combined code of corporate governance).

➤ Risk appetite

Judging again from the management philosophy and style, it is clear that they had, in more or less of a qualitative measure, a medium appetite for risk as they were not in the habit of avoiding or accepting the total responsibility for very high risks (such as new product development in the aerospace industry) but rather shared such very high risks amongst risk relationship partners.

➤ Oversight by Board of Directors

The director of operational risks oversaw all risks. The board of directors regularly reviewed the group's exposure.

NOTE: The objectives have been set and likely events that may come-up in the course of achieving these objectives identified, and thus the assessment is shown below. A summary sheet of the risk categorization and description, objectives, assessment and response, monitoring and control as well as benefits at Rolls Royce can be found in the Appendix section.

RISK ASSESSED

Table: Risk Assessed At Rolls-Royce

RISK CATEGORY	RISK ID	TOPIC		RISK ASSESSMENT	
				LIKELIHOOD OF OCCURENCE	RELATIVE IMPACT
Product development Risks	a	Research and Development		Moderate	Major
Marketing Risks	b	New engine Sales		High	Major
	c	Engine parts sales			
Financial Risks	d	Foreign Exchange	Translational Risk	Very high	Insignificant
	e		Transaction Risk		Major
	f	Interest Rate Risk	Fixed rate bond		
	g		Floating rate debt		
	h	Commodity Risk		high	
Credit Risk	i	Sales finance		Moderate	Moderate

CONTROL ACTIVITIES

In such cases where the control activities are not stated, the control activities may either be the same as the response action or had been integrated into regular business activities.

INFORMATION AND COMMUNICATION

The effectiveness of their communication and the flow of information are evaluated from the “Assignment of responsibility and authority” part of section 1 – Internal environment.

MONITORING

Apart from the regular or periodic reviews, other monitoring activities which may be specific to the particular topic or risk in question may be stated. Where no one is given in the analysis table, or not explicitly stated that there is none, it is taken that the regular ongoing monitoring is in place.

ROLES AND RESPONSIBILITIES

Please, see the “Assignment of responsibility” part of section 1- Internal Environment.

SUMMARY

The company manages an array of risks with a mixture of its own management style and standard risk management techniques. A risk culture is evident in its management philosophy. With Rolls Royce medium risk appetite, Rolls Royce continues to strive in a volatile business environment.

Benchmarking the Enterprise Risk Management Program (Infosys and Rolls Royce)

Benchmarking the Infosys ERM program reviewed above with the simple but effective COSO ERM – Integrated criteria, which is:

1. All eight components of ERM must be present and functioning effectively.
2. A risk management culture must be evident.

Assessed components are scored as pass or poor or N/A, where N/A may either means Not Available or Not observed in this case. The benchmark scores are shown in the table below:

Table: Benchmarking

COMPONENTS OF ERM		INFOSYS	ROLLS-ROYCE
Internal environment	Management philosophy	Pass	Pass
	Risk appetite	Pass	Pass
	Board oversight	Pass	Pass
	Integrity and ethical values	Pass	N/A
	Competence of people	N/A	Pass
	Structure	Pass	Pass
	Assignment of authority	Pass	Pass
	Development and training	N/A	Pass
Objectives setting		Pass	Pass
Event identification		Pass	Pass
Risk Assessment		Pass	Pass
Risk response		Pass	Pass
Control Activities		Pass	Pass
Information and Communication		Pass	Pass
Monitoring		Pass	Pass

Cross-Comparison of the ERM Programs

The tables below illustrate the prioritization of the risks faced by both organizations respectively, computed from the likelihood and impact assessment of the risks. Although, this is a simple view of the process, it does give you the big picture.

Table: Prioritized Risks at Infosys

RISK ID	TOPIC	LIKELIHOOD	IMPACT	WEIGHTED
a	Service concentration			
b	e-business	3	3	9
c	Client concentration	4	4	16
d	Geographical concentration	3	4	12

e	Vertical domain concentration	4	4	16
f	Platform concentration	5	4	20
g	Contractual liabilities	3	4	12
h	Statutory compliance	3	4	12
i	Intellectual property	4	3	12
j	Manpower development	4	3	12
k	Knowledge sharing	4	3	0
l	Project	1	4	4
m	Process	1	4	4
n	Disaster	1	4	4
o	Information system	1	4	4
p	Service	1	4	4
q	Communication	1	4	4
r	Technology	1	4	4
s	Category1: Desktop environment (PCs and associated software)	1	4	4
t	Category 2: Proprietary System	1	4	4
u	Category 3: Tools for software development	1	4	4
v	Internal control			0
w	Foreign currency rate	1	1	1
x	Liquidity			0
y	Leverage	1	1	1

Table: Prioritized Risk at Rolls-Royce

RISK ID	TOPIC	LIKELIHOOD	IMPACT	WEIGHTED
a	Research and Development	3	4	12
b	New engine Sales	4	4	16
c	Engine parts sales	4	4	16
d	Foreign Exchange: Translational Risk	5	1	5
e	Foreign Exchange: Transaction Risk	5	4	20
f	Interest Rate Risk: Fixed rate bond			0
g	Interest Rate Risk: Floating rate bond	4		0
h	Commodity Risk	3	3	9
i	Credit Risk: Sales finance	3	3	9

Simple Calculation of the risk priorities following the scientific definition of risk:

Risk Priority Number/Index/Weighted value = (likelihood of occurrence) x (severity of impact)

(Green) 1 – 8 Low priority

(Yellow) 9 – 15 Medium priority

(Red) 16 – 25 High priority

The logic behind the weighting system used is based on the following:

- The priority is set as low where either the likelihood of occurrence or the impact is below moderate (3) or is inversely related as one counter balances the other hypothetically.
- The priority is set as medium where both likelihood of occurrence and impact are above rare (2) but are both not major (4) as one counter balances the other hypothetically, and fall between low and high.
- The priority is as high where both the likelihood of occurrence and the impact is above or equal to major (4).

Comparisons of Case ERM programs

Cross-Comparison of ERM Programs (Risk Response)

According to the norms, without taking any other factors into consideration, the following inherent risk should be dealt with as shown in the figures below by the corresponding response strategies. But as we see, this was not the case, why is this so?

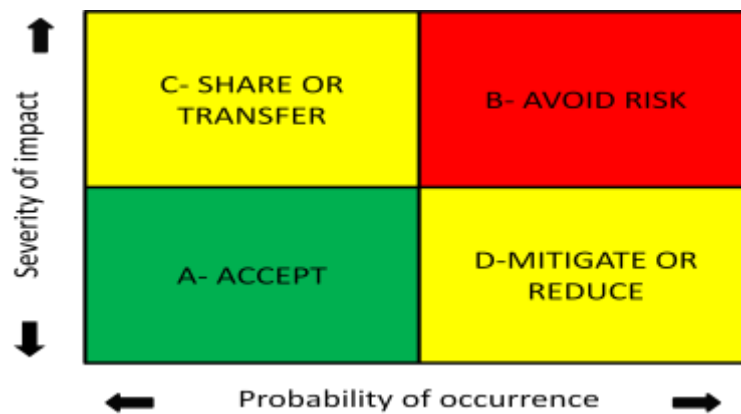


Fig: Risk Response

INFOSYS

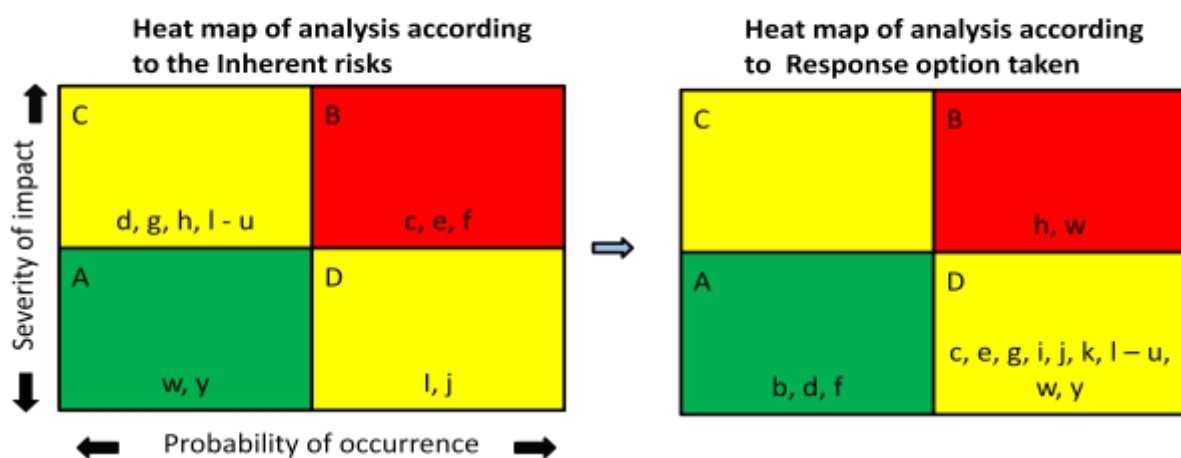


Fig: Infosys Heat Map

ROLLS ROYCE

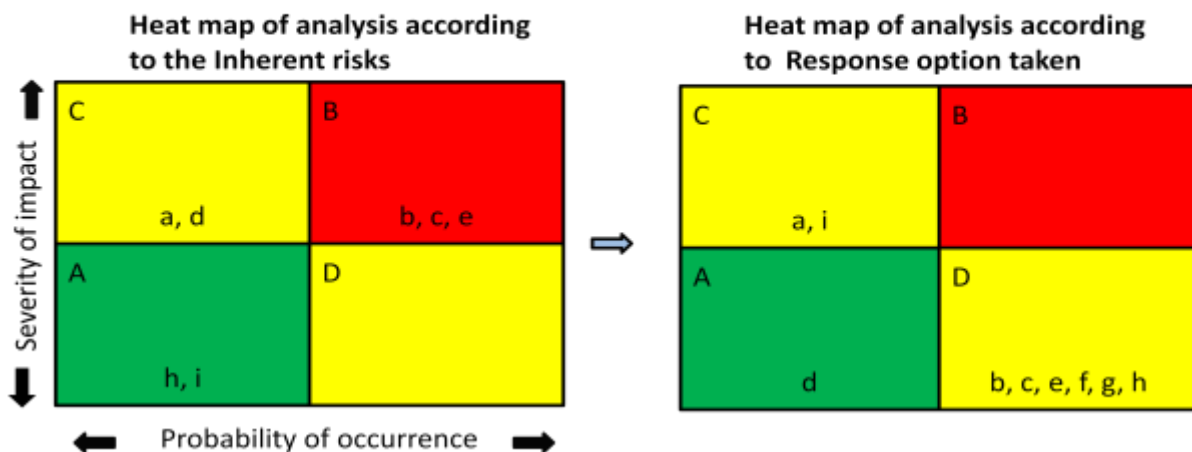


Fig: Rolls-Royce (Heat Map)

Noting the common topic in both cases; Foreign currency rate (transaction), Risk ID: e for Rolls-Royce (of high priority), and w for Infosys (of very low priority). The question is why is this so?

It is observed that three highest risks to Rolls-Royce, according to the prioritization exercise as shown in above earlier, were foreign exchange transaction risk, new engines sales, and engine parts sales. The one with most priority was foreign exchange transaction risk.

We can understand that this is so due to the fact that having achieved the strenuous tasks of making sales in the aerospace industry where it takes a long period of time to make one, making losses would mean driving them out of business eventually despite their effective and efficient operations. The sales of engines were critical to business since the foreign exchange transaction risks and engine parts sales risks were dependent on it. Anyone one of these three interdependent risks could drive the organisation out of business, thus, with their ERM program they were able to identify this and tackle all three at once. The relations in all three corresponding objectives pointed at the organisations' revenue, thus, their benefits are observed to be related in that respect.

In the case of Infosys, their three highest risks were platform concentration, vertical domain concentration and client concentration. The highest priority was given to platform concentration.

The platform concentration risk at Infosys was at the centre of its business and therefore relates to many other risks faced by the firm. Due to the sensitive nature of this risk, which could trigger the likelihood of other risks, Infosys decided to accept the risk and simply move with the trend. This observed response had reduced their liquidity risk; since the firm needed liquidity to make rapid changes in response to the market so as to avoid the impact of the platform concentration risk.

The platform concentration risk is closely related to the other two highest priority risks, since impact of the platform concentration risk may lead to the loss of clients. The loss of a client has a considerable impact on the firm due to the fact that majority of its income came from large clients, thus, its client concentration risk. Its vertical domain concentration risk was linked to client

concentration risk since it planned to focus its marketing on chosen domains which were not doing so well to improve revenues from such domains. The source of revenue is from clients, thus losing a major client meant a huge drop in revenue from that domain.

The Link between the ERM process and the Strategic Implications

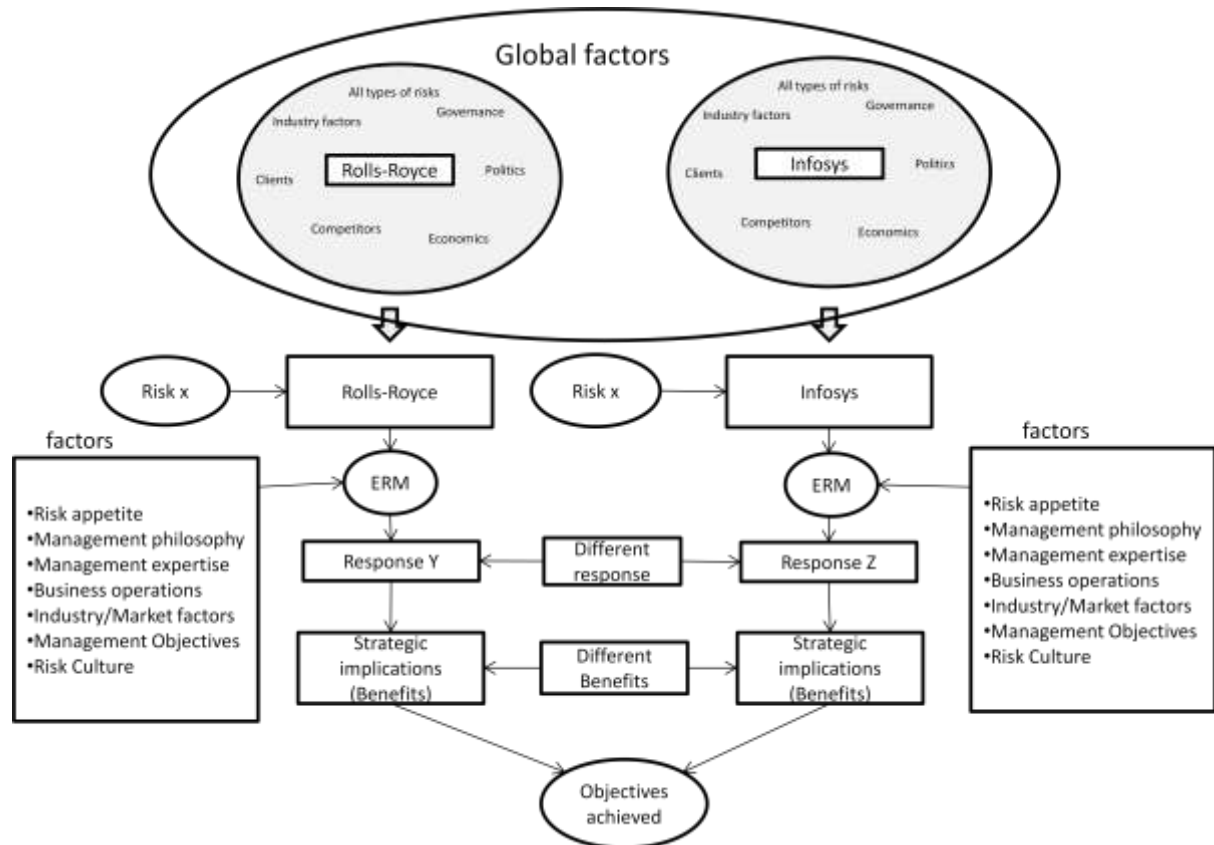


Fig: The Linkage

The proposed explanation is given below.

Risk ID = e = w (Foreign currency exchange rate).

The risk identified as ID: w for the case of Infosys:

- Has a low likelihood of occurrence
- And has an insignificant impact
- The risk is accepted as Infosys relies on a natural offset.
- According to the severity vs. probability map it should be accepted.

The risk identified as ID: e for the case of Rolls-Royce:

- Has a very major likelihood of occurrence
- And has a major impact
- The risk is mitigated. Rolls-Royce uses financial instruments to do this.
- According to the severity vs. probability map it should be avoided.

The questions to be answered are:

- Why is the risk perceived differently?
- Why is the impact of the risk different?
- Why is the response different?
- Why is the propose response different from the actual?
- How are all these linked together?

Deduced answers:

Why is the risk perceived differently?

This is so due to the following factors:

- a. Internal environment of the firm: This brings into consideration the management philosophy, risk appetite, objectives and business operations. It was earlier observed that even though they both had a management philosophy, the risk appetite different and their objectives which has exposed them to (directly related to) this risk differ, as well as the business operations they carry out. The latter means a different market environment which implies different influential forces.
- b. External environment of the firm: this relates to the potential economic, social, technological (and so on) factors, as well as competitors that influence the firm's decisions. In the case of Infosys, a large portion of its expenses is in Indian rupees and a depreciation of this currency is favourable to its bottom line impact. For Rolls-Royce, a substantial amount of its income of 38% of the UK turnover was in US dollar and therefore, tried to minimize the impact.

Why is the impact of the risk also different?

This is due to the firm's exposure, which simply means the more vulnerable you are, the more the damage. It is also due to its effect on core objective functions which create value for the business.

In the case of Infosys, even though 87.7% of its revenue was dollar-denominated in the fiscal year 2002, its surplus funds was maintained in foreign currency deposits and all dollars expense were paid in dollar, and though its operating profits was subject to fluctuations dues to its large proportion of expenses in rupees, its natural forex hedge took care of that.

In the case of Rolls-Royce: they were exposed to a number of foreign currencies, the most significant being the US dollar and followed by the Euro. It therefore is exposed to various currency fluctuations that have an impact on its income.

Why is the response to the risk in the cases different?

The response to risks is dependent on its relevance or impact on the core or value creating functions/objectives and the business long term goals. These goals are unique to each organization.

Why is the proposed strategy different from the actual strategy taken, in the figure above?

This is so because the organization also takes into consideration other factors other than the immediate impact, the probability of occurrence, and the internal and external environments. It also considers the long term standing of the organisation, as well as opportunities that may arise. Taking the proposed strategy may be safe now but may not be favourable to the firm's increased exposure or long term goals. Remember, every decision introduces its own risk.

How are these linked together?

- a. Risk culture {the drive to act on risk}
- b. Risk intelligence (information) {information used to inform decision-makers}
- c. Risk management {the practice}

Both organisations have a risk culture, a way of managing risk with an integrated approach. Both organisations have made informed decisions with risk intelligence and other relevant information. Both organisations practised risk management.

From the above stated factors influencing the risk response decision, ERM accounts for:

1. Risk information {in completeness, not fragment}
2. Risk culture and appetite {consciousness of the risk limits}
3. Risk management {a holistic way of managing risk}

And contributes to:

1. The development of objectives by de-risking them.
2. Business operations through the co-ordination of internal and risks control.
3. Management expertise by risks management training.

It is therefore clearly seen how ERM is integrated into the fabric of the organisation. The relationship between the benefits and objectives is shown below. The residual risk being the risk that is left after the risk response is implemented to mitigate the inherent risk initially observed.

By reducing the risk inherent to such a level (the residual risk) that the associated event is less likely to occur or the severity of the impact is acceptable with minimal loss, ERM processes give the assurance of the achievement of the expected outcomes of the objectives.

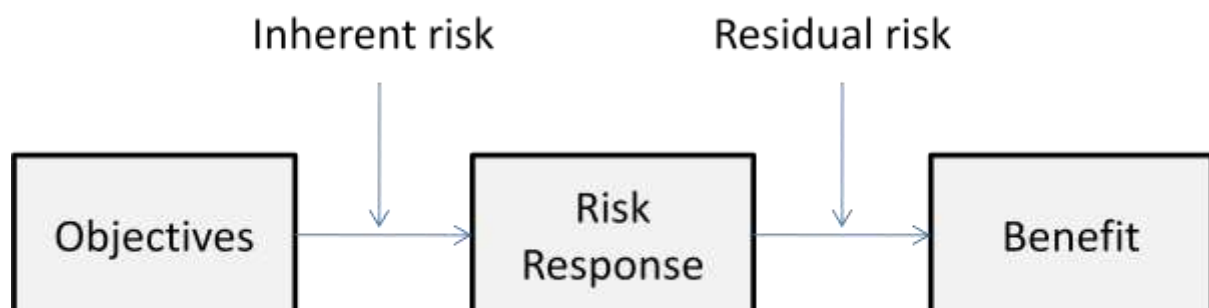


Fig: The Link between Objectives and Strategic Implications

The risk response is influenced by several factors?

- Risk information.
- Management subjective judgement.
- Risk appetite.
- Business operations and objectives, and very importantly
- Risk culture in the organisation

Therefore, such a decision is based on:

1. Environments scan including specific market information.
2. The objective.
3. The risk appetite.
4. Organisational Culture: including risk culture.
5. Updated risk information.
6. Management expertise.

SPECIALIST PERSPECTIVE ON THE VALUE OF ERM BESTPRACTICE

Enterprise Risk Management (ERM) has not changed, per say, but the focus is no longer on the quality of implementation; as more and more firms adopt the practice due to the need to achieve the GRC requirements, to improve their credit ratings (with the advantage of getting capital at a lower cost), and satisfactorily increase stakeholders' confidence.

Enterprise Risk Management plays a key role in the financial markets, with the wake of the global financial crisis, such an approach which promises to systematically facilitate decision-making in business as they contemplate all types of risks, aggregate risks and analyse the proper timing of the use of financial instruments such as hedging and so on. Information technology enables companies to embrace ERM as a basic tool.

Technology (ICT) plays a very critical role in enabling the flow of information in a firm, which is a reflection of the entity's approach to ERM, its sophistication, the entity's overall IT architecture, and the types of risks facing the entity (as the use of specific technologies would not only help mitigate some risk but would also be accompanied with its own risk).

The use of statistical models has proven inconsistent and unbelievable in the dealing with causes-and-effects. Structural models, however, have taken the task swiftly to a successful completion due to an explicit cause-and-effect relationship.

By viewing risks from an organisation-wide perspective, the ERM framework's continuous monitoring, identifying and assessing new risks as well as older changing risks, take care of the problem of emerging risk in a proactive way.

In today's business environment, investors have not only become vested in corporate governance but have also taken a drive for risk assessment, which is the current trend. Credit rating agencies have included risk management to their assessment.

An effective and efficient ERM practice must have all eight components of ERM functioning effectively as well as, very importantly, build an effective risk culture, all being effected organisation-wide and deep i.e. its integration in all activities. The main characteristics of ERM, however, must be present – a holistic view of risk.

It is concluded, from the observation of the enterprise risk management programs at Infosys and Rolls-Royce that they both have well-defined enterprise risk management programs that have worked for them.

These enterprise risk management programs when compared, revealed that the essence of ERM practised were the same (working towards the achievement of organisational objectives by a de-risking approach) but the ‘strategic’ implications varied according to their objectives and applied strategies (response options).

The response option (strategies) is influenced by subjective judgements of management (which is a function of management competence, as seen in the case of the Director of Operational Risk in Rolls-Royce who has commercial and manufacturing experience coupled with financial skills), the business operations, the risk appetite of the organisation, and other relevant information. The relevant information include insights of the business environment (both internal and external) which reveals threats and opportunities towards the achievement of business goals, the probabilities and impacts of these threats, and thus, their prioritization.

The prioritization process is influenced by the risk appetite, management philosophy, the core business areas, and how they hope to achieve their objectives. And these were observed in the case-comparisons of Infosys and Rolls-Royce companies, which both had a risk culture.

In a practical sense, the strategic implications may either be positive or negative. And therefore, the ‘promises’ of ERM are the positive implications of ERM, and can be achieved if and only if implemented effectively and efficiently.

The ‘how’ ERM is linked to this strategic implications; as explained, is through the response to events which may pose as risks or opportunities. The risk response is what makes the difference, and how ERM does this is by assessing events, carrying-out all other functions listed above and providing management with the appropriate information (including, and especially, the risk response options), without which management may carry-out their official duties ignorant of the risks(level of exposure to harm) involved.

The implementation of Enterprise Risk Management is neither an end on its own nor is it a one-off process, but a continuous improvement process of identifying, assessing known and emerging risks, adapting to change (such as the introduction of new policies and regulations), formulating and modifying risk response strategies, operational and risks reporting, controlling and monitoring that runs from the board of directors, through the line-managers, down to the bottom of the staff chain; defining a risk culture.

The practice of enterprise risk management instigates a holistic or integrated risk management culture within an organisation, which is characterized by a general oneness and co-operation, culture of managing risks, clear assignments, authority, responsibility and accountability as was observed in the cases of Infosys and Rolls-Royce.

But again, it cannot be stereotyped that all companies practicing ERM are successful at it or have had same performances. Some, as it's observed, have been noted to need guidance in their implementation process while others have failed at it and tend to go against it seeking alternative means. And there are the struggling few who are trying to master the art and science of this new discipline.

In a final remark, I would like to look at the saying "*He who fails to plan, plans to fail*". This saying has in the past been a motivating factor for many, and tends to point towards the strategic management of business. In the light of ERM, however, I would say "*He, who fails to plan with the complete awareness of the likelihood and impacts of possible events, plans to fail in the eventuality of the occurrence of the unanticipated*".

RECOMMENDATIONS TO ORGANISATIONS

- Organisations planning to implement ERM should pay great attention to cultivate a risk culture that supports their objectives.
- Such organisations while considering the cost of implementing ERM should factor in, mandatorily, the cost of acquiring an ERM expert for specialist support, guidance, and training.
- The use of policies and regulations in describing management's position, and seminars, on the job training, coaching, mentoring, and workshops in developing and training staff to adopt ERM, thus, building a risk management culture should be complemented with more of social meetings, opinion sharing exercises (as a way to gain staff commitment by involvement), as well as the introduction of a risk-reward system to encourage members of staff.
- In other to introduce the risk-reward system, it is advisable that ERM processes are fully integrated into the daily activities, and within the measurements for performance should also be integrated; qualifiable measures for the management of risks. Although, it may not be as easy as it sounds, this is a simple way to achieve 'lean-ness' (thus, saving cost) and measures the quality of achievement of objectives.

FOR THE ERM DISCIPLINE

- As there is no "one-size-fits all" framework or process for ERM, and frameworks are becoming more and more universal to covering sectors and industries making its interpretation require more skill, it is suggested that these frameworks are accomplished by a bulk of samples of models of it applies in all areas where it is applicable, so as to give the team implementing the framework a rough idea of an applicable best practice for such a framework and so it can be effectively understood (beforehand, to save time and cost due to delays and failures) and properly utilized.

This would help organisations understand and adopt the ERM process early enough rather wait till they are in trouble as is the case today.

- A cost effective and less complex framework should be created for SME taking into consideration the scope, cost and simplicity of their operations (since they are the life-line of any nation). And such information within the SME, specific to sectors, industries, and including the relationship to their size, capabilities, and so on, should be included.

Bibliography

- Aon Corp. (2009) *Global Risk Management Survey results 2009* [online] available from <<http://img.en25.com/Web/AON/GlobalRiskManagementSurvey2009.pdf>> [25 May 2009]
- Ayşe Kucuk Yilmaz (2008) *The Best Enterprise Risk Management Practice For Airline and Airport Business*. Saarbrücken: VDM Verlag Dr. Müller Aktiengesellschaft & Co.
- BBC news (2009a) *Honda's four month break begin January 29, 2009* [online] available from <<http://news.bbc.co.uk/2/hi/business/7859785.stm>> [24 May 2009]
- BBC news (2009b) *Final Woolworths stores shut down January 6, 2009* [online] available from <<http://news.bbc.co.uk/1/hi/business/7811187.stm>> [24 May 2009]
- Busman, E. R. (1998) *Risk Management -The Challenge Ahead: Adopting an enterprise wide approach to risk*.
- Casualty Actuarial Society (2003) *Overview of Enterprise Risk Management* [online] available from <www.casact.org/research/erm/overview.pdf> [27 July 2009]
- Dittmar, L (ND) *What are the Primary Challenges and Trends in Governance, Risk and Compliance?* [online] available from <<http://sox.mashnetworks.com/player.aspx?clip=0101021088&type=newCol/>> [27 August 2009] Source: SOX Television, GRC challenges and trends, Lee Dittmar
- IRMIa (2003) *Implementing Enterprise Risk Management: Getting the Fundamentals Right June 2003* by Jerry Miccolis; Brinton Eaton Associates, Inc. [online] available from <<http://www.irmi.com/expert/articles/2003/miccolis06.aspx>> [27 August 2009]
- IRMIb (2001) *Modeling the Reality of Risk: The Cornerstone of Enterprise Risk Management July 2001* by Jerry Miccolis and Samir Shah Tillinghast-Towers Perrin [online] available from <<http://www.irmi.com/expert/articles/2001/miccolis07.aspx>> [27 August 2009]
- Jablonowski, M. (2009) *Risk Management: The Bigger Picture.....* [online] available from <http://findarticles.com/p/articles/mi_qa5332/is_7_56/ai_n35637633/?tag=content;col1> [27 July 2009]
- Lexicon (2007) *Enterprise Risk Management: The New Imperative* by Jill Barson Gilbert, [online] available from <<http://www.lexicon-systems.com/pubs/white-papers/EnterpriseRiskManagementNewImperative.pdf>> [27 July 2009]
- Monahan, G. (2008) *Enterprise Risk Management: A Methodology for Achieving Strategic Objective* New Jersey: John Wiley & Sons, Inc
- NERAM (2003) *Workshop Report: Basic Framework for Risk Management*

[online] available from <http://www.irr-neram.ca/pdf_files/basicFrameworkMar2003.pdf> [27 July 2009]

Risk and Insurance Management Society, Inc. (2006) *RIMS Risk Maturity Model (RMM) for Enterprise Risk Management 2006* [online] available from <<http://www.RIMS.org/ERM>> [25 July 2009]

Sky news (2009) *BT cuts 15,000 jobs after £1.3bn loss May 14, 2009* [online] available from <http://news.sky.com/skynews/Home/Business/BT-Announces-More-Than-15000-Job-Cuts-In-Global-Services-Division-And-Agency-Staff/Article/200905215281399?videoSourceID=d4d7bee91612f110VgnVCM1000005d04170aRCRD&lpos=Business_Article_Inline_Player_List_0&lid=ARTICLE_15281399_BT_Announces_More_Than_15%2C000_Job_Cuts_In_Global_Services_Division_And_Agency_Staff> [25 May 2009]

Society of Actuaries (2006) *Enterprise Risk Management Specialty Guide* [online] available from <www.riskisopportunity.net/docs/2005-erm-guide.pdf> [31 July 2009]

SOA, 2009 “*Enterprise Risk Management (ERM): fact sheet*” [online] available from <www.soa.org> [25 August 2009]

The Committee of Sponsoring Organisations of the Treadway Commission (2004) *Enterprise Risk Management – Integration Framework* Durham: AICPA

Thomas L. Barton, et al (2002) *Making Enterprise Risk Management Pay off: How leading companies implement Risk management* New Jersey: Financial Times/Prentice Hall PTR

Vedpuriswar A V (2006) *Enterprise Risk Management: Industry Experience* Hyderabad: The ICAI University Press

*The author has worked in several roles in various industries in both technical and supervisory capacities, and has successfully carried-out an MBA-level empirical research study on ERM supervised by Coventry University, United Kingdom. Contact: consultezeosa@aol.co.uk

Appendix A

ANALYSIS OF THE ERM PROCESS AT INFOSYS

TABLE: SUMMARY OF ERM PROCESS AT INFOSYS

RISK CATEGORY	EVENT IDENTIFICATION				RISK ANALYSIS		RISK RESPONSE		RISK CONTROL	MONITORING	BENEFITS
	INHERENT RISKS			OBJECTIVE	RISK ASSESSMENT		OPTION	ACTION			
	RISK ID	TOPIC	RISK DESCRIPTION		LIKELIHOOD OF OCCURENCE	RELATIVE IMPACT					
Concentration Risks	a	Service concentration	Loss due to imbalance between too many services and customer demands	To meet customers demand						In place	
	b	e-business	Loss due to competitors	To expand its reach	Moderate	Moderate	A	Do nothing		In place	
	c	Client concentration	loss due to loss or failure to pay-up credits of large clients	To strike a balance	high	Major	D	General policy to limit business from anyone client to 10% of total revenues	Same as action	In place	-Cost-savings -increase market share
	d	Geographical concentration	Loss due to sudden changes of the environment factors, where its business are concentrated	Exploit opportunities	Moderate	Major	A	Exploited business opportunities in new regions	Did not impose any rigid limit	In place	Improve balance of clients
	e	Vertical domain concentration	Loss due to cyclical industry	Focus on core expertise	High	Major	D	Focused Marketing efforts in chosen domains		Close monitoring	-Increase revenue -Increase portfolio -create a revenue stability
	f	Platform concentration	Loss due to obsolescence	To stay up to date with the	Very high	Major	A	Market dynamics		In place	-Meet current demands

		n	in technology	technological trend				determine choice of technology			efficiently
Legal and statutory Risks	g	Contractual liabilities	Loss due to breach of contracts	To ensure legal security of investments of resources	moderate	Major	D	-Restricted its liabilities under the contract -covered risk involved to the extent possible -taken sufficient insurance cover abroad to cover possible liabilities arising out of non-performance of contracts -avoid open-ended contracts	Review and documentation processes for contracts	Management reviewed on a continuous basis and took corrective actions	-Reduce litigation incidents -Reduce cost of litigation
	h	Statutory compliance	Loss due to violation of laws	To adhere to laws and regulations	Moderate	Major	B	-Infosys took appropriate business decision after ascertaining from the compliance officer -Legal compliance issues were considered while assessing all new business	-Strengthened its legal team -Placed appropriate policies for ensuring compliance	- Compliance office monitors legal compliance issues -Also reported deviations, if any -Business leads gave compliance certificates to the board	-Avoidance of business interruption -Avoidance of the cost violation
	i	Intellectual property	Loss due as the cost of	To protect Infosys rights	High	Moderate	D	Actively pursued	Put in place measures		-Dissuade others from

			reputation damage	and reputation				trademark infringement suits	aimed at protecting its trade name and trademark service mark		such acts -Protect image
Human Resources Risk	j	Manpower development	Loss due to attrition	To maintain its key resource (people)	High	Moderate	D	-Create a favourable work environment that encourage innovation and rewarded merit -Develop a strong reputation for attracting engineers from India's most famous campuses	-Enlisted the services of a senior faculty at Stanford University with extensive experience in global consulting -Invest in a leadership and management training institute	360 degree reviews were used to measure performance	-Save cost of manpower development
	k	Knowledge sharing	Loss of experience	To develop the firm and individuals (employees)	High	Moderate	D	Put in place a system to document and disseminate experimental knowledge, an intranet based user-friendly application known as K shop. -Incentives schemes were also put in place to encourage a knowledge sharing culture (also a control)		In place	Build staff competencies for their jobs
Operational Risks	l	Project	Loss due to inability to	To deliver high quality	Very low	Major	D	-Use of Software	Had guidelines for		-Increase its client base

			deliver the deliverables	software solutions to client within budgeted cost and time.			Engineering Institutes' Capability Maturity Model (SEI-CMM) to ensure that risk were identified and mitigated -A database of such information was maintained to focus attention on key improvement areas	project leaders on how risks could be identified and mitigated		-Increase the client satisfaction with products and increase its demand -Create client confidence in doing business to Infosys -Protection of propriety property -Create a high reputation of service and technology
	m	Process	Loss due to quality of products/services due to processes				-concentrated on enhancing the process quality of other enterprise processes, and aligning it with organisational objectives, using Models such as Six Sigma and Malcolm Balridge			
	n	Disaster	Loss due to disaster occurrence				-Reviewed and modified its disaster recovery plan after the tragic event of September 11, 2001 -physical security in			

							campus buildings strengthened			
	o	Information system	Loss due to data theft				-Firewalls were put in place in all external connections -Mobile users could connect to Infosys network using secure connection only after the authentication credentials had been validated		Security of information system was reviewed regularly	
	p	Service	Loss due to service disruption or data loss				-Backups taken daily and stored in secure locations -Replication of any project from backup -More project from one campus to another, since they were similar in technological infrastructure			
	q	Communication	Loss due to disruption in information flow				-built redundancy into its data communication links -Development centres were connected using			Periodic reviews done to ensure that all these arrangements meet the organisations' requirements

							multiple links -Links provided by multiple service providers			
	r	Technology	Loss due to obsolescence of technology				-Developed its technology strategy based on cost of acquisition and retraining			Evaluation of the technological obsolescence of its infrastructure on a continuous basis
	s	Category 1 Desktop environment (PCs and associated software)	Loss due to large volumes and high retaining cost				-Used mature technology, not leading edge -Used standardized interface software to minimize retaining cost -Disposed with warranty expiry			Improve productivity and give competitive advantage
	t	Category 2 Proprietary System					-Purpose decisions were client-oriented -Standardized its network components based on a few suppliers			
	u	Category 3 Tools for software development		To be at par with or better than its competitors anywhere in			-Used leading edge technology to improve productivity -Advised clients			

				the world			on emerging products -Continuously invested in these technologies -Reserved initiatives were undertaken to review and adopt the technologies for internal use			
	v	Internal control					-Well defined roles and responsibilities for people at various levels. -A robust internal information system -Used operations planning model to forecast personnel requirements based on business projections -Personnel requirement were incorporated in annual budgets	-Frequent internal audits -any unbudgeted expense had to be approved by CEO -Any policy change had to be approved by committee headed by the CEO, after a five year profitability impact assessment -Senior management submitted periodic reports on their activities and achievements for review by the CEO		-Ensure appropriate information flow

									-Effective budgetary control on all expenses was used to ensure that actual spending was in line with the budget		
Financial Risks	w	Foreign currency rate	Loss to currency exchange rate fluctuation	To gain income	Very low	Insignificant	A and D	All other expenses were met out with dollar-dominated accounts -Part of the surplus funds was maintained in foreign currency deposits -Did not take active trading positions in foreign currency markets and only hedged its receivables			Maintained its operating profits
	x	Liquidity	Loss due to debt interest/penalties and lateness to respond to industry changes, as well as cost associated with liquidity	To maintain high liquidity to respond quickly in the fast changing software industry				-Tried to settle payables well within stipulated time frames -Earn a minimum of two times the cost of capital as return on average capital employed and a	Infosys' policy was to have liquid assets at 15% of the revenue and 40% of the total assets		-Prevent the firm from going solvent -Opportunity to move with the trend

								minimum of thrice the cost of capital as return on average invested capital (CofC for 2002 was 17.17%)			
	y	Leverage		To reduce extra cost to the minimum	Very low	insignificant	D	Used debt financing only for short term funding requirements and only when the need arose			Being debt-free implies no extra cost on due interest

Appendix B

ANALYSIS OF THE ERM PROCESS AT ROLLS ROYCE

TABLE: SUMMARY OF ERM AT ROLLS-ROYCE

EVENT IDENTIFICATION				RISK ANALYSIS		RISK RESPONSE		RISK CONTROL	MONITORING	BENEFITS	
RISK CATEGORY	INHERENT RISKS			OBJECTIVE	RISK ASSESSMENT		OPTION				ACTION
	RISK ID	TOPIC	RISK DESCRIPTION		LIKELIHOOD OF OCCURENCE	RELATIVE IMPACT					
Product development Risks	a	Research and Development	Loss of huge capital to negative market response to new product	To respond to future challenge	Moderate	Major	C	Develop risk and revenue sharing partnerships	Each partner invests in its own research in the range of areas	1.Reduced potential loss 2.Focused each partner on the link between investment and profit 3.Brought suppliers together to meet the overall objective 4.allowed suppliers more freedom as opposed to the constraints of a contractual arrangement 5. Stopped misuse of power 6. Pooled best management practices 7. encouraged the integration of culture and	

												skills 8. Engage partners in achieving strategic goals	
Marketing Risks	b	New engine Sales		Loss of market share to competitors	To convert occasional customers to regular customers and advocates	High	Major	D	Focus on activities and services that built good relationships with customers	-		Increased its customer base (more revenue)	
	c	Engine parts sales											
Financial Risks	d	Foreign Exchange	Translational Risk	Loss due to changes in exchange rate	Long-term investment in overseas subsidiary companies	Very high	Insignificant	A	Did <u>not</u> hedge	-		Cost saving due to avoidance of unnecessary activity	
	e		Transaction Risk	Loss due to business transaction in foreign currency	To generate income	Very high	Major	D	Used a variety of financial instruments. -Forward cover of up to eight years -Wrote currency options	-		Increase income from foreign transactions	
	f	Interest Rate Risk	Fixed rate bond	Loss due to change in interest rate	To provide fund				D	Used a combination of interest rate swaps and caps	-		1.Reduce loss 2.Stabilize interest payments 3.Predictability which aids management decisions
			Floating rate debt										
g	Commodity Risk		Loss due to fluctuations in the price of jet fuel	To minimize the impact price of jet fuel	high		D	Was hedged using commodity swaps up to four years	-				

	h	Credit Risk	Sales finance	Loss due to defaulting customers	To retain and attract customers	Moderate	Moderate	D	-Minimizing the level of exposure through the use of third-party non-recourse debt	-Used a sophisticated risk-price model to assess risk and exposure -Cost associated with providing financing support in any decision to secure new business	Board regularly reviews sales finance related exposures	-Increase revenue by reducing losing -Do business with creditworthy customers
	D							-Reducing the level of exposure through the transfer, sale, or re-insurance of risks				
	C							The proportionate flow down of risk and exposure to relevant risk and revenue sharing partner				