

Supply Chain Risk Management

SYLLABUS 2012

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1. Introduction

According to Aberdeen Research, more than 80% of supply management executives reported that their companies experienced supply disruptions within the past 24 months and these supply glitches negatively impacted their companies' customer relations, earnings, time to-market cycles, sales, and overall brand perceptions. They also found that less than half of enterprises have established metrics and procedures for assessing and managing supply risks. Many procurement organizations lack sufficient market intelligence, skills, and information systems to effectively predict and mitigate supply risks.

In response to this, best practice companies are moving to adapt and deploy a variety of the formal supply chain risk mapping tools emerging in the marketplace.

In this course, we introduce the student to the state of the art tools in use to map and manage supply chain risk.

On Day One, we review the basic concepts of business and supply chain risks. We also examine best practice companies that have become more Resilient Enterprises through aggressive adoption of formal corporate supply chain risk management programs, such as Shell, Dow Chemical and Boeing.

On Day Two, we explore the supply chain dimensions of extreme events such as a hurricane, terror attack or a pandemic. We assess and analyze the risk presented from environmental factors and develop ways to reduce the impact of these major events.

On Day Three, we provide a full day course module on supply chain risk mapping tools and techniques. We focus on the Risk Simulator and analytics of DRK Research, which has created a framework and process to better understand the drivers that create supply disruptions and mitigate the risk more proactively. This framework and process consists of a set of **disruption predictors** developed through several years of research and experience with global supply chains. The process and framework, shown in **Figure 1**,

has been used by Risk Management teams and commodity managers to aid in identifying, predicting and managing risk on a timely basis or to be alerted to possible risk factors that require their attention.

Structuring the Relationships of Supply Chain Risk

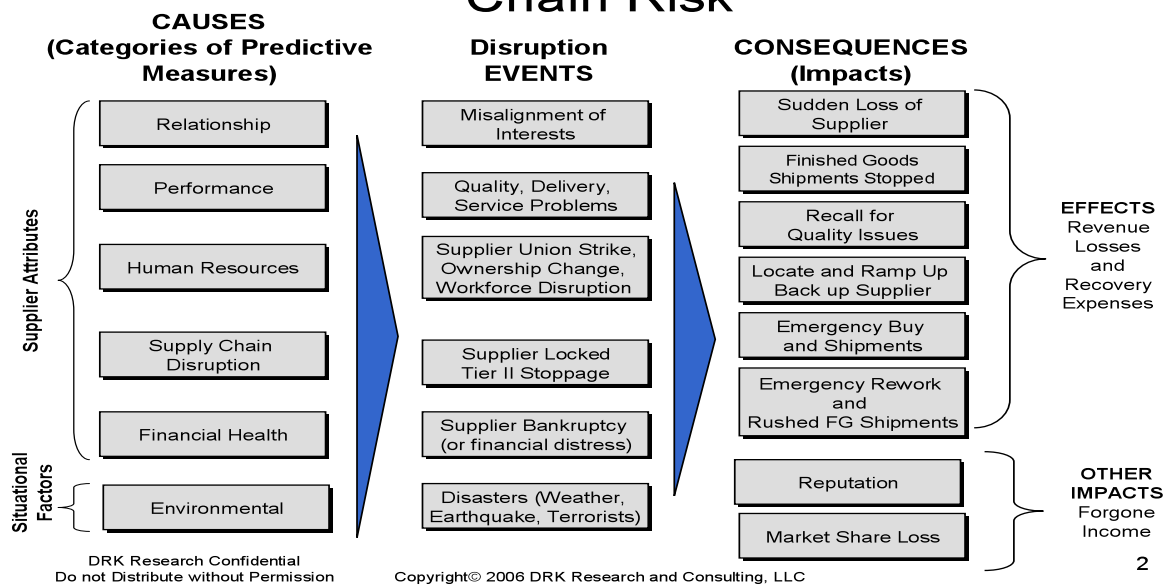


Figure 1. The DRK Supply Chain Risk Model

As stated previously, this ability to systematically approach & better manage global supply chain risk has led to the concept of *The Resilient Enterprise*- an increasingly important strategic and operational concept in a Post-911 world characterized by increasing risk. Borrowing a term from the material sciences, Yossi Sheffi (MIT, 2005) defines the Resilient Enterprise as one that has “the ability to recover its original shape following a deformation and the measure of its resilience is its ability to, and the speed at which they can, return to their normal performance level”. *Resiliency in the modern global enterprise is largely the result of Supply Chain Risk Management (SCRM) capability*. This is the capability to orchestrate end-to- end flows of material goods and services from the original source of demand, the customer- all the way back to the original supplier in a sustainable, robust fashion despite all risks.

This course explores methods to build enterprise resilience from multiple perspectives:

-from the perspective of the supply chain planner who has concerns about how to assess strategic & operational risks

-from the perspective of the supply chain operations director who must help the enterprise adapt to day to day uncertainties in demand & supply....

-from the perspective of supply chain customers who are concerned about how to ensure day to day business continuity ; and also how to cope with low probability but high impact events such as a terrorist attack or earthquake.

The benefits of Supply Chain Risk Management to the enterprise have been improvements in corporate revenue stability, asset utilization and strategic agility in the face of an escalating global risk environment. Deep recession, oil price volatility and the sheer complexities of managing large-scale world-wide supply chains are converging to deeply impact companies of all sizes.

II. Objectives

This course has the following **learning objectives**:

1. To provide the student with exposure to the concept of Supply Chain Risk Management as an emerging business discipline of crucial importance.
2. To demonstrate how the student can use systematic approaches, such as the Supply Chain Council Operations Reference Model (SCOR) to assess overall supply chain risks.
3. To enable the student to conduct more detailed supplier risk appraisals using the DRK Supply Chain Risk Framework & associated Risk Simulator Software to conduct a corporate supplier risk / resilience audit.
4. To provide a hands-on role-play exercise for the student on managing supply chain extreme events in support of key learning objectives.

5. To reflect on the spectrum of concepts and practices and determine critical lessons learned in regards to the nature and management of supply chain risk.

III. Required Materials

A.Required Text:

Handfield, Robert and McCormack, Kevin “Supply Chain Risk Management” Auerbach Publication (Taylor & Francis Group), 2008

B. Required Software License :

Individual student licenses for **RISK Simulator**, a web based program will be required.

Please bring a wireless-connected laptop with you to class! (

C. Additional Required Readings:

The Supply Chain Council Risk Research Team /Edited by Dr. Kevin McCormack & Taylor Wilkerson “Managing Risk in Your Organization with the SCOR Methodology” June, 2008, SC Council

Supplier Network Risk Management in Turbulent Environments, Kevin McCormack, DRK Research, kmccormack@drkresearch.org. Peter Trkman, University of Ljubljana, Faculty of Economics, peter.trkman@ef.uni-lj.si (Class Handout)

IV. Session Plan

Day One: Supply Chain Risk Management: Concepts & Best Practices

Morning Part 1

Lecture - Introduction To Course

Lecture - Supply Chain Risk Management Concepts, principles and frameworks

Break out - Responding To Disruption: The Caterpillar Disaster

Groups will break out and answer Case Questions and present their answers:

Read:

“Caterpillar Plant Damaged”, Bloomberg, Feb 6, 2008. (Class handout)

Morning Part 2

Lecture - Customer of Choice Theory

Break out - Relationships Matter: The Ford Case

Groups will break out and answer Case Questions and present their answers:

Lecture - Using The SCOR Reference Model To Manage Risk: Best Practices and Value at Risk

Read:

Mirror, Mirror, by Carlos Gordon, Redactive Media Group 2005-06.

Are you a customer of choice?, by Tim Minahan, posted June 13th, 2007.

Ford Gets Cut Off by a Top Supplier As Detroit Squeezes Parts Makers
www.wsj.com, October 18, 2006; Page A3 (Class handout)

The Supply Chain Council Risk Research Team /Edited by Dr. Kevin McCormack & Taylor Wilkerson “Managing Risk in Your Organization with the SCOR Methodology” June, 2008, SC Council

Day 1 Afternoon

Lecture – Market Turbulence and Risk

Lecture - Environmental Assessment – estimating likelihood and impact of high impact, low probability events.

Break out – Calculating Turbulence and VaR

Read:

DRK Environmental Assessment Method (Class Handout)

Supplier Network Risk Management in Turbulent Environments, Kevin McCormack, DRK Research, kmccormack@drkresearch.org. Peter Trkman, University of Ljubljana, Faculty of Economics, peter.trkman@ef.uni-lj.si (Class Handout)

Break out - Environmental Assessment Case:

Groups will break out and develop environmental risk assessments and present their results:

Read:

DRK Environmental Assessment Method Cases (Class Handout)

Day 2: Auditing Supply Chain Risks: The DRK Method

This will be a day long workshop on Supply Chain Risk Management Audit Principles/Practices using Risk Simulator Software led by Dr. Kevin McCormack, CEO & founder of DRK and Supply Chain Council Black Belt In Risk Management

Read:

1. Handfield & McCormack, pp 1-118

See Appendix for details of simulation workshop

Day 3: Auditing Supply Chain Risks: The DRK Method

The teams will report out and complete the written test.

IV. Grading

Final Exam- 50 points

An exam will be administered in class during the afternoon of our final session. It will cover the required readings, in class lectures & cases.

DRK Workshop Team Presentations- 30 points

Each team will be evaluated on the basis of content, presentation, analysis, conclusions & actionable recommendations

Class Participation-20 points

Level of Preparation, Participation/ & Contribution in classroom discussions and team exercises.

Appendix: DRK Workshop

Workshop Agenda

Using experiential learning approaches, real case studies and a **simulated supply chain environment**, this workshop will provide supply and procurement leaders and commodity managers an understanding of the fundamentals of supply risk management and the DRK Supply Risk Management model and approach.

As a result of completing this workshop, participants will be able to:

1. Understand the purpose and goals of supply risk management (SRM) within the context of their firm and supply network.
 - How and SRM based process view fits into the their mission and vision
 - SRM benefits to their firm

2. Develop a basic SRM strategy and plan for their organization and understand:
 - The supply chain network view (interactions, relationships, attributes, environment)
 - Your SRM strategy compared to the DRK model
 - SRM Program Management
 - Commodity classifications and organization
 - The importance of data quality, extraction and organization
 - Spend and impact analysis in the context of SRM
 - Supplier assessment, diagnoses and improvements.
 - Supply portfolio management – building the combined view
 - How to build a SRM measurement system
 - SRM “what if” modeling
 - Deployment methods, roles and responsibilities

3. Understand and articulate the impacts of success for an SRM program

Workshop Details

Duration 1 Day - 8 hours

Resources Required

Three flipcharts, tables for all participants, LCD monitors with laptop connection, masking tap for hanging posters on the wall, four sets of multicolored markers. Active laptops and internet connections for at least 50% of the participants.

Instructor: Dr. Kevin McCormack,

Time: Day 1 - 8:00 am. – 5:00 p.m.

Time	Topic	How	Outcomes
8:00 AM – 8:30	Introductions, workshop overview and training procedures	Individual introductions and instructor review of workshop outcomes	Participants meet fellow participants, understand the experiences each brings, and understands the workshop goals and outcomes. Participants also organize into teams for the exercises.
8:30 – 10:15	The DRK Model – background, components, and strategies.	- lecturette on basic elements of DRK model and application	Participants will be able to ID components of the DRK model and their purpose.
10:15 – 10:30	Break		
10:30 – 12n	Assess the supply network	- each team will complete their part of the supply network risk assessment.	Completed assessment of the supply network
12n -1:00	Lunch		

Time	Topic	How	Outcomes

Time	Topic	How	Outcomes
1:00 – 2:15	Develop Reports and analyze the data	- each team will build their reports and analyze the data using the DRK model	Participants are able to explain how they used the DRK model components to describe a measure supply chain risk.
2:15 – 2:30	Break		Compile Results in Simulator
2:30 – 5:00	Diagnose the network and identify mitigation actions.	- breakout exercise diagnosing the results of the assessment and building mitigation action plans.	Participants are able to explain how they used the DRK model components to diagnose a supply chain network
Day 3 – 8:30 – 11 N	Report out and wrap up Written Test	- each team presents their results. - Q and A	Participants are able to explain how they used the DRK model components to diagnose a supply chain network obtain feedback
Day 3 – 12 N	Close and Adjourn	Participants complete workshop feedback assessment	Workshop feedback assessment

KEY PERSONNEL

Kevin McCormack, BS, MBA, DBA

Dr. McCormack is currently President of DRK Research, a global business analytics research network, a Professor at National Graduate School and a visiting professor at SKEMA Business School (France). He has taught at NC State University, University of Alabama, University of Maryland, Keller Graduate School and Campbell University. He has over 30 years of business leadership, engineering, teaching, research and consulting experience in the areas of information technology, operations management, and supply chain management. Some of his clients have been Chrysler, Daimler, Texas Instruments, USMC, USAF, Chevron-Phillips, Shell, Exxon-Mobil, Dow Chemical, Standard Charter Bank, Microsoft, Intel, several state governments, Wal-Mart, Campbell's Soup, General Mills, and PepsiCo.

Dr. McCormack is also a judge for the Manufacturer of the Year award for the state of Alabama, home of several international manufacturers' locations (Honda, Mercedes, Lockheed, BASF, Nucor, U.S. Steel, and Siemens Automotive) as well as dozens of defense and automotive suppliers. He has been a member of the Supply Chain Council, the Institute of Supply Management, APICS and several other associations focused on the supply chain.

Dr. McCormack has degrees in Chemistry, Engineering, an MBA and a DBA. He has also developed and delivered courses in Information Technology, Operations Management, and Supply Chain Management at the graduate and undergraduate level both in the U.S., China and Europe. He has published five books and over 100 articles in Quality Progress, Business Process Management Journal, Supply Chain Management, Benchmarking: A International Journal, Supply Chain Management Review and several others.