Session 15
Quantifying Operational and Strategic Risks: An Advanced Yet Practical Approach

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President
SimErgy Consulting LLC

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June 30, 2010
Defining operational and strategic risks

Operational
- HR risk (e.g., critical employees)
- Technology (e.g., data security)
- Disasters (e.g., pandemic)
- Etc.

Strategic
- Strategy (e.g., wrong product set chosen)
- Execution (e.g., poor integration of acquisitions)
- Competitor (e.g., unexpected innovation by competitor)
- Supplier (e.g., sudden change in supplier capacity)
- External relations (e.g., negative publicity)
- Etc.
Traditional approaches struggle to quantify operational and strategic risks

<table>
<thead>
<tr>
<th>Traditional Approach</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method 1: Qualitative</strong></td>
<td>Cannot support decision-making</td>
</tr>
<tr>
<td><strong>Method 2: Industry data</strong></td>
<td>Often unavailable or inappropriate</td>
</tr>
</tbody>
</table>
| **Method 3: Risk capital** | ▪ Understates risk  
▪ Arbitrary / often directionally incorrect |
Modified case study: Quantifying individual risk exposures on enterprise value basis

![Individual Risk Quantification chart]

1. IT Risk 1
2. Legislation Risk
3. Loss of Critical EEs
4. M&A Risk
5. Execution Risk
6. International Risk 1
7. Loss of Key Supplier
8. Loss of Key Distributor
9. IT Risk 2
10. International Risk 2
11. Union Negotiations
12. Competitor Risk 1
13. Consumer Relations Risk

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Modified case study: Quantifying individual risk exposures on multiple bases

<table>
<thead>
<tr>
<th>Risk</th>
<th>Δ Enterprise Value</th>
<th>Δ Revenue Growth</th>
<th>Δ EPS Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 IT Risk 1</td>
<td>-23.0%</td>
<td>-5.3%</td>
<td>-7.4%</td>
</tr>
<tr>
<td>2 Legislation Risk</td>
<td>-19.0%</td>
<td>-17.0%</td>
<td>5.9%</td>
</tr>
<tr>
<td>3 Loss of Critical EEs</td>
<td>-14.5%</td>
<td>-8.9%</td>
<td>-9.5%</td>
</tr>
<tr>
<td>4 M&amp;A Risk</td>
<td>-8.7%</td>
<td>0.0%</td>
<td>-3.7%</td>
</tr>
<tr>
<td>5 Execution Risk</td>
<td>-7.9%</td>
<td>-1.1%</td>
<td>-4.1%</td>
</tr>
<tr>
<td>6 International Risk 1</td>
<td>-5.8%</td>
<td>-1.8%</td>
<td>-4.0%</td>
</tr>
<tr>
<td>7 Loss of Key Supplier</td>
<td>-5.5%</td>
<td>-0.9%</td>
<td>-3.3%</td>
</tr>
<tr>
<td>8 Loss of Key Distributor</td>
<td>-4.4%</td>
<td>-2.7%</td>
<td>-2.2%</td>
</tr>
<tr>
<td>9 IT Risk 2</td>
<td>-3.0%</td>
<td>0.0%</td>
<td>-1.4%</td>
</tr>
<tr>
<td>10 International Risk 2</td>
<td>-2.8%</td>
<td>-2.0%</td>
<td>-1.7%</td>
</tr>
<tr>
<td>11 Union Negotiations</td>
<td>-2.0%</td>
<td>-1.3%</td>
<td>-1.0%</td>
</tr>
<tr>
<td>12 Competitor Risk 1</td>
<td>-2.0%</td>
<td>-1.8%</td>
<td>-0.8%</td>
</tr>
<tr>
<td>13 Consumer Relations Risk</td>
<td>-1.5%</td>
<td>-1.2%</td>
<td>-0.5%</td>
</tr>
</tbody>
</table>
Value-based approach properly quantifies operational and strategic risks

<table>
<thead>
<tr>
<th>Traditional Approach</th>
<th>Value-based Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method 1: Qualitative</strong></td>
<td>Quantifies impact to value / supports decision-making</td>
</tr>
<tr>
<td>Cannot support decision-making</td>
<td></td>
</tr>
<tr>
<td>Method 2: Industry data</td>
<td></td>
</tr>
<tr>
<td>Often unavailable or inappropriate</td>
<td>Company/situation-specific</td>
</tr>
<tr>
<td>Method 3: Risk capital</td>
<td></td>
</tr>
<tr>
<td>Understates risk</td>
<td>Fully quantifies risk impacts</td>
</tr>
<tr>
<td>Arbitrary / often directionally incorrect</td>
<td>Risk-based</td>
</tr>
</tbody>
</table>

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Developing company/situation-specific risk scenarios: FMEA technique

1) Identify interviewees
   - Those closest to the risk
   - Usually 1 or 2 risk experts

2) Develop risk scenario
   - Begin with credible worst case
   - Select specific scenario and think it through

3) Assign likelihood

4) Quantify
   - Determine impacts on free cash flow

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Risk: Legislation Risk

Attendees: xxx, xxx, xxx

Scenario 1: Legislation passes reducing business opportunity in certain markets

Likelihood: 5%

Financial impact:
- Revenue impact
  - 50% loss of planned revenues in market A
    - 1st year: -$2.5M
    - 2nd year: -$2.6M
    - etc.
  - 100% loss of planned revenues in market B
    - 1st year: -$1.0M
    - 2nd year: -$1.1M
    - etc.

- Expense impact
  - Reduction in workforce
    - -10% of salary and related benefits
    - +$100K severance costs

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Case studies: Quantifying impact to value supports decision-making

A) Technology – External attack
B) Human resources – Critical employees
C) Fraud – Money Laundering
D) Supplier – Disruption
E) Technology – Data Privacy
F) Strategy – Strategic Planning Process
## Case study A
### Technology – External attack

<table>
<thead>
<tr>
<th>Sector</th>
<th>Financial services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Event</strong></td>
<td>External attack through unprotected wireless device leading to numerous impacts on systems, data and customers</td>
</tr>
</tbody>
</table>
| **Quantification** | ▪ Ranked as #3 risk by value impact  
 ▪ Primary driver found to be customer privacy data violation |
| **Management action(s)** | ▪ Make two immediate decisions:  
  1) Identified and secured PCs with customer data  
  2) Purged ex-customer data, cutting exposure in half |
| **Lessons**     | ▪ Value metric leads to decision-making  
 ▪ Attribution focuses mitigation opportunities |

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## Case study B

**Human Resources – Critical employees**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Event</strong></td>
<td>Plane crash results in death of some top salespeople, sales managers and executives</td>
</tr>
<tr>
<td><strong>Quantification</strong></td>
<td>Attribution identified sales managers as primary driver</td>
</tr>
<tr>
<td><strong>Management actions(s)</strong></td>
<td>Decision to strengthen adherence to company policy limiting concentration of key employees on flights, particularly for sales managers</td>
</tr>
</tbody>
</table>
| **Lessons**    | ▪ Value metric superior to traditional capital metric, which does not rank this risk properly  
▪ Attribution focuses mitigation opportunities |
### Case study C
**Fraud – Money Laundering**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Insurance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Situation</strong></td>
<td>Decision needed on whether to resume AML spending</td>
</tr>
<tr>
<td><strong>Event</strong></td>
<td>Money laundering violation with fines and criminal prosecutions</td>
</tr>
<tr>
<td><strong>Quantification</strong></td>
<td>Destroys approximately half the company’s value</td>
</tr>
<tr>
<td><strong>Management actions(s)</strong></td>
<td>Immediate decision to continue AML spending</td>
</tr>
</tbody>
</table>
| **Lessons**     | ▪ Quantification exercise adds value, despite approximate nature of inputs  
                  ▪ Value metric leads to decision-making |

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Case study D
Supplier – Disruption

<table>
<thead>
<tr>
<th>Sector</th>
<th>Chemical manufacturer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>Sole source supplier facility destroyed by fire</td>
</tr>
</tbody>
</table>
| Quantification  | ▪ Ranked as #1 risk by value impact  
▪ 100% destruction of minor product line  
▪ Market share loss in major product line, some permanent |
| Management actions(s) | Immediate decision to qualify backup supplier |
| Lessons         | ▪ Value metric fully quantifies impact, including future years  
▪ FMEA process translates and shares experts’ knowledge |
## Case study E
### Technology – Data Privacy

<table>
<thead>
<tr>
<th>Sector</th>
<th>Telecommunications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Situation</td>
<td>Rapid decision needed on response to customer request to guarantee data privacy</td>
</tr>
<tr>
<td>Event</td>
<td>Multiple scenarios under each of three decision options</td>
</tr>
<tr>
<td>Quantification</td>
<td>Produced within required short time frame</td>
</tr>
<tr>
<td>Management actions(s)</td>
<td>ERM information helped management arrive at their decision</td>
</tr>
</tbody>
</table>
| Lessons      | ▪ Value-based ERM model can be modified and run rapidly, making it practical to include in decision-making process  
▪ Value metric is the language of business decision-makers |
## Case study F
### Strategy – Strategic Planning Process

<table>
<thead>
<tr>
<th>Sector</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>Strategic plan process is unrealistic, and 4 elements of the plan are not achieved</td>
</tr>
</tbody>
</table>
| Quantification | ▪ 20% drop in enterprise value from baseline valuation  
▪ Attribution identified which of the 4 elements most impactful |
| Management actions(s) | ▪ Realized source of bias, vis-à-vis stock options  
▪ Focused attention on achieving most impactful elements |
| Lessons      | ▪ Value metric is relatable to existing business metrics  
▪ Attribution focuses mitigation opportunities |
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