

MANAGING THE UNKNOWN:

How We Should Tackle Risk in Global Supply Chains



AN ESSAY BY ANDREAS WIELAND

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Early approaches to managing risk in supply chains were based on enterprise risk management tools – tools that had been developed for a system called the “company.” These tools often contained risk categories relating to operational and financial circumstances within the company. Moreover, these tools were easily scalable, as they allowed the inclusion of additional risk categories. It comes as no surprise, therefore, that the notion of risks further upstream and downstream in the supply chain has led risk managers to include new categories such as “supplier insolvency,” “supplier quality” or “defects of supplied parts (per million).” The inclusion of such categories that represent risk sources outside of their own companies has certainly been a great achievement. But, as I will argue, this is not enough to shift from a company view towards a supply chain view that has been shown to enable value creation.

1. Managing risk beyond the own company.

The “company” and “supply chain” views are fundamentally different – so it is thus not possible to simply assume that approaches that are suitable for one system are also suitable for another.

A company can sometimes be a relatively large system; however, it is usually centrally controlled, has relatively well-defined boundaries and its processes and organizational structure can, at least in principle, be mapped. This is usually not the case for end-to-end supply chain systems. Not only are supply chains, by involving different organizational cultures, languages, locations etc., far more complex and dynamic than companies, but companies often do not even have access to the suppliers of their own direct suppliers – not to mention all the different raw materials suppliers further upstream.

For example, if 30,000 parts are needed to build a car – many of them coming from different suppliers and suppliers’ suppliers – it should become obvious that the scalability of traditional risk management tools becomes quickly limited. Identifying and assessing all types of risks from all suppliers, all suppliers’ suppliers and finally all raw materials suppliers is simply impossible! Plus, doing this is also not always reasonable: many of the supply chain disruptions that happened in recent years were, in fact, caused by risks that had not appeared on risk category lists. Could we really imagine that a volcano eruption in Iceland

would halt Europe’s air traffic, for example? Or that a Tsunami in Japan would cause a nuclear accident? I certainly did not and I doubt that having tried to identify even more risk causes to add to the list would have helped much.

2. Increasing the robustness of the supply chain.

But what would have helped in these cases if the old approach of optimizing the list of potential risk causes fails? Instead of looking at the causes of risk it would be better to focus on the systemic characteristics of the supply chain system in order for it to be robust if something bad happens – irrespective of its cause! The harmful thing for Japanese car manufacturers after the 2011 earthquake was not that it was an earthquake that had happened. It was that many of their redundant suppliers were located in the same region. Worse, even the non-Japanese plants of these companies were affected, as they had failed to make the supply chains of different regions independent. These companies also realized that they did not hold enough inventories for important components – ones that could not be built in other places. From a cost perspective, it might make sense to centralize warehouse capacity; but to increase the robustness of your supply chain, a certain amount of redundancy makes a lot of sense. (We should not forget, however, that two redundant suppliers for the same materials often supply from the same sub-suppliers, which can create a false security.)

It’s not just the design of your supply chain that can help your company become more robust. It’s also the design of your product. Avoiding materials that can only be supplied from certain regions, such as rare-earth materials, or suppliers of non-standardized parts, can help to reduce or even ward off certain types of risk. Modular product design can help to at least semi-finish a product and to add missing modules at a later stage when they become available again. Such systemic solutions help companies cope with risk in the supply chain without paying too much attention on the exact causes of risk.

3. Prerequisites of a robust supply chain.

As we have seen, there are potential ways to increase the robustness of a supply chain, i.e. its ability to avoid and resist risk. But why are some companies more successful in implementing these than others? Our research [1] clearly shows that both intra-organizational and interorganizational factors affect the supply chain’s robustness.

Intra-organizational factors include:

1. Leadership commitment. Investing in robustness pays out only when a risk occurs, i.e. in the long term. In the short term, investments might have a negative impact on cost-based or profit-based KPIs. Therefore, a supply chain can only become robust if the C-level (those highest in senior management) acknowledges its importance.

2. Human capital. Coping with supply chain risk is not only a top-down approach. Companies need skilled SCM talent – people who are aware of potential disruptions, experienced in identifying problems and know how to solve them.
3. Relationship magnitude. To reduce risk in the supply chain, strong relationships between different departments within a company can be crucial. This helps to exchange relevant information about ongoing or future problems. For example, Ericsson restructured its organizational chart to foster internal relationships after a major supply chain disruption in 2000.
4. Risk management orientation. Another factor that can create additional robustness is a risk-oriented culture throughout the entire company. This can involve processes to learn from previous disruptions and processes to proactively implement solutions.

Interorganizational factors include:

5. Node criticality. Some elements of the supply chain make it typically more vulnerable than others. This is, for example, the case for suppliers who deliver several key components or own centralized distribution centers. Identifying critical nodes and redesigning the network is, thus, a good strategy to reduce vulnerabilities.
6. Bargaining power. Some nodes in the supply chain have a stronger power position than others, e.g. single suppliers of a key component, or buyers of complex components such as those in the car industry. Such companies should use their power to ensure that the entire supply chain becomes robust, e.g. by forcing partners to implement risk-mitigating procedures.
7. Visibility. Shortly after the 2013 Rana Plaza tragedy, some Western fashion retailers did not even know that their shirts had been produced in the collapsed Bangladeshi plant. Yet companies such as Switcher, with their Respect Code solution, demonstrate that end-to-end visibility is, in fact, possible all along the supply chain.
8. Network complexity. Recent research clearly demonstrates that a high complexity of the supply chain can increase the frequency of disruptions. Companies should thus try to reduce the number of direct suppliers, the number of supply chain tiers and the geographical spread of their supply base. ■

[1] Durach, C.F., Wieland, A. & Machuca, J.A.D. (2015). Antecedents and Dimensions of Supply Chain Robustness: A Systematic Literature Review. *International Journal of Physical Distribution & Logistics Management*, 45 (1/2), 118–137.