How to Conduct a Supply Chain Business Impact Analysis

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Today

• What is our objective?
• What is the desired output?
• Where do we begin?
• What’s the system we need to achieve the desired output?
What is our objective?

- Create a system to balance business value against potential exposure
- Build a business case for risk investment
What is our desired output? (macroview)

Revenue Stream: The Ultimate Widget

Impact

Revenue Stream: The Ultimate Widget

Effort

Low

High

High

Low

What is our desired output? (microview)

Revenue Stream: The Ultimate Widget

Component | Component Name | Weight | Unit Count (U) | Safety Stock | Shelf Stock Control | Lead Time (Days) | Supplier | Annual Qty | Quarter 4 Month Supply |
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
A001 | ATI Router | 10 | 500 | 10 | 50 | 15 | 3 | 10,000 | 4,000 |
A002 | Insta-pack | 20 | 100 | 20 | 10 | 20 | 5 | 2,000 | 800 |
A003 | Helium | 30 | 50 | 50 | 25 | 30 | 10 | 500 | 200 |
A004 | Voice & Data Communications Contracts | 40 | 25 | 25 | 12.5 | 40 | 20 | 1,000 | 400 |
A005 | Employee files | 50 | 15 | 15 | 7.5 | 50 | 15 | 500 | 200 |
A006 | Crimping hand tools, cutters, irons | 60 | 10 | 10 | 5 | 60 | 10 | 100 | 40 |
A007 | Quad Pack & Place | 70 | 5 | 5 | 2.5 | 70 | 5 | 50 | 20 |
A008 | Sun/Oracle Environment (MRP) | 80 | 2 | 2 | 1 | 80 | 2 | 20 | 8 |
A009 | Testers, EM, Assembly, Engineers, Sr. Bus Dev | 90 | 1 | 1 | 0.5 | 90 | 1 | 10 | 1 |
A010 | Facility | 100 | 0.5 | 0.5 | 0.25 | 100 | 0.5 | 5 | 0.5 |
A011 | Cleared Personnel | 110 | 0.25 | 0.25 | 0.125 | 110 | 0.25 | 2.5 | 0.25 |
A012 | Event Processing | 120 | 0.125 | 0.125 | 0.0625 | 120 | 0.125 | 1.25 | 0.125 |
A013 | High | 130 | 0.0625 | 0.0625 | 0.03125 | 130 | 0.0625 | 0.625 | 0.0625 |
A014 | Low | 140 | 0 | 0 | 0 | 140 | 0 | 0 | 0 |
A015 | Cleared Personnel | 150 | 0.03125 | 0.03125 | 0.015625 | 150 | 0.03125 | 0.3125 | 0.03125 |
A016 | High | 160 | 0.015625 | 0.015625 | 0.0078125 | 160 | 0.015625 | 0.15625 | 0.015625 |
A017 | Low | 170 | 0 | 0 | 0 | 170 | 0 | 0 | 0 |
Where do we begin?

• Assumptions
• Scope
• System
• Something of value

The Reality of Risk
Definition

• Uncertainty
• Exposure to Uncertainty
There is an infinite universe of potential failures – all with the potential for significant impact

- Supplier Failures (financial, production, design, etc.)
- Unanticipated Supply Constraints, Allocation, or Price Increases
- Manufacturing
- Infrastructure Outages (fire in plant, power grid down, etc.)
- Natural Disasters
- Work Stoppages
- Labor Disputes

Risk Fluctuations
- Price, Currency, and Interest Rate
- Unanticipated Supply Constraints, Allocation, or Price Increases
- Unanticipated Demand Surge or Drop-off
- Political Upheaval
- Pandemic

Fluctuations
- Diversion/Gray Market
- Theft
- Diversion/Gray Market
- Unanticipated Demand Surge or Drop-off

- Raw Materials
- Price, Currency, and Interest Rate
- Counterfeiting
- Improper Handling or Cargo Placement

- Filling & Packaging
- Diversion/Gray Market
- Unanticipated Demand Surge or Drop-off

- Distribution Center
- Delivery Delays
- Poor Packaging
- Spoilage

- Wholesaler
- Complete Failure

- Consumer

Exposure to Uncertainty

STEP 6 - MEASUREMENT OF RISK

Mitigated BI Risk
Assumptions

• Business impact assessment versus functional impact assessment
• Collective versus individual perspective
• Goal is to determine impact regardless of exposure exists; within or outside the organization boundaries

Scope

• Know no borders
• However, reality is we need to do it manageable “chunks”
Supply chains are complex, geographically distributed & collectively managed.

Manageable “Chunks” Cropping

Sourcing
- Active Ingr. & Material Suppliers
- Logistics

Operations
- R&D Clinical Development
- Manufacturing
- Clinical Trials
- Packing & Materials
- Bulk Production

Distribution (US based)
- Corporate and Shared Services Support
- Logistics
- 3P's Logistics
- Distribution Centers & Wholesalers
- Customers:
  - Primary Care Doctors
  - Specialty Doctors
  - Hospitals
  - Pharmacies
Need a system & process to manage supply chain risk

<table>
<thead>
<tr>
<th>Risk Identification (impact assessment)</th>
<th>Risk Measurement &amp; Investment</th>
<th>Risk Execution (Mitigation, Financing, Monitoring &amp; Optimization)</th>
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<tbody>
<tr>
<td>Value Alignment</td>
<td>Prioritization &amp; Allocation</td>
<td>Gap Recognition</td>
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<tr>
<td>• Value segmentation (by product, product line, SKUs, or other value creating segmentation)</td>
<td>• Line of sight (business processes &amp; resource mapping) &amp; scoping</td>
<td>• Current state evaluation</td>
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<tr>
<td>• Flow analysis</td>
<td>• Impact failure analysis &amp; modeling</td>
<td>• Risk tolerance index (current state &amp; benchmark)</td>
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<tr>
<td>• Risk paradigm set, listening posts &amp; market sensing, client &amp; market alignment</td>
<td>• Relevance &amp; threat analysis &amp; modeling</td>
<td>• Risk effect analysis (current state &amp; benchmark)</td>
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Objective: match greatest value with highest impact

Hallmark

Rationalization – Business Alignment
Contribution to overall value of the organization

Value Target

Value Filter

Illustrative Only - Random Org Selected - Does not reflect actual priority
Map product/service flows & analyze failure points

Incorporate resource categories into scope of analysis
Analyze impacts and prioritize both internal and external suppliers

Logistics Portion of Supply Chain (Illustrative)

PRIORITIZED FAILURE POINTS

April 12-14, 2010
Sheraton New Orleans

Quantify and Qualify Impacts

Example

Critical Skill Set* | Annual Impact | Recommendations*
------------------|--------------|------------------
Loftman           | ~$2,045,000** | Consider expanding recruiting base to similarly skilled professions outside of marine.
Journeyman – Mechanical | ~$4,870,000** | Accelerate knowledge transfer through new methods of knowledge management (e.g., IT-based education, external mentoring programs).
Journeyman – Shipfitter Shop | ~$3,305,000*** | Establish contract or partnership with subcontractor or competitor to provide replacement help immediately following an incident.

*Consider the feasibility of establishing further agreements with Norfolk for skilled labor.

Credit: Ania Friedrich, Marsh, and Jake DeAngelis, Marsh
Couple of footnotes

- Not perfection on the numbers, rather a stratification
- Trajectory counts
- Behavioral issues trump all else, will have to factor in (slide)
- Impact based (versus threat)
- Don’t lose focus on overall goal

Wrap Up

- Objective
- Output
- Starting point
- System
- Law of the Laws
  - Behavioral