

# FN241: Session 7

## Introduction to Enterprise Risk Management

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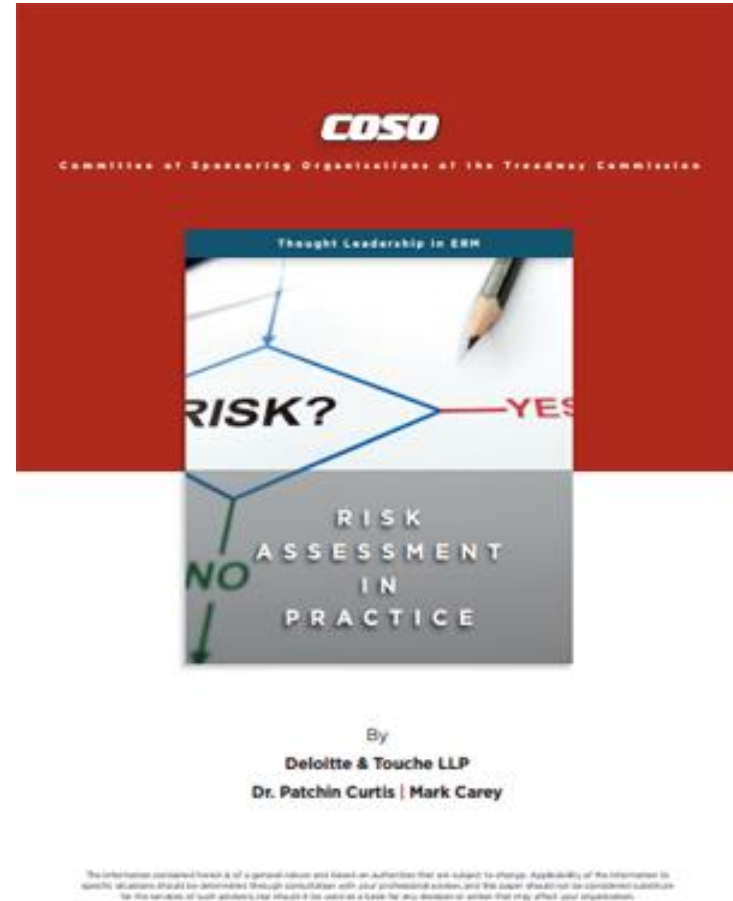
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# Reading

*“Risk Assessment in Practice”*

<http://goo.gl/CxUHtl>



# What is ERM?

Enterprise Risk Management (ERM) is defined by the Committee of Sponsoring Organizations (COSO) as:

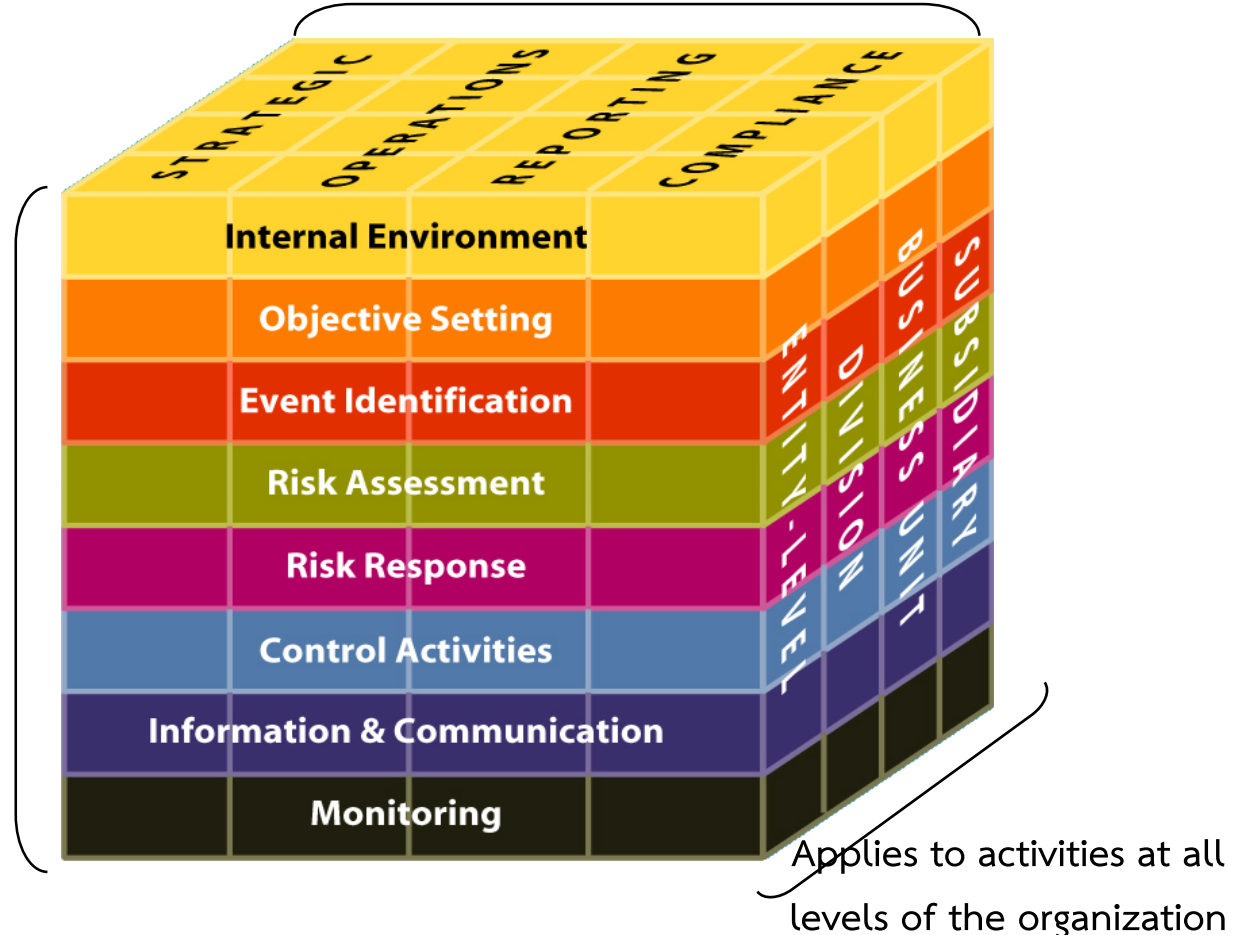
“a process, effected by an entity’s board of directors, management and other personnel, applied in strategy-setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the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

# What is ERM?

- To help assist with the implementation of the ERM process, COSO developed the ERM Integrated Framework (2004), also known as the COSO Cube.

Eight interrelated components

ERM is a process to help achieve entity objectives across these categories



# Process to help achieve entity objectives across these categories

- **Strategic**

- These are the high level goals that are aligned with and support the institution's mission.

- **Operations**

- Relate to the ongoing management process and daily activities of the organization.

- **Reporting**

- Relates to the protection of the organization's assets and quality of financial reporting.

- **Compliance**

- Relates to the organization's adherence to applicable laws and regulations.

# Eight interrelated components

## (1) Internal environment

= the general culture, values and environment in which an organization or entity operates

## (2) Objective setting

= the process management uses to set its strategic goals and objectives.  
Establishes the organization's risk appetite and risk tolerance.

## (3) Event identification

= process by which an organization identifies events that influence strategy and objectives, or could affect an organization's ability to achieve its objectives.

## (4) Risk assessment

= the organization's process of evaluating the impact and likelihood of events, and prioritizing related risks.

# Eight interrelated components

## (5) Risk response

= determining how management will respond to the risks an organization faces. Will they avoid the risk, share the risk, or mitigate the risk through updated practices and policies.

## (6) Control activities

= policies and procedures that an institution implements to address the risks the organization chooses to accept.

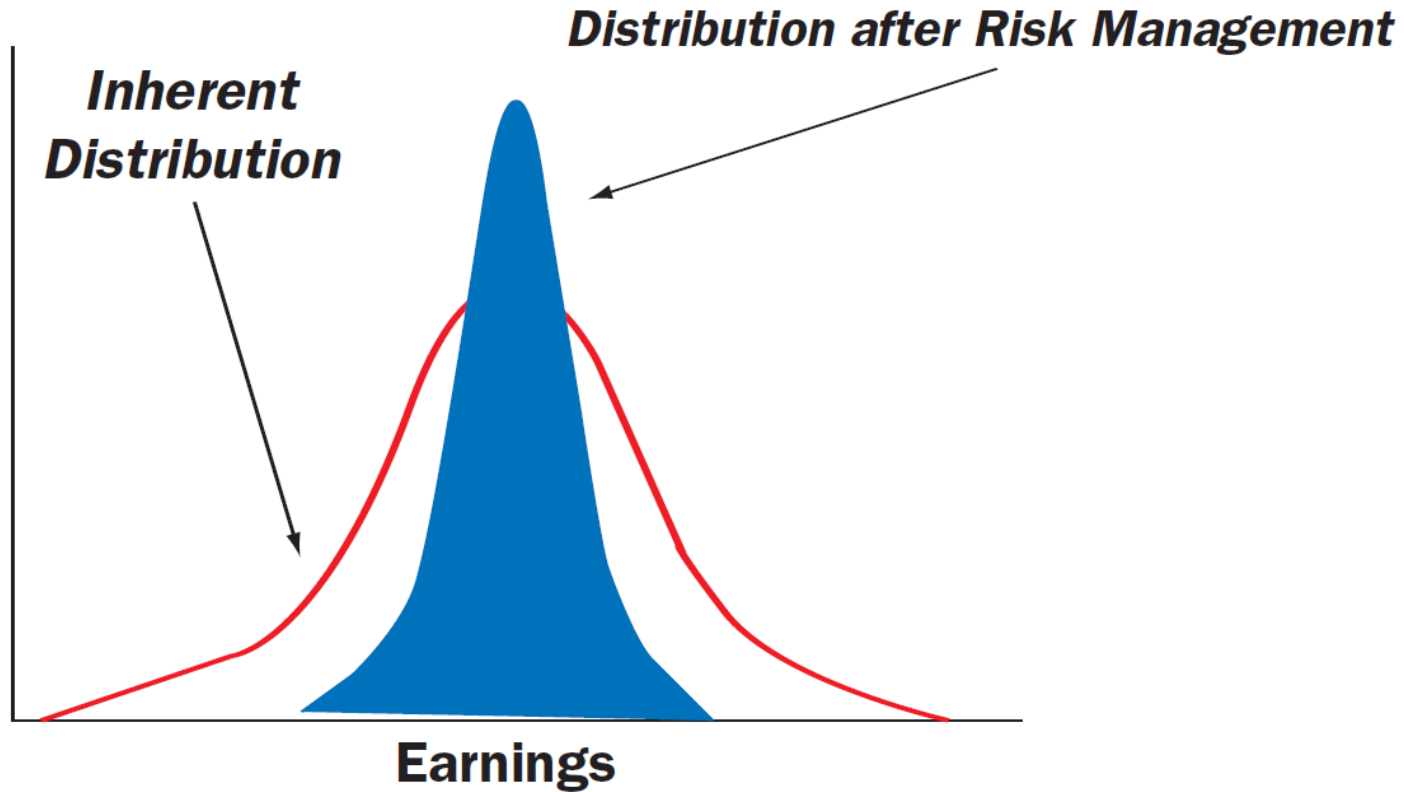
## (7) Information & communication

= practices that ensure that the right information is communicated at the right time to the right people.

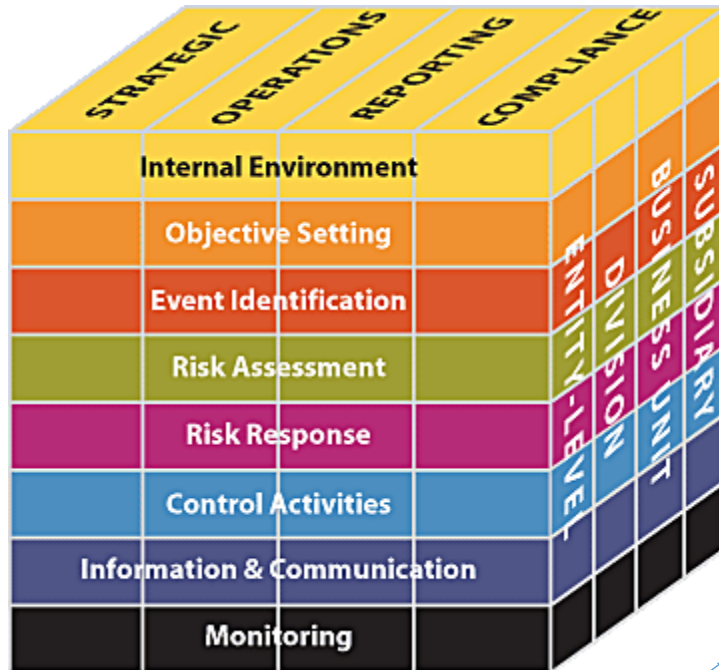
## (8) Monitoring

= ongoing evaluations to ensure controls are functioning as designed, and taking corrective action to enhance control activities if needed.

# Goals of Risk Management



# Applies to activities at all levels of the organization



Each of these components are considered at multiple levels of the organization, rather than within a single function, unit, or department.

# Enterprise Risk Wheel

Source: Zurich

UNDERSTANDING YOUR BUSINESS



KEEPING YOU IN BUSINESS

UNDERSTANDING RISK ACROSS YOUR BUSINESS

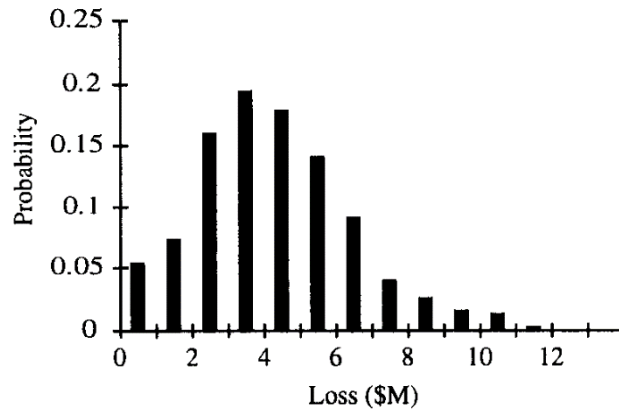
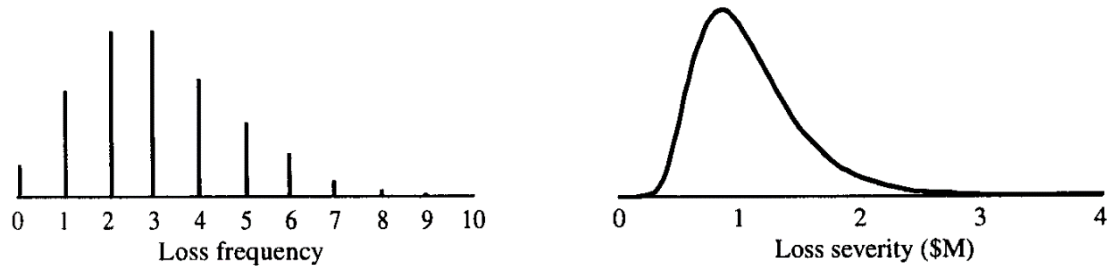
# Initiated Risk Mapping

- Helpful to put risk into buckets to assess “what’s at risk, where?”
  - = Useful in communicating risk priorities and response to Board, others
- Categories vary, but often include:

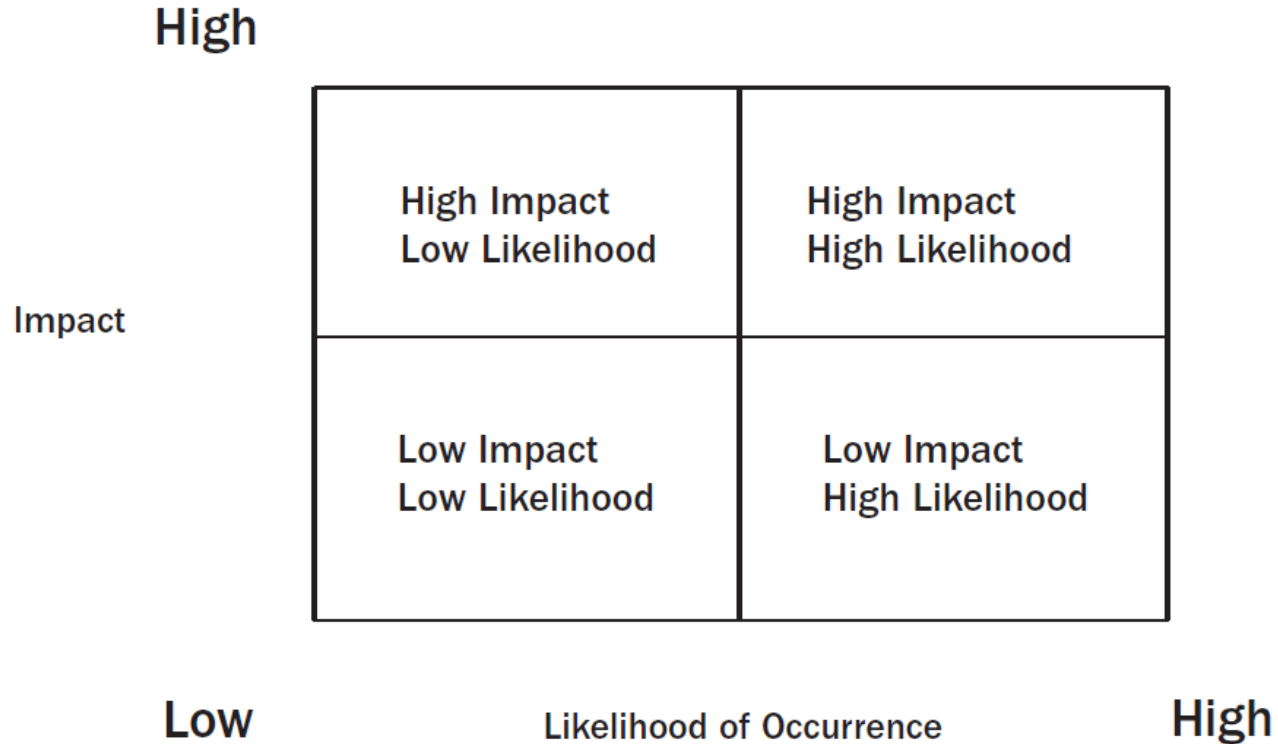
# Developed Risk Matrix, Common Language

- Challenge is finding common means to evaluating various risk in terms of frequency, severity
- While all risk eventually may be (eventually) quantified and correlated, did not have the time or resources to do so
  - Idea was subjective process first, quantitative discipline as ERM evolved
- Agreed on Frequency/Likelihood and Severity Matrix for rating risk
  - Severity Matrix blended financial measurements, reputation risk and compliance risk
    - *Built the language bridge across diverse functions like legal, marketing, human resources, technology, finance*
  - Low, Medium, High, “Survival Bet” = Severity

# Using Monte Carlo to combine the Distributions



# Risk Map



# Risk Map

Process/Business Level Impact    Segment/Intersegment Level Impact    Level Impact

<p>6 Yellow (Level III)</p> <p><i>Close monitoring for increased impact and/or variability</i></p>	<p>8 Red (Level IV)</p> <ul style="list-style-type: none"> <li>• <i>Segment <u>Commitment</u></i></li> <li>• <i>Reported to Segment Leadership</i></li> <li>• <i>Close monitoring of risk action plan</i></li> </ul>	<p>9 Red (Level V)</p> <ul style="list-style-type: none"> <li>• <i><u>Commitment</u></i></li> <li>• <i>Reported to Audit Committee</i></li> <li>• <i>Reported to Segment Leadership</i></li> <li>• <i>Close monitoring of risk action plan</i></li> </ul>
<p>3 Green (Level II)</p> <p><i>High-level monitoring for increased impact and/or variability</i></p>	<p>5 Yellow (Level III)</p> <p><i>Close monitoring for increased impact and/or variability</i></p>	<p>7 Red (Level IV)</p> <ul style="list-style-type: none"> <li>• <i>Segment <u>Commitment</u></i></li> <li>• <i>Reported to Segment Leadership</i></li> <li>• <i>Close monitoring of risk action plan</i></li> </ul>
<p>1 Green (Level I)</p> <p><i>High-level monitoring for increased impact and/or variability</i></p>	<p>2 Green (Level II)</p> <p><i>High-level monitoring for increased impact and/or variability</i></p>	<p>4 Yellow (Level III)</p> <p><i>Close monitoring for increased impact and/or variability</i></p>

**Low**

*(Consistently within tolerable variance in key metric improvement or target)*

**Moderate**

*(Sometimes within tolerable variance in key metric improvement or target)*

**High**

*(Mostly outside of tolerable variance in key metric improvement or target)*

# Example: Impact Scale

## Illustrative Impact Scale

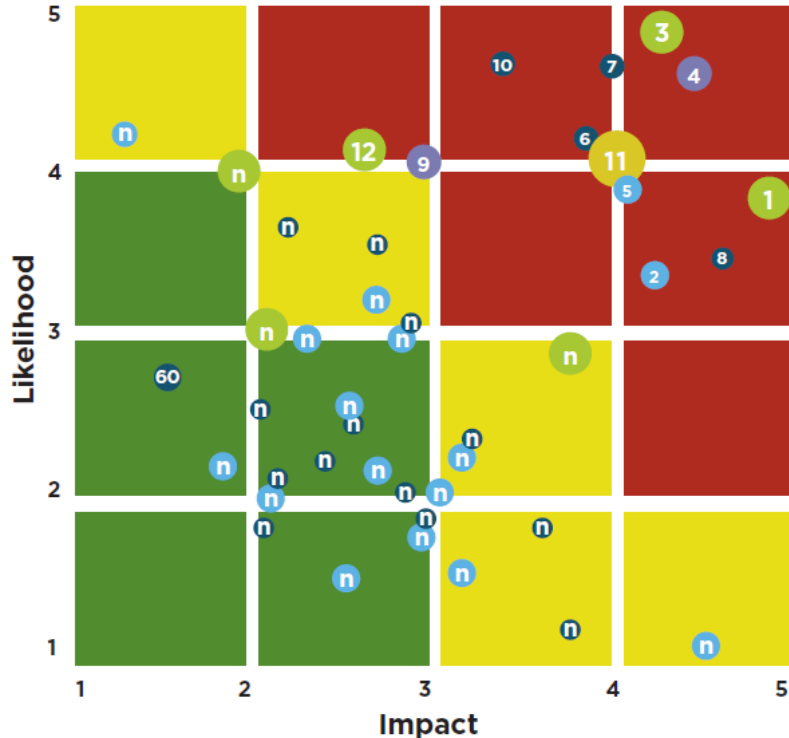
Rating	Descriptor	Definition
5	Extreme	<ul style="list-style-type: none"> <li>Financial loss of \$X million or more<sup>3</sup></li> <li>International long-term negative media coverage; game-changing loss of market share</li> <li>Significant prosecution and fines, litigation including class actions, incarceration of leadership</li> <li>Significant injuries or fatalities to employees or third parties, such as customers or vendors</li> <li>Multiple senior leaders leave</li> </ul>
4	Major	<ul style="list-style-type: none"> <li>Financial loss of \$X million up to \$X million</li> <li>National long-term negative media coverage; significant loss of market share</li> <li>Report to regulator requiring major project for corrective action</li> <li>Limited in-patient care required for employees or third parties, such as customers or vendors</li> <li>Some senior managers leave, high turnover of experienced staff, not perceived as employer of choice</li> </ul>
3	Moderate	<ul style="list-style-type: none"> <li>Financial loss of \$X million up to \$X million</li> <li>National short-term negative media coverage</li> <li>Report of breach to regulator with immediate correction to be implemented</li> <li>Out-patient medical treatment required for employees or third parties, such as customers or vendors</li> <li>Widespread staff morale problems and high turnover</li> </ul>
2	Minor	<ul style="list-style-type: none"> <li>Financial loss of \$X million up to \$X million</li> <li>Local reputational damage</li> <li>Reportable incident to regulator, no follow up</li> <li>No or minor injuries to employees or third parties, such as customers or vendors</li> <li>General staff morale problems and increase in turnover</li> </ul>
1	Incidental	<ul style="list-style-type: none"> <li>Financial loss up to \$X million</li> <li>Local media attention quickly remedied</li> <li>Not reportable to regulator</li> <li>No injuries to employees or third parties, such as customers or vendors</li> <li>Isolated staff dissatisfaction</li> </ul>

# Example: Likelihood Scale

## Illustrative Likelihood Scale

Rating	Annual Frequency		Probability	
	Descriptor	Definition	Descriptor	Definition
5	Frequent	Up to once in 2 years or more	Almost certain	90% or greater chance of occurrence over life of asset or project
4	Likely	Once in 2 years up to once in 25 years	Likely	65% up to 90% chance of occurrence over life of asset or project
3	Possible	Once in 25 years up to once in 50 years	Possible	35% up to 65% chance of occurrence over life of asset or project
2	Unlikely	Once in 50 years up to once in 100 years	Unlikely	10% up to 35% chance of occurrence over life of asset or project
1	Rare	Once in 100 years or less	Rare	<10% chance of occurrence over life of asset or project

# Example: Results



ID	Risk	I	L	V	S
1	Supply chain disruption	4.8	3.7	3.8	4
2	Customer preference shift	4.1	3.3	3.5	2
3	Copper price rise >10%	4.3	4.7	2.3	4
4	Work stoppage > 1 week	4.4	4.5	4.1	3
5	Economic downturn	4.0	3.7	3.5	2
6	Supplier consolidation	3.8	4.2	3.2	1
7	Local competitors enter	3.9	4.5	3.6	1
8	New substitutes available	4.5	3.6	4.2	1
9	Cost of capital rise >5%	2.9	4.0	2.9	3
10	Tighter emission standards	3.4	4.6	2.9	1
11	FCPA violation	4.0	4.0	3.3	5
12	Exchange rate fluctuations	2.7	4.1	2.7	4
n	...	...	...	...	...
60	Impairment of assets	1.6	2.7	1.6	1

Dots represent risk #1 - #n

Dot size reflects speed of onset:

● Very Low  
 ● Low  
 ● Medium  
 ● High  
 ● Very High

I = Impact   L = Likelihood   V = Vulnerability   S = Speed of onset

# Case Study: Business Operations



## Revenue Breakdown for the Company and its Subsidiaries

Revenue for the Company and its subsidiaries for the past 3 years can be broken down as follows:

	2015		2014		2013	
	MTHB	%	MTHB	%	MTHB	%
<b>Revenue from Transportation Activities</b>						
Passenger and excess baggage revenue	152,488	79.2	154,881	76.0	172,335	83.0
Freight and mail revenue	18,651	9.7	23,601	11.6	24,515	11.8
<b>Total Revenue from Transportation Activities</b>	<b>171,139</b>	<b>88.9</b>	<b>178,482</b>	<b>87.6</b>	<b>196,850</b>	<b>94.8</b>
Revenue from Other Activities <sup>(1)</sup>	11,588	6.0	9,885	4.8	9,486	4.6
<b>Total Operating Revenue</b>	<b>182,727</b>	<b>94.9</b>	<b>188,367</b>	<b>92.4</b>	<b>206,336</b>	<b>99.4</b>
Other incomes <sup>(2)</sup>	9,864	5.1	15,522	7.6	1,374	0.6
<b>Total Revenues</b>	<b>192,591</b>	<b>100.0</b>	<b>203,889</b>	<b>100.0</b>	<b>207,710</b>	<b>100.0</b>

Notes: <sup>(1)</sup> Revenue from other activities consists of revenues from business units and other supporting activities.

<sup>(2)</sup> Other incomes include interest income, gain (loss) on foreign currency exchange, gains on deemed disposal, gain on disposal of the controlling interest and other incomes.

# Case Study: Risk Factors



1. Fluctuations in the Price of Jet Fuel
2. Fluctuations in Foreign Currency Exchange Rates
3. Interest Rate Fluctuation
4. Competition in the Airlines Business
5. Risks from External Crises and Natural Disasters
6. Risk Related to the Quality and Efficiency of Personnel
7. Risks Related to the Quality of Products and Services
8. Risks Related to the Shareholding Structure

Question?