Risk-management in European Transport/
Logistical System involving both EU and non-EU Member State

Lecture 1

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Hazards Identification and Risk Assessments as Crucial Parts of Risk-Management for Supply Chains

I.N. Semenov: CEI - Summer School, Varna, 2 - 7 October, 2011,
Basic Sources

I.N. Semenov: CEI - Summer School, Varna, 2 - 7 October, 2011,


4. EC: REGULATION No 725/2004: The security of European Community shipping and of the citizens using it and of the environment in the face of threats of intentional unlawful acts such as acts of terrorism, acts of piracy or similar. Brussels, 2004


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<td>7.</td>
<td>IMO: <em>The safe transport of dangerous cargoes and related activities in port areas were approved as MSC.1/Circ.1216</em> by the Maritime Safety Committee at its eighty-second session, London, 2006.</td>
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Part 1

External and Internal Threats for Supply Chains
Maritime Supply Chains. Some facts

I. Passenger traffic

- More 340 ocean – going liners were operating around the world.
- 12 - 14 mln customers per year.
- Piraeus (Greece) is largest passenger port in Europe.
- The port handles 20 mln passenger per year.
II. Freight transport

- Maritime commercial freight included an estimated 15 million containers.
- More 100,000 merchant vessels;
- 6,500 ports and harbor facilities;
- Linking roughly 225 coastal nations, and island states.
- Caters to around 80 percent of total EU commercial freight.
- Registered more 230 million point-to-point movements across the world’s seas.

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Maritime Supply Chains. Some facts

III. Maritime trade

- Approximately 90 percent of European Union external trade

- Around 35 percent of trade between European Union countries - members is handled in the Black, the North, the Baltic and Mediterranean Seas.
Maritime Supply Chains. Some facts

2011 year statistic data:

- Average first-quarter of freight rate of $1,563 per TEU.
- Average second-quarter of freight rate decline to $1,531 per TEU.
- Average the first half year freight rate of $1,546 per TEU of 2011.
- Average first half freight rate was 4.4% higher year on year in consequence of bunker prices and other energy-related cost increases.

IV. Transport cost

- The price of a tonne of bunker fuel surged from around $480 in January to over $630 by June 2011.
Selected Risk Terms
Supply Chain Hazard versus Supply Chain Vulnerability

- **Hazard** – An act or phenomenon posing damage to Supply Chain.

- **Hazard characteristics:**
  - Difficult to forecast;
  - Uncontrollable.

- **Vulnerability (Exposed to Risk)**:
  - podatność na zagrożenie – A weakness in Supply Chain security procedures, design, implementation, or internal controls that could be exercised and result in a security break.

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Supply Chain Threat versus Supply Chain Risk

- **Risk** – The combination of the probability of an uncertain event and its consequences.
  - A positive consequence presents as *opportunity*;
  - A negative consequence poses as *threat*.

- **Risk elements** (opportunities, threats, hazard, vulnerability) are defined through modeling to provide a probable range for both cost evaluation and operating Supply Chain schedule.

- **Threat** is external/internal impact that is a source of danger to Supply Chain.

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Common Threats for Supply Chains
Common Threats: 1. Natural Threats

Natural Threats, including:
- Storms,
- Cyclone/Tornadoes,
- Icebergs,
- Pack ice,
- Waves,
- Fog,
- Streams,
- Tsunami.
Common Threats: 2. Human Threats / Human factor/

- Events that are either enabled by or caused by human beings, including:
  - unintentional acts (crewmember mistakes or errors);
  - deliberate actions (terrorist attacks, crime acts).

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Common Threats: 3. Technical Threats

Technical Threats:

- Long-term failure of equipment, corrosion, loss of strength.

Failure - a state of inability system to perform a normal function.

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<tr>
<th>Term</th>
<th>Definition</th>
<th>Classification</th>
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<tr>
<td>Accident into Supply Chain</td>
<td>An event that causes death, injury, environmental pollution or material damage.</td>
<td>• Slight</td>
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<td>• Serious</td>
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<td>• Fatal</td>
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<td>Incident into Supply Chain</td>
<td>An event that does not result in loss.</td>
<td>• Boolean</td>
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Safety
Definitions

1. **Safety** - Freedom from dangers consequences.
   
   *(Oxford Dictionary)*

2. **Safety** - Freedom from unacceptable risk for personal or property harm.
   
   *(Managing Ship Safety)*

3. **Safety** - Not losing money.
   
   *(Commercial statement)*
Safety as Supply Chain freedom from dangers is classified by the three aspects:

The first Aspect: Human safety.

- Human safety for a maritime transport focused to the crew and passengers.
- Human safety is the degree to which illness, injury, and death are prevented, detected, and properly reacted to.
The second Aspect: Environmental safety

- **Environmental safety** is the degree to which accidental damage to the environment are prevented, detected, and properly reacted.
The third Aspect: Property safety

**Property safety** is the degree to which accidental damage and destruction of property are prevented, detected, and properly reacted to.

This can include:

- property that is part of the municipal government (e.g. transport system),
- property that is owned stakeholders,
- property that is owned third party.
Supply Chain Security versus Supply Chain Safety

- **Security** is the degree of protection personal, passengers and crew against various threats.

- **Security** as a form of protection are personal and processes in Supply Chain.

- **Safety** - Supply Chain Freedom from unacceptable risk for personal harm.

- **The key difference between security and safety** is that security must take into account the actions of people attempting to cause destruction.

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Supply Chain Security versus Supply Chain Safety

- **System Security**
  
  Management: Set of management techniques that defines the system security requirements and ensures the planning, implementation, and accomplishments of system security tasks and activities.

- **System Security**
  
  Set of operating, technical, and organizational methods the guaranteeing security of transport system.

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Two conventional approaches to increasing safety
Take place two approaches to increasing safety:

1. **Proactive approach so-called “ex ante” type.**
   (Based on Conception of Preventive Action)

2. **Reactive approach so-called “ex post” type**
   (Based on Defence-in-depth Conception analyzing post accidents information).
### Aims of increasing safety:

1. **Supply Chain risk minimization** ⇒ *prevention means*  
   (Proactive approach)

2. **Number of accidents minimization** ⇒ *active safety methods*  
   (Proactive approach)

3. **Accidents effects minimization** ⇒ *passive safety methods*  
   (Reactive approach)

4. **Supply Chain accidents consequences minimization** ⇒ *evacuation and recovery plans, crisis management*  
   (Reactive approach)
Safety increasing
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General goal EU: Transport system improvement

Domestic market

Foreign market

Increase of consumer’s satisfaction

Increase of transport profitability

Particular Goals EU

The greening of surface transport

Supporting modal shift & decongesting corridors

Guarantying sustainable urban mobility

Strengthening accessibility & competitiveness

Increasing safety and security

Increase of consumer’s satisfaction

Increase of transport profitability

Particular Goals EU

The greening of surface transport

Supporting modal shift & decongesting corridors

Guarantying sustainable urban mobility

Strengthening accessibility & competitiveness

Increasing safety and security
Three initial assumptions for problem of safety increasing
Assumption 1.

- The European Union successfully develops integrated Supply Chain for free movement of people and the goods transportation at Business Environment.
Assumption 2.

Supply Chain is complexly constructed involving numerous threats, including:

- Natural Threats (heavy meteorological conditions),
- Human-factor (inexperience of crewmembers, cargo crime etc.),
- Technical Threats (transport infrastructure, vessels).
Assumption 3.

- Supply Chains has been seized by organised crime groups, who see the increasing value of goods moved across the European Union as “opportunities for easy robbing, grabbing, pickings, stealing etc”.

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The total process of identifying, controlling, and mitigating Supply Chains risks.

It includes:

- Risk Assessment Methods;
- Methods of Incident Management;
- Crime Prevention Techniques.
Risk Assessment

The process of:

- identifying the risks;
- determining the probability of occurrence,
- forecasting the resulting impact.

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Incident Management

- The process of managing unexpected operational events (returning seaport, robbing, grabbing) as quickly as possible.

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