

Reconfiguring supply chain networks for competitive advantage

Are you making the most of your extended supply network? Recent research at the IfM indicates that the capabilities of a company's supply network can be a vital source of competitive advantage in international markets – and that superior performance does not necessarily require advanced supply chain processes or planning systems.

As manufacturing enterprises become increasingly globalised, their supply chains are becoming more fragmented, with multiple players engaged in key aspects of the value chain. This has seen the emergence of suppliers offering specialised operations (research, design, production, service) who are capable of serving widely dispersed markets. It is generally assumed that managing these increasingly complex international supply chains requires sophisticated management techniques. Many companies have for example installed advanced planning systems for just this reason – systems that require skilled staff to implement the complex processes involved.

However, research in the IfM's Centre for International Manufacturing (CIM) shows that some companies have found other ways to compete that depend more on the configuration of the supply network itself than sophisticated operational processes.

New supply network models are emerging that have demonstrated superior network performance - they are not dependent on complex operational processes

The research investigated leading edge international supply chain networks and found that new models are emerging, configured to support specific business imperatives, some of which utilise quite simple management and supply chain processes and require only semi-skilled staff.

Similar supply network models have been observed working in very different sectors and regions

CIM's research indicates that the way in which the supply network itself is configured is critically important, and that the alternative kinds of networks have different, intrinsic capabilities. Having codified some of these operating models, researchers observed similar forms working in very different sectors, and across different international regions. The work has demonstrated the importance of considering supply network configuration profiles and highlighted the limitations of relying on process improvement alone.

One model identified comprises a product specific **Supply Network Cluster**. This variant of the well known industrial clusters consists of tightly integrated groups of suppliers, in close geographic proximity, to support a single product category of global scale. The operational benefits provided are significant and appear to compensate for relatively weak (early-stage) management processes of these 'born global' organisations.

These supply network clusters appear to be fundamental in the support of global-scale, fast-response production of low-cost items – using very basic product supply and kanban replenishment systems.

A global manufacturer of industrial motors is a case in point: its made-to-order products are produced using highly responsive, low-cost supply chains. Its supplier base is within two hours road transport of its manufacturing plant in Shenzhen. China's excellent transport infrastructure, particularly around these industrial zones, means that delivery times are reliable and inventory can be kept to a minimum. Its suppliers are closely integrated into the company's supply

network and in many cases manage the company's inventory directly, enabling the company itself to operate on extremely low material stocks. This supply chain structure does not require sophisticated systems to run it.

Another emerging business model the research has identified is the **Network Integrator**. By building extremely close partnerships with their suppliers and customers the companies involved are able to gain much greater control and capture value across the supply chain.

One approach is to take ownership of critical parts of the supply chain

There are different ways of achieving this integrated approach. One version observed is when a company actually takes ownership of critical parts of the chain. One particular fashion company, for example, owns several stages of the supply network (typically on a 51% Joint Venture basis), both upstream (key supply stages) and down stream (key retail outlets), carefully selecting the parts that enable it to create maximum value. The firm integrates fabric manufacture, garment design, garment production, and even the cat walks for marketing its international consignment sales, right through to in-country retail outlets.

Supply network models used in different sectors exhibit nearly identical performance profiles. This suggests intrinsic capabilities of particular configurations.

Using a similar approach, a leading Scandinavian-based European furniture company, with extensive international operations, manages some of its key material sources (e.g. forests for pulp production), key intermediate processing plants used to process them (e.g. pulp factories), high-volume final product

manufacturing operations, not to mention all of its retail outlets. These two examples demonstrate that similar supply network models are used in very different geographies and sectors with near identical performance profiles.

Companies do not have to own major elements of their supply chain however – or even their own manufacturing facilities – to be Network Integrators. A leading teens fashion company in the Far East is a good example of this **'fables' manufacturing model**, as it owns virtually no assets and outsources all of its manufacturing. Instead it has developed extremely close partnerships with its factory suppliers and has placed its own production supervisors in companies across its supply network.

A high-volume manufacturer of sophisticated medical devices can deliver customised products to customers in just three days from order placement.

Another model involves **mass customisation of high-value products**.

A high-volume manufacturer of sophisticated medical devices has managed to achieve highly responsive, mass customisation for its end users. With its primary product range selling for premium prices the company can deliver a customised end-product anywhere in Europe, just three days after the customer has received his medical assessment and the order placed. Several factors are critical to achieve this. A sophisticated

high-value component is manufactured in-house protecting technology and intellectual property; the remaining manufactured parts are quite simple and enable rapid final assembly; and perhaps most critically the customer requirements can be digitally codified ensuring rapid communication of the specification to the production plant. Finally, the company's outbound logistics operation is extremely slick, achieved through close relationships with operators and special arrangements it has set up for customs clearance.

Local suppliers keep stocks of certain components required by an international telecoms company to help it respond quickly when an order comes in. The suppliers are willing to share the risks as well as the rewards

Risk sharing forms a central part of yet another approach taken by a major international telecoms systems provider. The company is capable of fulfilling major contracts in just a few weeks by using a careful balance between pre-bought items and a local supplier base prepared to bear significant levels of risk in return for a partnering approach and the potential for rich returns. The company sources half its components from overseas due to their specialised content and pre-buys these selectively, using air freight, to ensure it is ready to respond when orders comes in. The remaining components are sourced locally from suppliers prepared to stock the necessary items and respond quickly – sharing the risk but also the potential

rewards. The company's responsiveness gives it a key competitive edge in a sector in which component obsolescence is high and low inventory is therefore critical in more ways than one.

Supply chain configuration is not fixed: it can be considered as a variable that can be changed to support the business model

The research has demonstrated that supply chains are becoming increasingly globalised, with centres of production changing and the emergence of specialist component suppliers, contract manufacturers and service providers across the value chain. These changes have further accelerated the fragmentation of the supply chain so that the configuration of a supply network has become a complex business consideration. However, far from being something that is traditionally regarded as fixed, elements of a supply network configuration can be changed to support the business model. Furthermore, particular network forms appear to have intrinsic capabilities that require specific management approaches. Supply Network Configuration is thus another variable to optimise in the journey to supply chain operational excellence.

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Supply network profile	Discriminating configuration characteristics and capabilities
Network integrator 1: vertically integrated model	Closely coupled, closely integrated supply network operating a largely postponed, modular made-to-order fulfilment process with the OEM playing a network leadership role and deploying advanced SCM and innovation processes. Tailored supply chain models are used to meet product-market place requirements.
Network integrator 2: fables manufacturing model	A high degree of network integration led by the focal firm managing a network of manufacturing firms, but where the manufacturing task is largely or completely outsourced. These networks demonstrate leading capability in network connectivity, design, collaborative working and service.
Upstream supply network cluster cost leader	Very high degree of upstream supply network integration, enabling simple kanban processes producing mature products largely to order, exhibiting benefits of international or global scale, fast response and low cost with the ability to share risk with upstream supply chain partners without the need for advanced planning systems or sophisticated structured inter-firm or firm processes.
International contract manufacturer	Advanced risk hedging capabilities supporting consignment order contract supply. The supplier base contributes to responsiveness, sharing risks and rewards. Global supply focus supports economies of scale.
Mass customisation manufacturer	A make-to-end customer order supply network supported by high-value products, digital codification of end customer requirements, complex first tier manufacturer with simplified final assembly and advanced logistics practices.
Integrated product and service	Development of product offering to a product-and-service offering building on existing innovation, design and manufacture expertise with the key capabilities of network integration and network connectivity, involved in the transition to service supply chains as part of a more end-to-end supply chain solution.
MNC global supply network	Global network of a few focused manufacturing plants: typically less than 15 OEM sites, driven by scale, high value density products and/or large plant investments demonstrating capabilities in innovation, supplier integration and network efficiency.
MNC multi-domestic network	International network of a multi-domestic based manufacturing plants: driven by low-value density products and low/medium plant investments, having a balanced set of capabilities with few/no outstanding capabilities. This multi-domestic fragmented SC footprint, largely in mature businesses, resulting from localisation and legacy networks, perhaps face the challenge of needing to migrate to superior network forms in order to achieve supply chain excellence rather than focusing on process-based incremental improvement.