CSCP CERTIFIED SUPPLY CHAIN PROFESSIONAL

# MODULE 7: SUPPLY CHAIN RISK

## SECTION A: RISK MANAGEMENT AND SUPPLY CHAIN RISKS

APICS

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# Section A Introduction

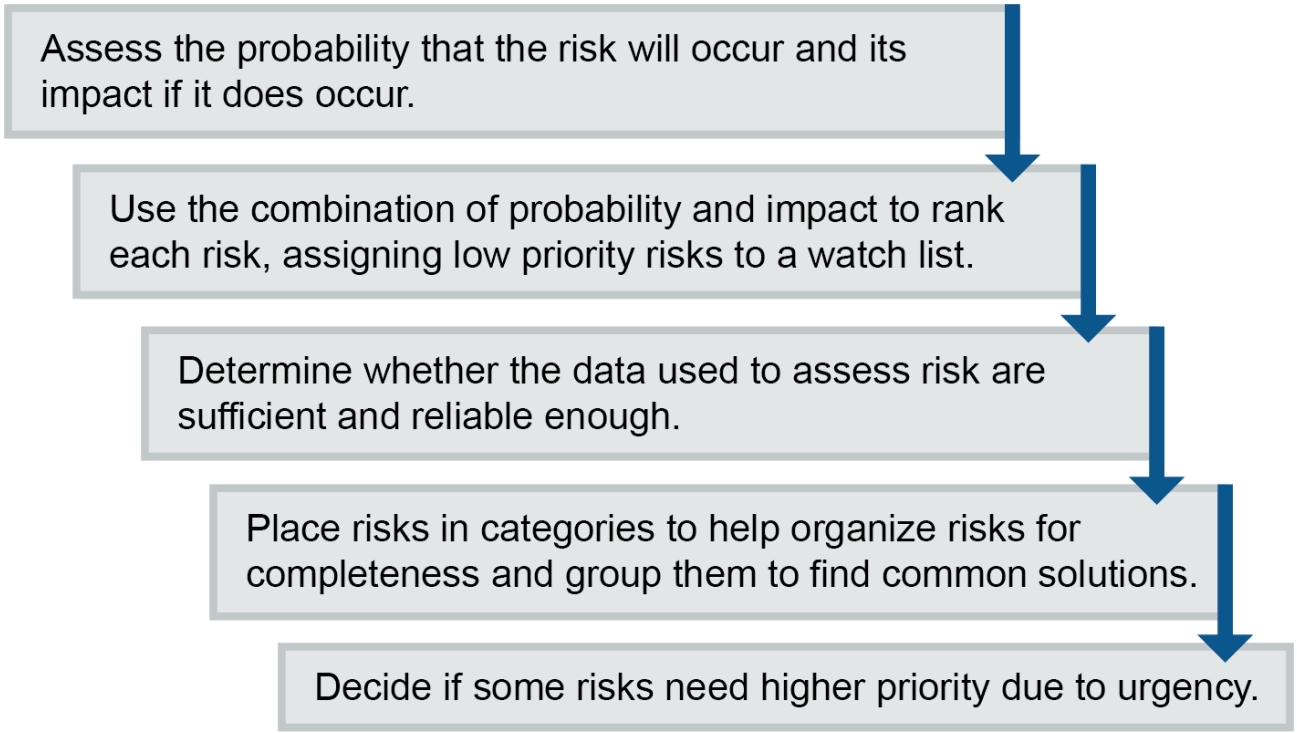
## Section A Key Processes:

- Manage supply chain risk.
  - Identify risks.

## Section A Topics:

- Risk Management
- Risk Identification and Supply Chain Risks

# Qualitative Risk Management Steps



# Quantitative Risk Management Steps

Quantify each risk's probability and monetary impact using estimation techniques and probability distributions (i.e., statistical curves showing the range of possible results).

Multiply each risk's probability times its monetary impact to find its expected monetary value (EMV). This is the potential monetary loss (or gain) weighted by its probability.

Sum the EMVs of all significant threats and opportunities to assess whether the business process or project is worth doing in the proposed manner.

Perform simulation or scenario analysis or other modeling to better understand the forces affecting the system.

# Supply Chain Risk Management

The systematic identification, assessment, and quantification of potential supply chain disruptions with the objective to control exposure to risk or reduce its negative impact on supply chain performance.
  – APICS Supply Chain Council

- Known versus unknown risks
- Risk management attitude
  - Risk appetite
  - Risk tolerance
  - Risk threshold
- Risk management plan

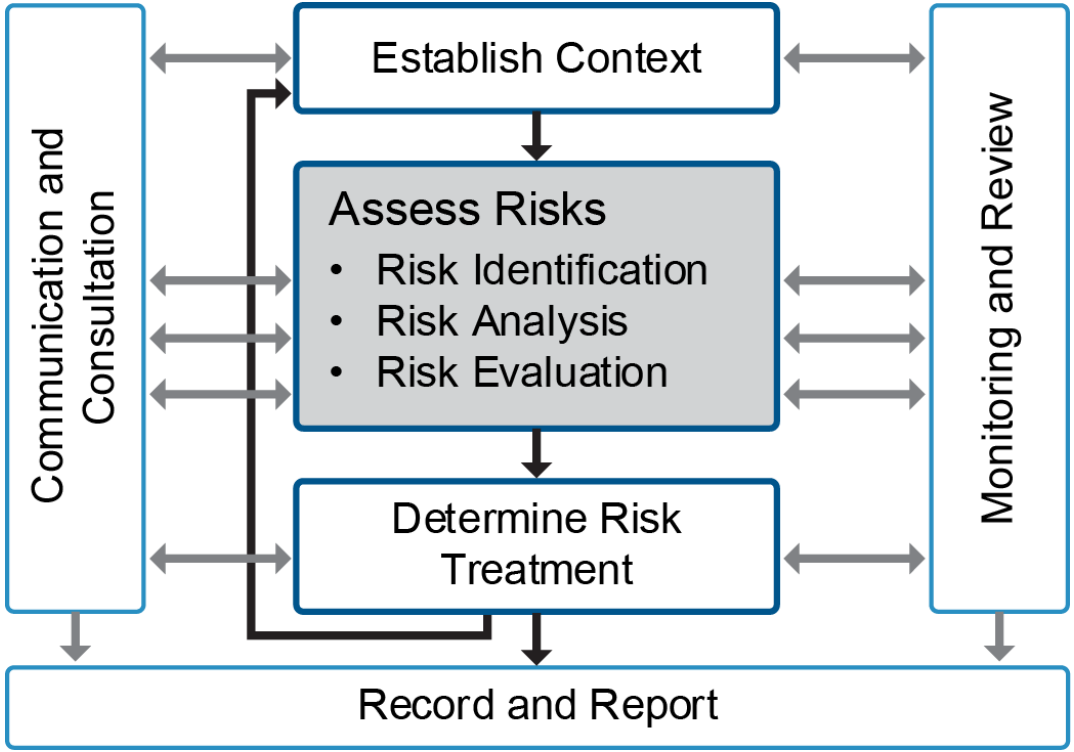
# Risk Management Frameworks

**COSO ERM Integrating with Strategy**

- Internal environment
- Objective setting
- Event identification
- Risk assessment
- Risk response
- Control activities
- Information and communication
- Monitoring

**Governance, Risk, and Compliance (GRC)**

# ISO 31000 Process Framework



# Additional ISO Supporting Standards

## ISO 31010

- More emphasis on risk analysis
- How to monitor, review, and apply risk assessments
- Technique selection

## ISO Guide 73:2009

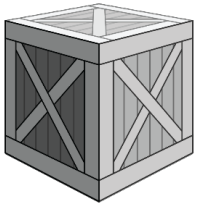
- Glossary of risk management vocabulary
- Provides a way to discuss risks using common terms and definitions

# Risk Identification and Supply Chain Risks

## Recognition and Identification

| | |
|---|---|
| Identification | • Brainstorming possible risks<br>• Cause, event, impact, effect |
| Definition | • Time horizon and scope |
| Risk register | • Risk, causes, triggers, responses, and ownership |

## Risk of Loss



Loss of goods, reputation, or money (fraud, corruption, bribery, abduction)

Loss of intellectual property (IP risk differs by country)

Losses from lawsuits

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# SECTION B:
# RISK ANALYSIS AND RESPONSE

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# Section B Introduction

## Section B Key Processes:

- Assess impact, timing, or probability of risks.
- Determine response to mitigate risks.
  - Eliminate avoidable risks.
  - Accept unavoidable risks.
  - Perform contingency planning to minimize impact.
- Execute and evaluate risk response.

## Section B Topics:

- Risk Analysis
- Risk Responses, Action Plans, and Business Continuity

# Internal and External Supply Chain Risks

| Internal Risks | External Risks |
|---|---|
| ▪ Poor quality<br>▪ Unreliable suppliers or shortages<br>▪ Equipment issues or needs<br>▪ Technology incompatibility, disruptions<br>▪ Poor forecasting<br>▪ SKU proliferation<br>▪ System “nervousness”<br>▪ Cross-cultural communication<br>▪ Service failures<br>▪ Compliance<br>▪ Labor relations, slowdowns, or strikes<br>▪ Training, turnover, or morale | ▪ Labor shortages<br>▪ Political instability<br>▪ Transportation delays<br>▪ Financial, currency<br>▪ Natural disasters, wars, or terrorism<br>▪ Poor infrastructure<br>▪ Demand variability (economy, competitor actions, etc.)<br>▪ Legal/regulatory<br>▪ Taxation<br>▪ Customs<br>▪ Customer or consumer pressures |

# Categories of Risk Levels

| | | Impact | | | | |
|---|---|---|---|---|---|---|
| | | Insignificant | Minor | Moderate | Major | Extreme |
| **Probability** | | **5%** | **10%** | **20%** | **40%** | **80%** |
| **Almost certain** | **90%** | 5% | 9% | **18%** | **36%** | **72%** |
| **Likely** | **70%** | 4% | 7% | 14% | **28%** | **56%** |
| **Possible** | **50%** | 3% | 5% | 10% | **20%** | **40%** |
| **Unlikely** | **30%** | 2% | 3% | 6% | 12% | **24%** |
| **Rare** | **10%** | 1% | 1% | 2% | 4% | 8% |

# Expected Monetary Value (EMV)

- Net impact: If there is a response cost, the net monetary impact is found before multiplying by the probability.
- EMV = Probability × Monetary Impact

# Risk Responses, Action Plans, Business Continuity

## Basic Risk Responses

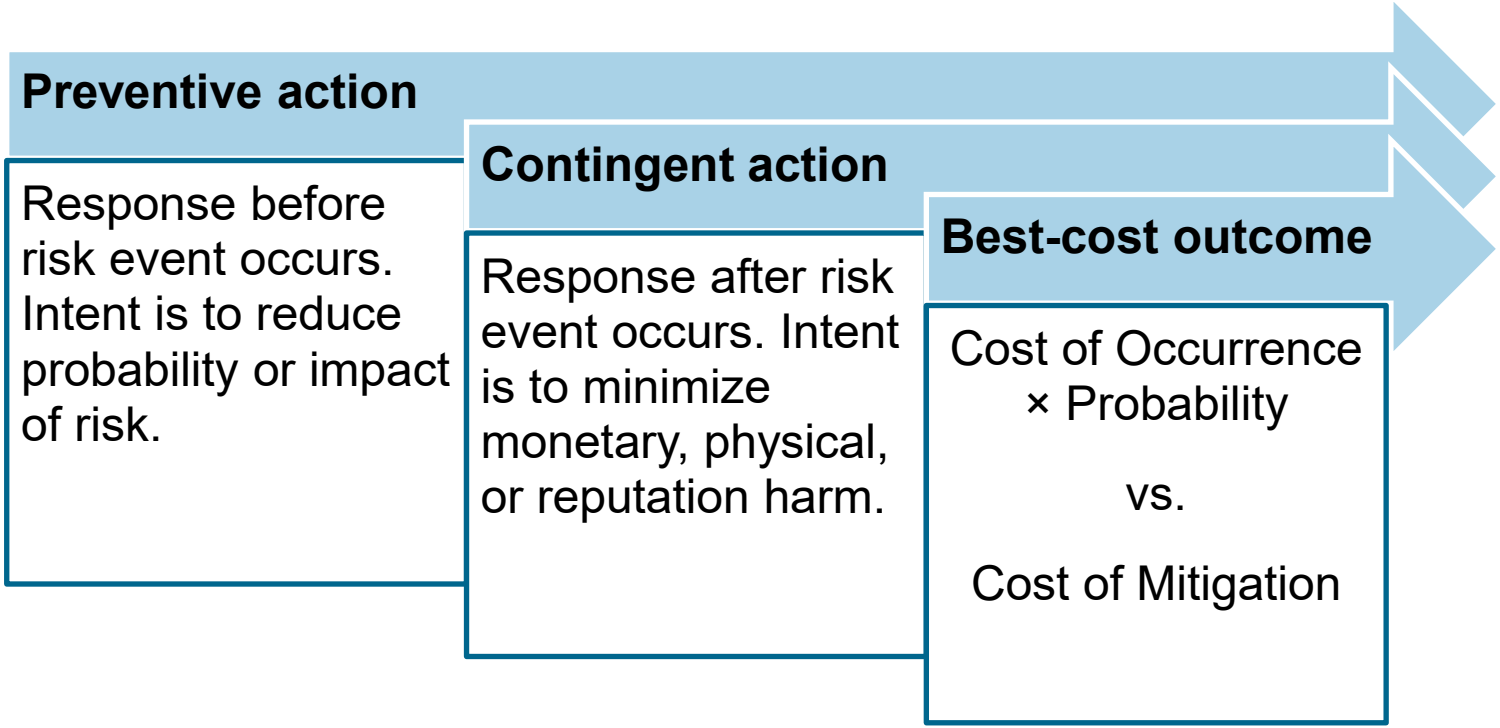
| | |
|---|---|
| Accept | • Take no action or unable to form cost-effective plan |
| Avoid | • Changing a plan to eliminate risk or its impact |
| Transfer | • Insurance or contractual transfer to SC partner |
| Mitigate | • Preventive measures to reduce probability or impact of risks |

# Risk Response Plan

| Risk ID | Valid until | Name | Description | Prob. (1 = low, 5 = high) | Magnitude (1 = low, 5 = high) | Priority (max = 25) |
|---|---|---|---|---|---|---|
| 6.1.8 | 12/Y1 | Loss of sole-source supplier | Part 5-323 sole-sourced | 2 x | 5 = | 10 |

| Risk ID | Root Cause | Preventive Action Plan | Contingency Plan | Responsible/ Status | Red Flags |
|---|---|---|---|---|---|
| 6.1.8 | Specialized patent. | Increase safety stock to 3-month supply. | Send supplier plans and personnel to firms with compatible equipment. | Assigned to: H. Hernandez. Safety stock ordered. | Weak supplier financials |

# Risk Responses



# Preventive and Contingent Action Plans

- Strategic supply chain risks
- Supply risks
- Demand risks
- Process risks
- Environmental risks
- Hazard risks
- Financial risks
- Malfeasance risks
- Litigation risks

| Supply Risk | Preventive | Contingent |
|---|---|---|
| Availability | Capacity audit | RFP finalists |
| Pricing | Due diligence | Negotiate |
| Quality | Penalty clause | Probation |
| Supplier lead time | Safety stock | Safety lead time |
| Transportation lead time | 3PLs | Benchmark |
| Customs | Freight forwarder | Government contacts |
| Labor | Diversify plants | Prepare alternatives |

# Risk Management Best Practices

| Best Practices: Coordinated Risk Management | |
|---|---|
| Program coordination with partners | Ensure functional areas and SC partners cooperate to manage risks holistically; make a risk management coordination committee |
| Sourcing risk | Multiple sources, strategic supplier agreements, partnerships |
| Crisis communications | Creating joint contingency plans |
| **Best Practices: Supply Chain Designed to Manage Risk** | |
| SC business rules | Business rules (e.g., customer or supplier priority, production routing, transportation routing, etc.) to minimize SC risk |
| SC information | Information sharing internally and with partners; robust IT |
| SC network | Designing node locations, transportation routes, etc. |

Source: Supply Chain Risk Management Team, Supply Chain Council, Inc., 2009.