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# Supply Chain Risk Management

## INTRODUCTION

- The Supply Chains have become the multi-structural dynamic systems vulnerable to disruptions with a significant impact on entities business and performance. In modern times, supply chain risk management is used to identify the potential sources of risks, their possible influences and propagation through the supply chain as well as to plan and implement appropriate actions in order to remove, reduce or mitigate supply chain disruptions.
- Managing risk has become a crucial challenge for supply chain managers due to growing global competition, rising cost pressures, increasing customer expectations, geopolitics and ever-increasing complexity.
- In supply chain design, planning and optimization, we need to take uncertainty and risk into account as we develop decision-oriented solutions. In order to consider possible impact of operational risks and disruptive risks, use of dynamic simulation methods and software is almost mandatory.

This training course on supply chain risk management will highlight:

- How to develop analytical and management skills to analyze bullwhip and ripple effects
- Need for technical skills on batching, ordering rules and events
- Performing variation and comparison experiments in AnyLogistix dynamic simulation software
- Major trade-offs in supply chain risk management
- Planning and avoidance of major supply chain disruptions by identifying risk and recovery

## OBJECTIVES

At the end of this training course, delegates will learn to:

- Identify the dynamic structure of supply chain
- Use AnyLogistix software
- Incorporate dynamic simulation modeling in risk identification
- Plan for uncertainty and reduce impact of disturbances in supply chain
- Recover fast from the unwanted events
- Incorporate geopolitics into supply chain optimization

## TRAINING METHODOLOGY

- This Supply Chain Risk Management training course uses a hands-on approach. The delegates will be provided with a personal learning edition of the anyLogistix software and will be walked through the examples of using the software for supply chain risk management, optimization and recovery planning.
- Delegates will use AnyLogic and anyLogistix software to prepare dynamic simulation models from which they will identify the possible causes of disruptions and use modern techniques of risk assessments, and prepare measures to remove reduce or repair negative influences.
- The delegates will create simulation models based on the actual examples from the industry, either form the sources available from AnyLogic or anyLogistix models or the available sources within their own industry.

## ORGANISATIONAL IMPACT

- Complexity management and system modelling is now a basis for handling uncertainty in supply chains. A particular feature of risk management in supply chains (unlike in technical systems) is that people do not strive for a 100% guarantee of the result: they consciously tend to take risks. Therefore, organizations need people that can provide the system with resiliency, flexibility in sourcing, supply chain visibility, adaptability and resilience, prepared to mitigate the emerging risks and recover from disturbances in the supply chain.

From this training course, organizations can expect to benefit by their employees learning:

- The use of dynamic simulation tools for supply chain risk identification and influence measurement
- Dynamic control of the actual risks and mitigation measures for their supply chains
- Understand redundancy, robustness, stability, flexibility, resilience
- Preparing a performance and recovery analysis framework
- How to identify ripple and bullwhip effects in virtual world through simulations

## PERSONAL IMPACT

Delegates will learn how to use the full strength of modern technologies and dynamic simulation tools to create efficient, optimized, flexible, resilient and effective supply chain; specifically, delegates will acquire:

- The structured knowledge of supply chain and logistics dynamics and risk identification
- Knowledge on risks in the supply chains of modern age, like IT risks
- Simulation techniques, advantages and limitations
- Step-by-step process of supply chain risk simulation and recovery measures prioritization
- The way to tackle the risks trough simulated experiments
- Use of anyLogistix and AnyLogic dynamic simulation software

## WHO SHOULD ATTEND?

- This training course on Supply Chain Risk Management has been designed for any professionals within supply chain and logistics, production, business analytics, service provision etc. The dynamic simulation techniques are applicable for multiple industries, and the range of application is ever-expanding as the data becomes more and more accessible, and therefore professionals from many disciplines can attend this training course.

This training course is suitable to a wide range of professionals from supply chain and logistics industry but will greatly benefit:

- Risk Managers
- Supply Chain Managers
- Operation Managers
- Project Managers
- Finance Managers
- IT Managers
- Plant Managers
- Production Planners
- HR Managers
- Logistics Managers
- Business Improvement Specialists
- Consultants

## Course Outline

### Structural Dynamics and Supply Chains

- Supply chain structure dynamics control problem
- Dynamic model of supply chain structural dynamics control processes
- Uncertainty and risks
- Introduction to anyLogic dynamic simulation modelling software

### Risk Management in the Supply Chain

- Framework of risk control
- Operational risks
- Disruption risks
- Bullwhip effect

## Supply Chain Resilience

- Ripple effect
- Mitigation strategies for ripple effect
- Supply chain and operations disruption management framework
- Supply chain resilience framework
- Modeling ripple effect and its mitigation with anyLogistix
- Models and algorithms of supply chain reconfiguration

## Structural Dynamic Methods in Supply Chain Risk Management

- Linear and mixed-integer programming optimization
- Stochastic programming fuzzy logic and robust optimization
- Pricing and game theory application in supply chain risk management
- Simulation: Process, agent and dynamic

## Supply Chain 4.0 and IT Risks for Supply Chain Management

- Industry 4.0 as a new driver for supply chain structural dynamics
- IT risks and cyber risks: Real threats for all supply chains
- Managing IT and cyber risks in supply chains: A practical framework
- Adaptive supply chain management framework
- Flexible supply chain structural configuration

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