



SOCIETY OF ACTUARIES

**ERM Symposium  
April 2010**

**1C: Quantifying Operational and Strategic Risks:  
An Advanced, Yet Practical Approach**

**Sim Segal**

**Moderator  
Maryellen Coggins**



## Quantifying Operational and Strategic Risks: An Advanced Yet Practical Approach

Sim Segal, FSA, CERA, MAAA  
President  
SimErgy Consulting LLC

ERM Symposium  
Session 1C: Quantifying Operational and Strategic Risks: An  
Advanced Yet Practical Approach  
April 13, 2010

## Defining operational and strategic risks

### Operational

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

### Strategic

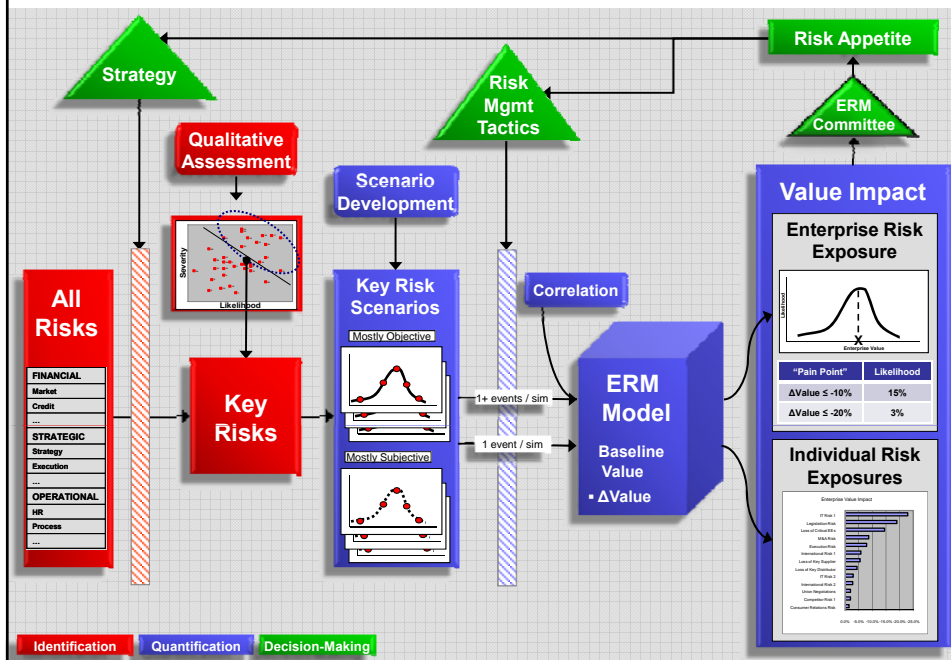
- Strategy (e.g., wrong product set chosen)
- Execution (e.g., poor integration of acquisitions)
- Competitor (e.g., unexpected innovation by competitor)
- Supplier (e.g., sudden change in supplier capacity)
- External relations (e.g., negative publicity)
- Etc.



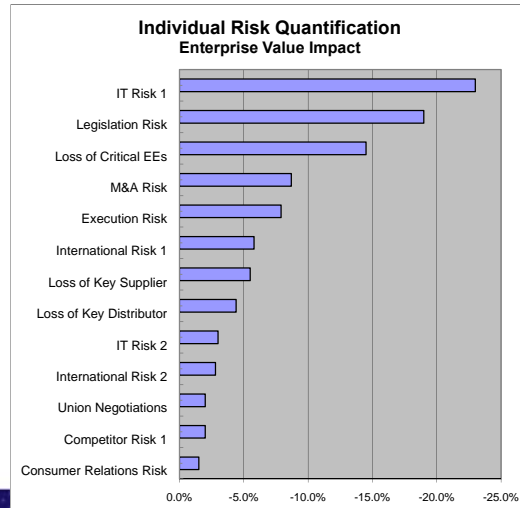
## Traditional approaches struggle to quantify operational and strategic risks

Traditional Approach	
<b>Method 1: Qualitative</b>	Cannot support decision-making
<b>Method 2: Industry data</b>	Often unavailable or inappropriate
<b>Method 3: Risk capital</b>	<ul style="list-style-type: none"> <li>▪ Understates risk</li> <li>▪ Arbitrary / often directionally incorrect</li> </ul>

## Value-Based ERM Framework



## Modified case study: Quantifying individual risk exposures on enterprise value basis



## Modified case study: Quantifying individual risk exposures on multiple bases

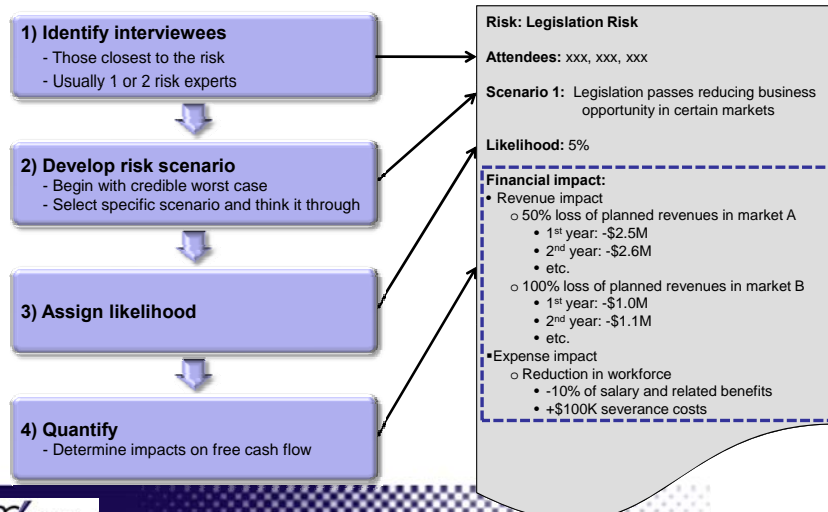
	Risk	Δ Enterprise Value	Δ Revenue Growth	Δ EPS Growth
1	IT Risk 1	-23.0%	-5.3%	-7.4%
2	Legislation Risk	-19.0%	-17.0%	5.9%
3	Loss of Critical EEs	-14.5%	-8.9%	-9.5%
4	M&A Risk	-8.7%	0.0%	-3.7%
5	Execution Risk	-7.9%	-1.1%	-4.1%
6	International Risk 1	-5.8%	-1.8%	-4.0%
7	Loss of Key Supplier	-5.5%	-0.9%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

## Value-based approach properly quantifies operational and strategic risks

Traditional Approach		Value-based Approach
<b>Method 1: Qualitative</b>	Cannot support decision-making	Quantifies impact to value / supports decision-making  Company/situation-specific  ▪ Fully quantifies risk impacts ▪ Risk-based
<b>Method 2: Industry data</b>	Often unavailable or inappropriate	
<b>Method 3: Risk capital</b>	<ul style="list-style-type: none"> <li>▪ Understates risk</li> <li>▪ Arbitrary / often directionally incorrect</li> </ul>	

## Developing company/situation-specific risk scenarios: FMEA technique

ILLUSTRATIVE EXAMPLE



## 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

<b>Sector</b>	Financial services
<b>Event</b>	External attack through unprotected wireless device leading to numerous impacts on systems, data and customers
<b>Quantification</b>	<ul style="list-style-type: none"> <li>▪ Ranked as #3 risk by value impact</li> <li>▪ Primary driver found to be customer privacy data violation</li> </ul>
<b>Management action(s)</b>	<ul style="list-style-type: none"> <li>▪ Make two immediate decisions:                             <ol style="list-style-type: none"> <li>1) Identified and secured PCs with customer data</li> <li>2) Purged ex-customer data, cutting exposure in half</li> </ol> </li> </ul>
<b>Lessons</b>	<ul style="list-style-type: none"> <li>▪ Value metric leads to decision-making</li> <li>▪ Attribution focuses mitigation opportunities</li> </ul>

## Case study B

### Human Resources – Critical employees

<b>Sector</b>	Insurance
<b>Event</b>	Plane crash results in death of some top salespeople, sales managers and executives
<b>Quantification</b>	Attribution identified sales managers as primary driver
<b>Management actions(s)</b>	Decision to strengthen adherence to company policy limiting concentration of key employees on flights, particularly for sales managers
<b>Lessons</b>	<ul style="list-style-type: none"> <li>▪ Value metric superior to traditional capital metric, which does not rank this risk properly</li> <li>▪ Attribution focuses mitigation opportunities</li> </ul>

## Case study C

### Fraud – Money Laundering

<b>Sector</b>	Insurance
<b>Situation</b>	Decision needed on whether to resume AML spending
<b>Event</b>	Money laundering violation with fines and criminal prosecutions
<b>Quantification</b>	Destroys approximately half the company's value
<b>Management actions(s)</b>	Immediate decision to continue AML spending
<b>Lessons</b>	<ul style="list-style-type: none"> <li>▪ Quantification exercise adds value, despite approximate nature of inputs</li> <li>▪ Value metric leads to decision-making</li> </ul>

## Case study D Supplier – Disruption

<b>Sector</b>	Chemical manufacturer
<b>Event</b>	Sole source supplier facility destroyed by fire
<b>Quantification</b>	<ul style="list-style-type: none"> <li>▪ Ranked as #1 risk by value impact</li> <li>▪ 100% destruction of minor product line</li> <li>▪ Market share loss in major product line, some permanent</li> </ul>
<b>Management actions(s)</b>	Immediate decision to qualify backup supplier
<b>Lessons</b>	<ul style="list-style-type: none"> <li>▪ Value metric fully quantifies impact, including future years</li> <li>▪ FMEA process translates and shares experts' knowledge</li> </ul>

## Case study E Technology – Data Privacy

<b>Sector</b>	Telecommunications
<b>Situation</b>	Rapid decision needed on response to customer request to guarantee data privacy
<b>Event</b>	Multiple scenarios under each of three decision options
<b>Quantification</b>	Produced within required short time frame
<b>Management actions(s)</b>	ERM information helped management arrive at their decision
<b>Lessons</b>	<ul style="list-style-type: none"> <li>▪ Value-based ERM model can be modified and run rapidly, making it practical to include in decision-making process</li> <li>▪ Value metric is the language of business decision-makers</li> </ul>

## Case study F Strategy – Strategic Planning Process

<b>Sector</b>	Technology
<b>Event</b>	Strategic plan process is unrealistic, and 4 elements of the plan are not achieved
<b>Quantification</b>	<ul style="list-style-type: none"> <li>▪ 20% drop in enterprise value from baseline valuation</li> <li>▪ Attribution identified which of the 4 elements most impactful</li> </ul>
<b>Management actions(s)</b>	<ul style="list-style-type: none"> <li>▪ Realized source of bias, vis-à-vis stock options</li> <li>▪ Focused attention on achieving most impactful elements</li> </ul>
<b>Lessons</b>	<ul style="list-style-type: none"> <li>▪ Value metric is relatable to existing business metrics</li> <li>▪ Attribution focuses mitigation opportunities</li> </ul>

## Contact information

**Sim Segal, FSA, CERA, MAAA**  
President

**SimErgy Consulting LLC**  
Chrysler Building  
405 Lexington Ave., 26<sup>th</sup> Flr  
New York, NY 10174

(917) 699-3373 Mobile  
(646) 862-6134 Office  
(347) 342-0346 Fax

sim@simergy.com

www.simergy.com