

Introduction to Supply Chain Risk Management

Introduction to Supply Chain Risk Management (SCRM)

Designed as a quick-reference guide for students, professionals, and anyone new to the field.

1. What Is Supply Chain Risk Management?

Element	Definition
Supply Chain	Network of organizations, people, activities, information, and resources that move a product or service from supplier to end-customer.
Risk	The possibility that an event will occur that adversely affects the achievement of supply-chain objectives (cost, service level, quality, compliance, etc.).
SCRM	The systematic process of identifying, assessing, mitigating, monitoring, and communicating risks across the entire supply chain.

Goal: Preserve continuity, protect value, and enhance resilience while balancing cost and performance.

2. Why SCRM Matters Today

Driver	Impact on Risk Profile
Globalization	Longer, more complex networks → exposure to geopolitical, regulatory, and transportation disruptions.
Digitalization	Cyber-attacks, data breaches, and system failures become critical supply-chain threats.
Demand Volatility	Rapid shifts (e.g., fashion, tech) increase inventory and capacity risk.
Regulatory Pressure	Sustainability, labor, and trade compliance create legal and reputational risks.
Natural Disasters & Climate Change	Higher frequency of extreme events that can shut down facilities or transport routes.
COVID-19 & Pandemics	Highlighted the need for contingency planning and flexible sourcing.

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3. Core Components of an SCRM Framework Management

1. Risk Identification

- **Sources:** Supplier failure, transportation delays, demand spikes, natural events, cyber incidents, regulatory changes.
- **Tools:**
 - *Supplier questionnaires & audits*
 - *Process mapping (value stream, flowcharts)*
 - *Brainstorming workshops (SWOT, HAZOP)*
 - *External data feeds (weather, political risk indexes)*

2. Risk Assessment (Analysis & Prioritization)

- **Qualitative:** Heatmaps, risk matrices (likelihood × impact).
- **Quantitative:**
 - *Probability distributions* (e.g., Poisson for demand spikes)
 - *Monte Carlo simulation* for total cost of disruption
 - *Expected monetary value (EMV) = Probability × Impact*
- **Output:** Ranked list of “critical risks” that require mitigation.

3. Risk Mitigation (Response Planning)

- **Avoidance:** Remove the risky activity (e.g., drop a single-source supplier).
- **Reduction:** Strengthen controls (e.g., dual-sourcing, safety stock, buffer capacity).
- **Transfer:** Outsource risk (e.g., insurance, third-party logistics contracts).
- **Acceptance:** Tolerate low-impact, low-probability risks with monitoring.

4. Risk Monitoring & Reporting

- **KPIs & KRIs** (Key Risk Indicators) – e.g., supplier on-time performance, lead-time variance, cyber-incident count.
- **Dashboards** with real-time alerts (IoT sensors, ERP integration).
- **Periodic reviews** (quarterly risk committee, annual audit).

5. Continuous Improvement

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- Capture lessons learned after disruptions.
- Update risk registers, scenarios, and mitigation tactics.
- Incorporate emerging threats (e.g., AI-driven fraud).

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4. Common Categories of Supply Chain Risks

| Category | Typical Examples | Typical Controls |