

FN241: Session 2

Introduction to Enterprise Risk Management

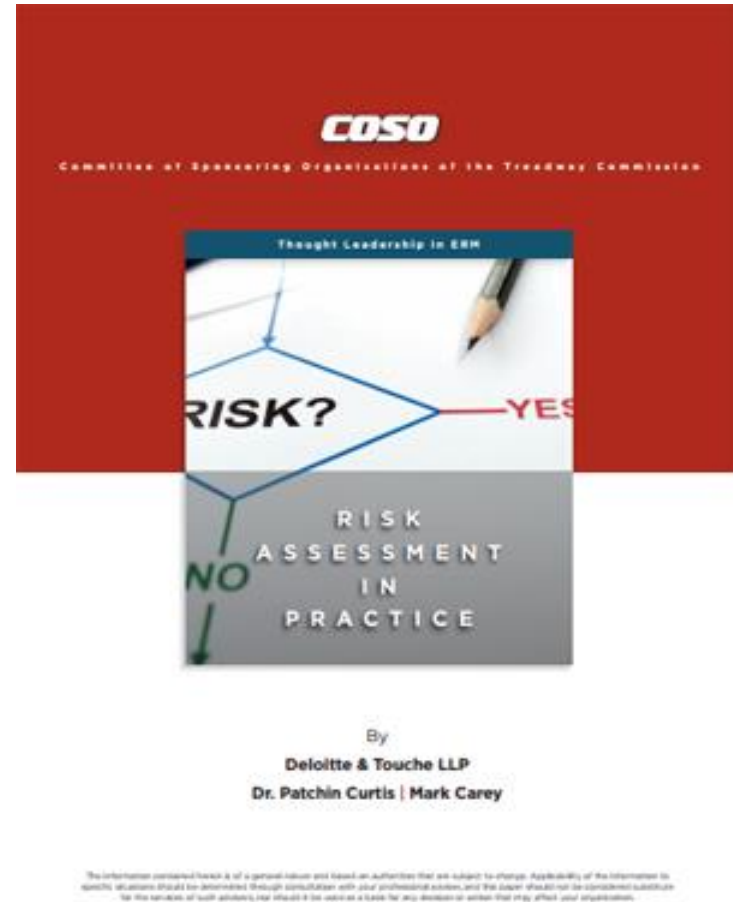
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Reading

“Risk Assessment in Practice”



What is ERM?

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

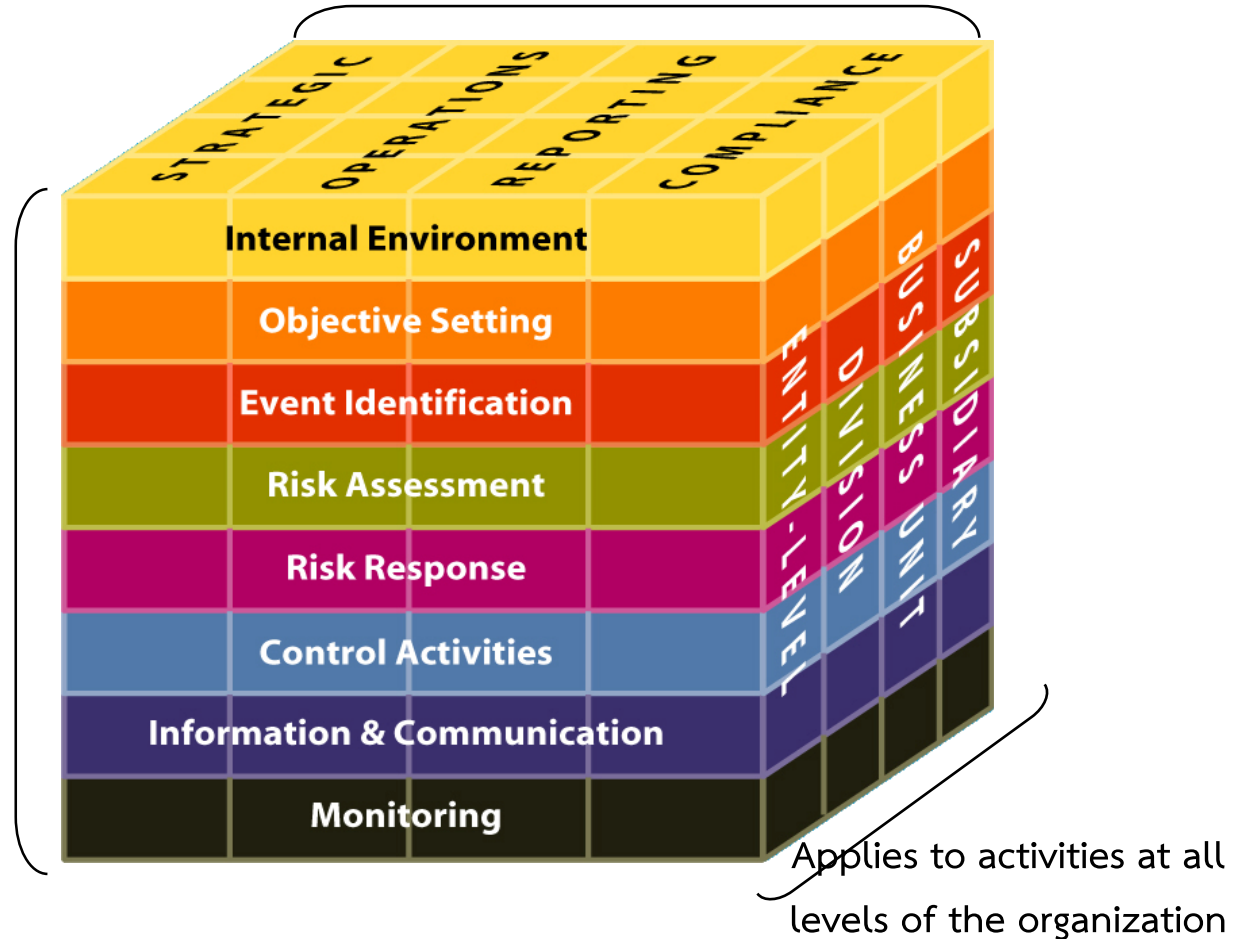
“a PROCESS, effected by an entity’s board of directors, management and other personnel, applied in STRATEGY-SETTING and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide REASONABLE ASSURANCE regarding the achievement of ENTITY OBJECTIVES.”

What is ERM?

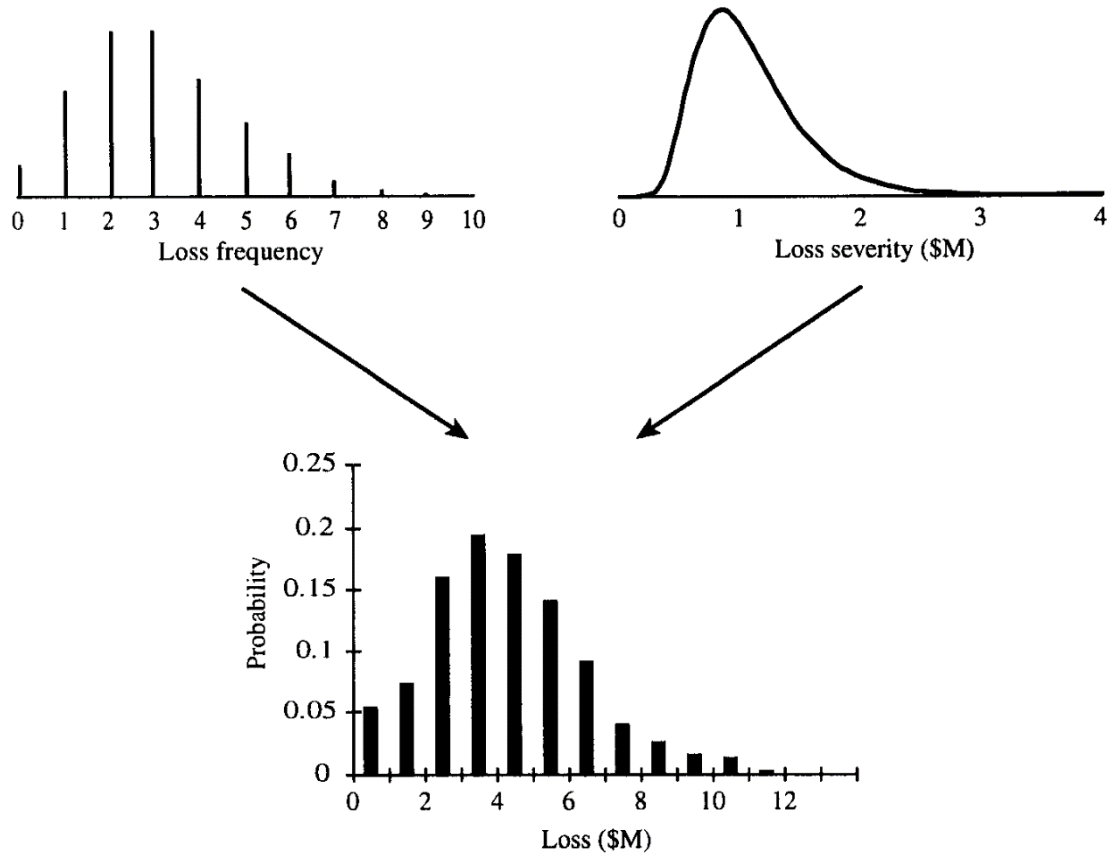
- To help assist with the implementation of the ERM process, COSO developed the ERM Integrated Framework (2004), also known as the COSO Cube.

Eight interrelated components

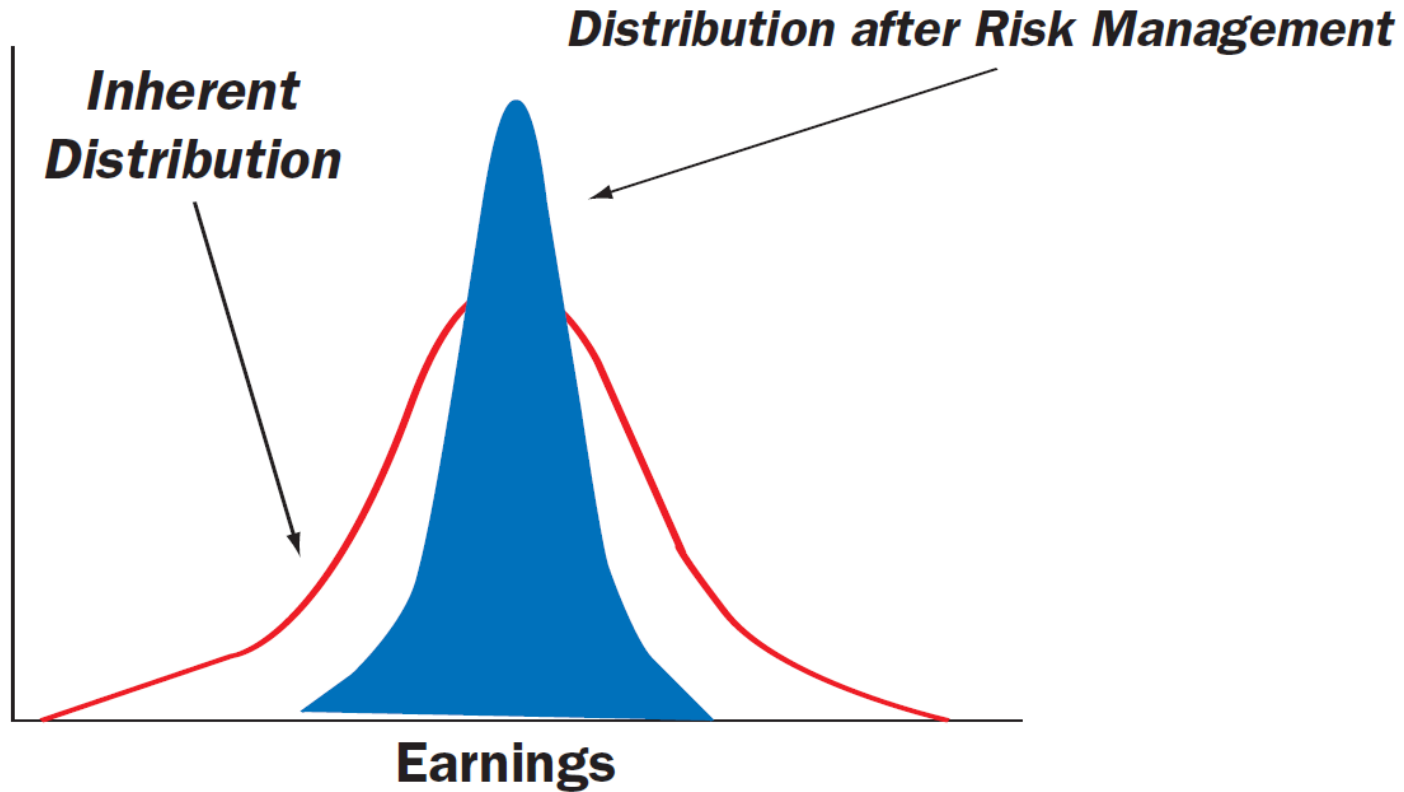
ERM is a process to help achieve entity objectives across these categories



Using Monte Carlo to combine the Distributions



Goals of Risk Management



Hazard and Risk

Hazard :

The potential to cause harm. Harm including ill health and injury, damage to property, plant, products or the environment, production losses or increased liabilities.

Risk:

The likelihood that a specified undesired event will occur due to the realisation of a hazard by, or during work activities or by the products and services created by work activities.

Assessing the Risks: Example

The likely EFFECT of a hazard may for example be rated:

1. **Major:** Death or major injury or illness causing long term disability
2. **Serious:** Injuries or illness causing short-term disability
3. **Slight:** All other injuries or illnesses

The LIKELIHOOD of harm may be rated

1. **High:** Where it is certain that harm will occur
2. **Medium:** Where harm will often occur
3. **Low:** Where harm will seldom occur

Hazard Identification

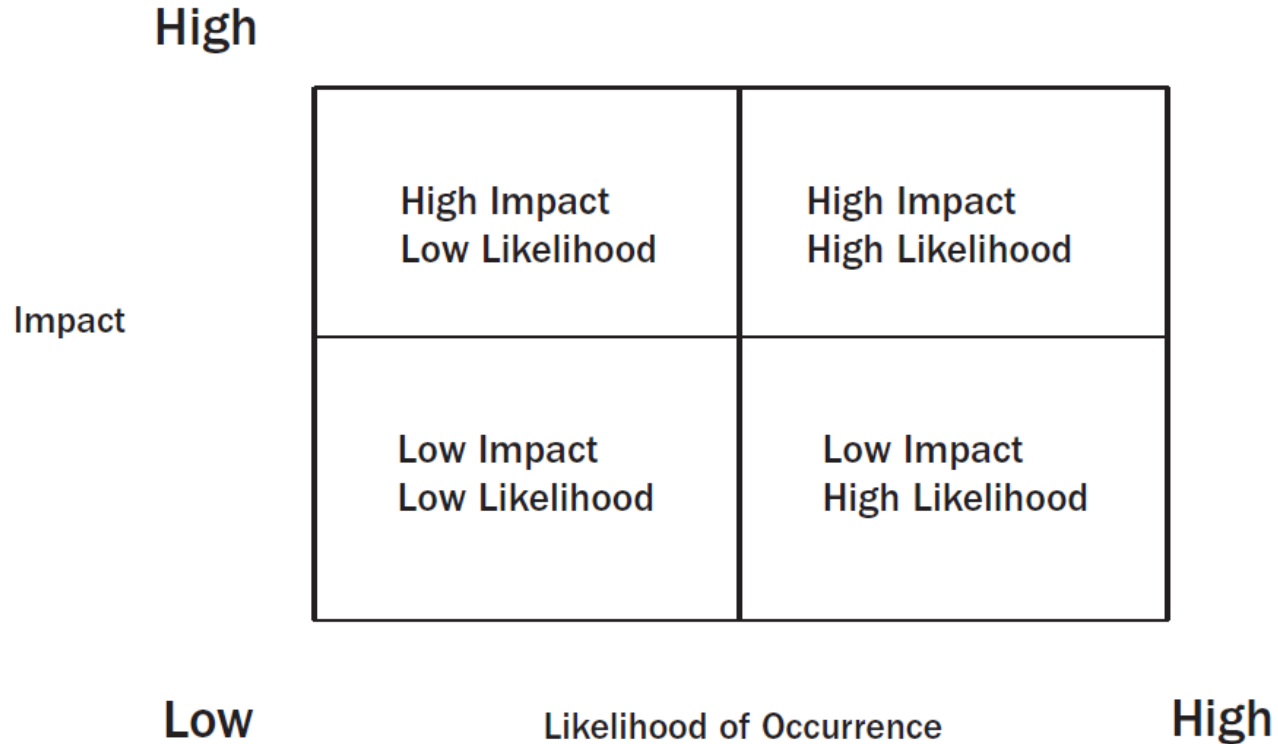
- Helpful to put risk into buckets to assess “what’s at risk, where?”
 - = Useful in communicating risk priorities and response to Board, others
- Categories vary, but often include:



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

Risk Map



Risk Map

RISK FACTOR PRIORITIZATION

CALCULATED AS:

POTENTIAL **SEVERITY** OF HARM
(THE CONSEQUENCE – OR
DAMAGE)

X

LIKELIHOOD OF EVENT
OCCURRING

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"> • <i>Segment <u>Commitment</u></i> • <i>Reported to Segment Leadership</i> • <i>Close monitoring of risk action plan</i> 	<p>9 Red (Level V)</p> <ul style="list-style-type: none"> • <i><u>Commitment</u></i> • <i>Reported to Audit Committee</i> • <i>Reported to Segment Leadership</i> • <i>Close monitoring of risk action plan</i>
			<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"> • <i>Segment <u>Commitment</u></i> • <i>Reported to Segment Leadership</i> • <i>Close monitoring of risk action plan</i>
			<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>
			<p>Low</p> <p><i>(Consistently within tolerable variance in key metric improvement or target)</i></p>	<p>Moderate</p> <p><i>(Sometimes within tolerable variance in key metric improvement or target)</i></p>	<p>High</p> <p><i>(Mostly outside of tolerable variance in key metric improvement or target)</i></p>

Example: Impact Scale

Illustrative Impact Scale

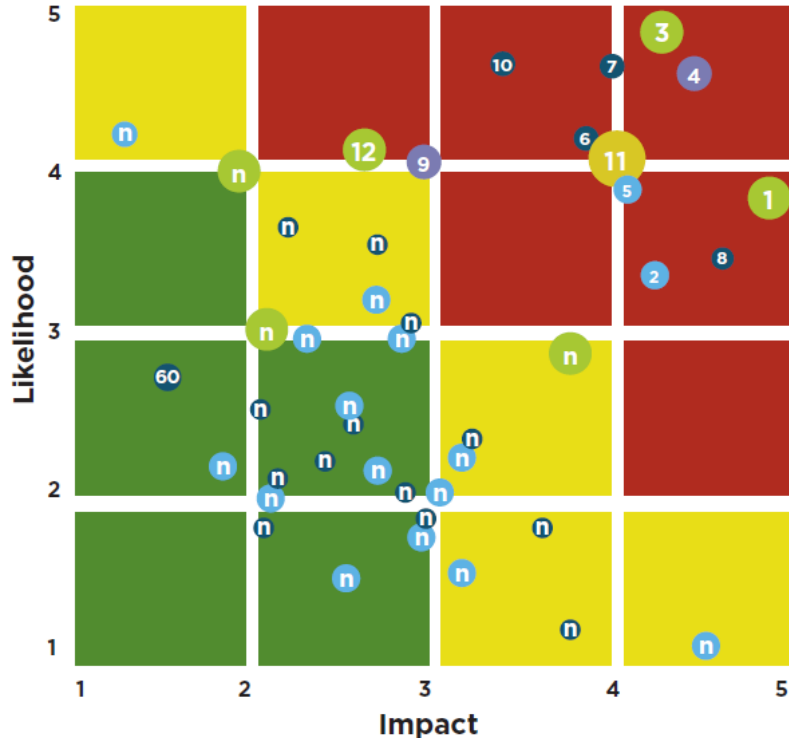
Rating	Descriptor	Definition
5	Extreme	<ul style="list-style-type: none"> Financial loss of \$X million or more³ International long-term negative media coverage; game-changing loss of market share Significant prosecution and fines, litigation including class actions, incarceration of leadership Significant injuries or fatalities to employees or third parties, such as customers or vendors Multiple senior leaders leave
4	Major	<ul style="list-style-type: none"> Financial loss of \$X million up to \$X million National long-term negative media coverage; significant loss of market share Report to regulator requiring major project for corrective action Limited in-patient care required for employees or third parties, such as customers or vendors Some senior managers leave, high turnover of experienced staff, not perceived as employer of choice
3	Moderate	<ul style="list-style-type: none"> Financial loss of \$X million up to \$X million National short-term negative media coverage Report of breach to regulator with immediate correction to be implemented Out-patient medical treatment required for employees or third parties, such as customers or vendors Widespread staff morale problems and high turnover
2	Minor	<ul style="list-style-type: none"> Financial loss of \$X million up to \$X million Local reputational damage Reportable incident to regulator, no follow up No or minor injuries to employees or third parties, such as customers or vendors General staff morale problems and increase in turnover
1	Incidental	<ul style="list-style-type: none"> Financial loss up to \$X million Local media attention quickly remedied Not reportable to regulator No injuries to employees or third parties, such as customers or vendors Isolated staff dissatisfaction

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

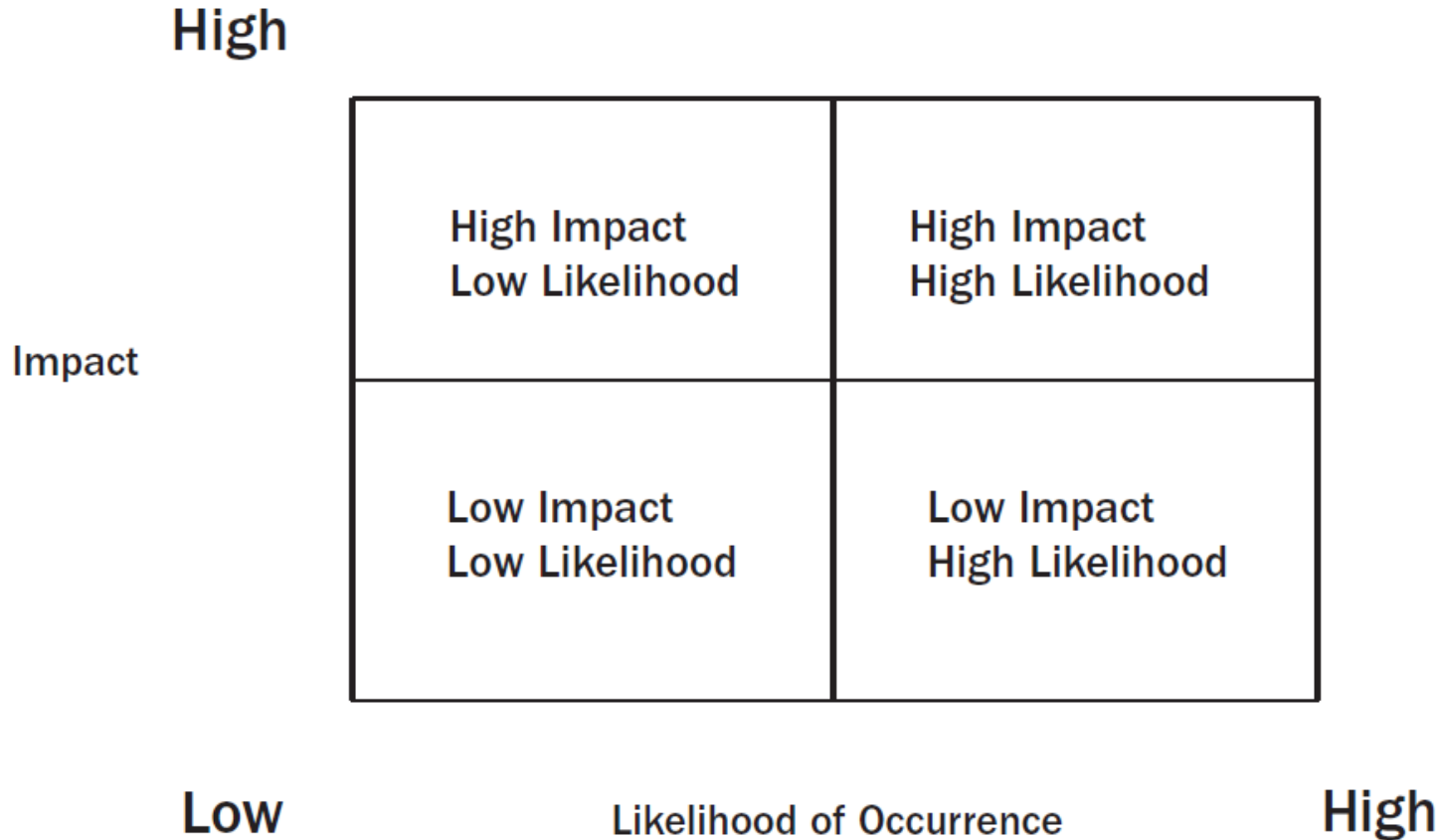
Dots represent risk #1 - #n

Dot size reflects speed of onset:

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

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

Methods of Handling Risk



Methods of Handling Risk

- **Risk Control**

- Avoidance
- Loss control
- Control Risk (Loss prevention) refers to activities to reduce the frequency of losses
- Manage or Transfer Risk (Loss reduction) refers to activities to reduce the severity of losses

- **Risk Financing**

- Retention
 - An individual or firm retains all or part of a loss
 - Loss retention may be active or passive
- Noninsurance transfers
 - A risk may be transferred to another party through contracts, hedging, or incorporation
- Insurance

Question?