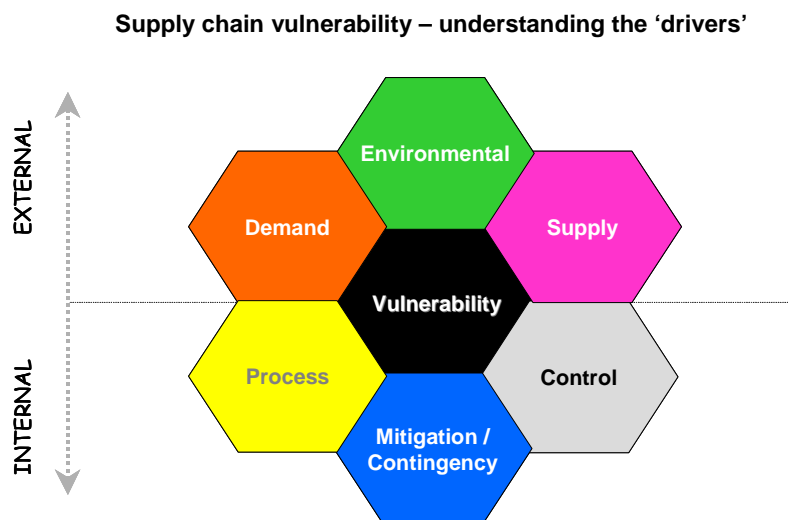


## The Mitigation of Supply Chain Risk

**Professor Richard Wilding, Cranfield School of Management.**

Supply Chain Risk Management is receiving increased attention in recent years. With events such as 9/11, the foot and mouth outbreak in Europe and hurricane Katrina all impacting on organisations and the global supply chains they are part of. Trends including the rapid growth in global sourcing and offshore manufacturing; the continued move to reduce the supplier base; industry consolidation and the centralisation of distribution all change the risk profile of supply chains and businesses. Supply Chain Risk Management is now a priority on many CEOs' agendas.

Research at Cranfield School of Management (1) sponsored by the U.K. Department for Transport into the origins of supply chain risk and vulnerability identified the following dimensions of risk in the supply chain –divided into external and internal 'drivers'. These are shown in Figure 1.



**FIGURE 1 – THE DRIVERS OF SUPPLY CHAIN RISK**

Risks external to the corporation can be summarised as follows

- ◆ **Demand risk** relates to potential or actual disturbances to flow of product, information, and cash, emanating from within the network, between the focal firm and its market. **Supply risk** is the upstream equivalent of demand risk; it relates to potential or actual disturbances to the flow of product or information emanating within the network, upstream of the focal firm.
- ◆ **Environmental risk** is the risk associated with external and, from the firm's perspective, uncontrollable events. The risks can impact the firm directly or through its suppliers and customers.

Risks internal to the corporation relate both to how the firm addresses the external risks and its competences to plan and execute its own business.

- ◆ **Processes** are the sequences of value-adding and managerial activities undertaken by the firm. Process risk relates to disruptions to key business processes.
- ◆ **Controls** are the assumptions, rules, systems and procedures that govern how an organisation exerts control over the processes. In terms of the supply chain they may be order quantities, batch sizes, safety stock policies etc. plus the policies and procedures that govern asset and transportation management. Control risk is therefore the risk arising from the application/misapplication of these rules.
- ◆ **Mitigation** is a hedge against risk built into the operations themselves and, therefore, the lack of mitigating tactics is a risk in itself. **Contingency** is the existence of a prepared plan and the identification of resources that can be mobilised in the event of a risk being identified.

### **Building a Resilient Supply Chain**

Supply Chain Risk mitigation can not be seen as an “after thought” or “add on” to the supply chain. To be cost effective supply chain risk mitigation needs to be built into the supply chain process, product design and decision making environment. To build a resilient supply chain to following four areas need to be addressed:

- **Effective Supply Chain Design** - Organisations need to consider the trade-off between efficiency and redundancy, by analysing the benefits and costs of building in some redundancy into the network it is often found that a small investment at this stage can result in a big return in terms of resilience. If existing supply chains are being used mapping tools such as Time Based Process Mapping can help in the identification of critical paths and bottlenecks in the supply pipeline. During the design phase the “Supply Base Strategy” needs to be considered. Supplier development programmes can contribute to risk mitigation, if single sourcing seems attractive working with that supplier to understand the impact of key risks can be appropriate. Remember sourcing from supplier’s off shore can increase the number of handovers and increase lead-times dramatically which can result in increased risk.
- **Building Collaborative Supply Chain Relationships** – Collaboration is key to supply chain risk mitigation. In global supply chains the large number of “hand overs” within the supply pipeline can increase risk. Good collaborative supply chain relationships can ensure that “intelligence” within the supply chain can be shared and effectively disseminated enabling all members of the supply chain to react. Traditional arms length supply chain relationships are not always appropriate and studies of organisations who have managed supply chain risk effectively find collaboration as a factor in their success.

- **Creating supply chain agility** – agility in the supply chain is dependant on sound supply chain design and also effective collaboration. It is founded on the need for high levels of transparency and the application of Time Compression techniques in all critical processes. Agility reduces uncertainty and enables the supply chain to be more demand driven rather than operations driven. Through high levels of transparency and increased velocity in information flows across the supply chain risk can also be reduced.
- **Creating a supply chain risk management culture** – Supply Chain risk management needs to operate within the culture of the organisation. This culture can only be generated by Board level involvement. Supply chains cross all disciplines of the organisation and therefore a cross disciplinary supply chain risk management team is required, this should meet on a regular basis to support the board. A change in business strategy such as increasing the amount of items produced or sourced overseas can have a significant impact on the risk profile of an organisation therefore supply chain risk management needs to be considered formally within the decision making processes of the company.

### **The Mitigation of Supply Chain risk**

At an operational level within the supply chain, organisations are using a number of key approaches. There are variations on these themes, that when combined, can help to mitigate the risks that are no longer solved by more traditional approaches, for example:

- ◆ Generic material inventory – the company commits to generic materials which it is confident can be converted into a number of products or disposed of at market price. This reduces the lead time to procure material and make the products - so increasing responsiveness
- ◆ Capacity booking with postponed ordering – the company commits to manufacturing capacity for a range of products to be made by the vendor. The actual commitment in terms of sku and quantity is made based on the latest forecast just before the run starts
- ◆ Postponement – the design and supply of manufactured parts that can be configured or localised in the destination markets. This enables generic parts to be directed to where the demand is and avoids product obsolescence. It also reduces inventory levels in the chain as a whole.
- ◆ Consolidation / deconsolidation / speed management – logistics operations that can identify, combine and route products through the chain to increase the frequency of shipment and reduce unnecessary time through the chain. The net effect is to make the chain more responsive, increase availability and reduce inventory risk.

### **The Supply Chain Risk Forum at Cranfield.**

The Supply Chain Risk Forum ([www.supplychainriskmanagement.co.uk](http://www.supplychainriskmanagement.co.uk)) at Cranfield School of Management in the U.K. is supported by over 15 sponsoring companies from a variety of industrial sectors including Astra Zeneca, Jewson, HSBC, Tetley and the Ministry of Defence (U.K.) is focusing on applied research into in all forms of Supply Chain Risk. The membership of the forum is open to new members and is continually growing and evolving depending on the specific needs of the sponsoring organisations. The goals of the Forum are:

- To improve the resilience of our member supply chains
- To encourage benchmarking activities between members and develop appropriate benchmarking methods.
- To advance knowledge in the area of supply chain risk management.
- To disseminate useful and current information to all members.

This is done with a view to providing practicing managers and policy makers with the tools and concepts necessary to enable them to improve Supply Chain Resilience by effective risk mitigation so organisation can continue to profit in an increasingly turbulent world.

### **Conclusion**

We have to accept that uncertainty and risk is inherent within supply chains our approach can be summed up in the following quotation by Francis Bacon:

“If a man presumes certainty, he shall end with doubts, but if he will be content with doubts, he will end with certainties”. Francis Bacon 1561-1626

By being content with doubts and uncertainties and by planning appropriately we can manage our supply chains with a higher degree of certainty.

### **Biography**

Professor Richard Wilding is Chair (Full Professor) in Supply Chain Risk Management at Cranfield School of Management U.K. one of Europe’s leading business schools and hosts the Cranfield Supply Chain Risk Forum [www.supplychainriskmanagement.co.uk](http://www.supplychainriskmanagement.co.uk) he can be contacted through [www.richardwilding.info](http://www.richardwilding.info)

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<sup>i</sup> Cranfield School of Management – “Creating Resilient Supply Chains: A practical guide” Cranfield School of Management & Department for Transport (ISBN 1 861941 02 1) 2003