ERM: Qualitative Implementation Guide for Insurers

Session C3 – 8th October 2009

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ERM Framework for Corporate Governance

The Problem of Inductive Knowledge
Problem of Inductive Knowledge & Revision of Belief

Problem of Inductive Knowledge

The Unknown Unknowns

“Reports that say that something hasn’t happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns -- the ones we don’t know we don’t know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones.”

Corporate Governance and Board Functions
Corporate Governance: Continuous cycle

ERM Impinges on 4 Main Board Functions

Risk and Opportunity Management Framework
Stages in the Enterprise Risk Management process

ERM Process - Stage 1: Analysis

**CONSTRAINTS**
1. Business risk management culture
2. Risk management resources
3. Risk management study parameters
4. Risk management plan

**INPUTS**
1. Appointment
2. Business objectives and plan
3. Process map and organization structure
4. Audit committee
5. Financial report
6. Marketing plan
7. Risk management plan
8. Ratio analysis

**MECHANISMS**
1. Finance analysis tools
2. Risk management process diagnostic
3. SWOT questions
4. PEST questions
5. PESTEL analysis
6. Risk mapping
7. Causal modeling

**OUTPUTS**
1. Business analysis findings

ERM Process – Stage 2: Risk Identification

**CONSTRAINTS**
1. Business risk management culture
2. Risk management resources
3. Risk management study
4. Risk management plan

**INPUTS**
1. Business analysis
2. Assumptions
3. Uncertain events
4. Lessons learned
5. Issues

**MECHANISMS**
1. Risk checklist
2. Risk prompt list
3. PESTEVL prompt
4. SWOT prompt
5. Risk database
6. Process map
7. Business risk breakdown structure
8. Risk questionnaire

**OUTPUTS**
1. Risk register
ERM Process – Stage 6: Risk Management

**CONSTRAINTS**
1. Business risk management culture
2. Risk management resources
3. Risk management study parameters
4. Risk management plan

**INPUTS**
1. Risk database
2. Risk register
3. Risk exposures

**MECHANISMS**
1. Meeting agendas
2. Proformas

**OUTPUTS**
1. Meeting agenda
2. Proformas
3. Report format
4. Key performance indicators

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External and Internal Sources of Risk

**Operational Risk**

**Technological Risk**

**Financial Risk**

**Internal Sources of Risk**

**Economic Risk**

**Environment Risk**

**Social Risk**

**External Sources of Risk**

**Market Risk**

**Political Risk**

**Legal Risk**

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Causal Modelling and Risk Mapping

**High Level Risk Map**

**Underlying/Cause – Internal Management**

**Internal processes, people or systems (failed, inadequate)**

**Risk Appetite Decision**

**Risk decisions** (inappropriate risk appetite)

**Financial Outcomes** (market, reputational, credit)

**Policy/Behaviour** (harm, losses, inefficiency)

**Inefficient Evaluation of Financial Outcomes**

**Feedback control loop**

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Risk Appetite – Portfolio Mapping 1

Risk Appetite – Portfolio Mapping 2

Risk Culture of Operational Business Unit

where the risk appetite is higher than the residual risk, resulting in too much being spent on risk reduction due to inappropriate perception.
Risk Culture of the Corporate Parent

Corporate Parent | Risk appetite, inherent risk status (before action), residual risk status (after action)

Risk Status
- Red
- Amber
- Olive
- Green

Risk Scenario
- R1
- R2
- R3
- R4
- R5
- R6
- R7

Where the risk appetite is higher than the residual risk, resulting in too much being spent on risk reduction due to inappropriate perception.

Risk Profile example A

<table>
<thead>
<tr>
<th>Impact</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>0.00 &lt; p &lt; 0.05</td>
</tr>
<tr>
<td>Unlikely</td>
<td>0.05 &lt; p &lt; 0.50</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.50 &lt; p &lt; 0.95</td>
</tr>
<tr>
<td>Likely</td>
<td>0.90 &lt; p &lt; 1.00</td>
</tr>
<tr>
<td>Almost certain</td>
<td>1.00 &gt; p &gt; 1.00</td>
</tr>
</tbody>
</table>

- Catastrophic - the business survival at risk (eg £25M loss)
  - Impact: High
  - Likelihood: Extreme

- Major - operations severely damaged (eg. £10M loss)
  - Impact: High
  - Likelihood: Extreme

- Moderate - significant time & resource (eg. £5M loss)
  - Impact: Moderate
  - Likelihood: High

- Minor - some disruption is possible (eg. £0.5M loss)
  - Impact: Low
  - Likelihood: Moderate

- Insignificant - minor problem, utilise normal daily processes
  - Impact: Low
  - Likelihood: Low

Risk Profile example B

<table>
<thead>
<tr>
<th>Impact</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>0.00 &lt; p &lt; 0.05</td>
</tr>
<tr>
<td>Unlikely</td>
<td>0.05 &lt; p &lt; 0.50</td>
</tr>
<tr>
<td>Likely</td>
<td>0.50 &lt; p &lt; 0.95</td>
</tr>
<tr>
<td>Probable</td>
<td>0.90 &lt; p &lt; 1.00</td>
</tr>
<tr>
<td>Almost certain</td>
<td>1.00 &gt; p &gt; 1.00</td>
</tr>
</tbody>
</table>

- Impact > £0.0M
  - Impact: Extreme

- £0.0M ≤ impact < £0.0M
  - Impact: Moderate

- £0.0M ≤ impact < £0.5M
  - Impact: Low

- £0.5M ≤ impact < £1M
  - Impact: Very low

- £1 ≤ impact < £10M
  - Impact: Low

- £10M ≤ impact < £100M
  - Impact: Moderate

- £100M ≤ impact < £1B
  - Impact: High

- £1B ≤ impact < £10B
  - Impact: Very high
Risk Profile example C

<table>
<thead>
<tr>
<th>Impact on enterprise value</th>
<th>Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>Extreme</td>
</tr>
<tr>
<td>Probability 0.00 &lt; p &lt; 0.05</td>
<td>Extreme</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Unlikely</td>
</tr>
<tr>
<td>0.05 &lt; p &lt; 0.30</td>
<td>Moderate</td>
</tr>
<tr>
<td>Likely</td>
<td>Likely</td>
</tr>
<tr>
<td>0.30 &lt; p &lt; 0.70</td>
<td>Moderate</td>
</tr>
<tr>
<td>Probable</td>
<td>Probable</td>
</tr>
<tr>
<td>0.70 &lt; p &lt; 0.95</td>
<td>High</td>
</tr>
<tr>
<td>Almost certain</td>
<td>Almost certain</td>
</tr>
<tr>
<td>p &gt; 1.00</td>
<td>Extreme</td>
</tr>
</tbody>
</table>

Impact > £300M

- Extreme
- Severe
- High
- Moderate
- Low

Black Swans and Fat Tails
People generally severely underestimate the possibility of unexpected events. Non-Australians used to be convinced that all swans were white, an unassailable belief from empirical evidence. The sighting of the first black swan illustrated the fragility of our knowledge. One single observation of a black swan invalidated a general statement derived from millennia of confirmatory sightings of millions of white swans.
Case Study 1  A Casino and its unexpected losses

Black swans swamped casino ERM model risks by 1,000 to 1

Qualitative & Quantitative inputs

External & Internal

Aware ‘Statistics are artefacts’

Consider ‘off-model’ risks

4 largest losses incurred fell outside of casino’s sophisticated ERM models:

1. $100m loss when irreplaceable performer in their main show was mauled by a tiger.
2. Disgruntled contractor hurt during construction of the hotel annex to casino; so offended by the settlement offered him that he made an attempt to dynamite the casino.
3. Employee supposed to send IRS gambling wins returns, but hid them in boxes under his desk. As tax violations are crimes, casino faced the near loss of its gambling licence.
4. Kidnap of casino owner’s daughter led him to fund ransom by dipping into casino cash.

Case Study 2  UK Cabinet Office

1. Risk response strategies to manage outcomes of policy implementation, extreme events (natural / man-made), increasing consumer activism where State is deemed to under-deliver or fail in delivering its legal responsibilities and duties.
2. Focus on need for fewer unnecessary crises; to ensure that risk management is part of delivery plans; get right balance between innovation/change & avoidance of shocks / crises; to improve risk management and its communication.
3. Risk concerns about where organisation wants to go, how to get there and how to ensure survival. Major risks may stop organisation functioning (e.g. financial, directional, environmental, cultural, acquisition, political & quality issues).
Case Study 3  Microsoft

1. Embed ERM within project planning and processes. Web-based knowledge tools in association with the risk management group. Internet includes risk checklists, best practices and factual, reference information for managers and staff.

2. ERM team are evaluated on the amount of time they spend working 'hands-on' with managers on risk issues. Team builds risk awareness in managers, leveraging wisdom from them and sharing best practices across organisation.

3. ERM process consolidates and generates early warning indicators; ensures that managers are responsive and alert; maintains risk register as a living, dynamic document which is updated to allow for emerging signals of risk and opportunity.

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Case Study 4  Nokia

1. Ericsson was a global force in telecoms and mobile telephone industry. However, its culture was conservative and less pro-active than Nokia, which contributed to its operational risk losses following catastrophic incident at a major supplier.

2. Fire in Phillips factory in New Mexico that manufactured silicon chips for Ericsson and Nokia. Ericsson local managers slow to report disruption of supply to HQ. Nokia local managers pro-active and HQ pressured Phillips to locate substitute suppliers → Nokia silicon chip supplies not materially interrupted.

3. Difference in corporate culture contributed to Ericsson’s lack of focus on supplies that local unit thought it had no control → vulnerable to disruption. Ericsson was unable to locate substitute suppliers and reporting large loss in mobile division. It also lost global industry leadership and has not yet recovered its former glory.

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Case Study 5  Union Carbide

1. 40 tons of poisonous gases leaked in Bhopal, India, killing over 20,000 residents. Union Carbide eventually settled law suits for damages from 500,000 exposed to the gas. Company → allege no 'legal' responsibility → Union Carbide India Ltd.

2. HQ cost cutting had disabled safety procedures essential to prevent such disasters. Dow Chemical (was Union Carbide) denies responsibility but as it is larger than what was Union Carbide, ongoing litigation haunts Dow Chemical. Bhopal → risk event at a distant and small unit can have disastrous consequences on a firm.

3. Proven need for thorough ‘risk identification’ and ‘risk assessment’ processes that consider catastrophic incidents. We can never predict risks of this major consequence, but an enterprise should always be aware that disasters can happen.
Case Study 6  Arthur Andersen

1. Andersen LLP was one of the world’s leading firms. However, in less than 12 months, its reputation was destroyed as a result of its dealings with Enron. Firm imploded as a result of reputational damage caused by one of its Houston office.

2. Although local offices had risk assessment procedures and almost all followed firm wide standards, a risk event at one office caused global firm to collapse. Each operating unit was responsible for managing its own risks but was also subject to the consequences of risk events on units above or below each in the organisation.

3. Firm lost sight of core business model → compromised by close relationship with Enron. Large fees from auditing/consultancy resulted in conflicts. Disclosure that it had shredded documents gave appearance of something to hide. Public outrage was acute → employees and small investors harmed and the firm imploded.

ERM - risk response strategies for unexpected events