



## **Managing complexity to increase global supply chain performance**

**Can you reduce complexity in global supply chains and increase performance? Peter Dew considers how processes and systems can be managed in a more ordered way to create competitive advantage.**

Consider a brand new car parked next to a classic model from the earlier days of motoring. Whenever you turn the key of the modern car it starts every time without fuss, no matter how cold or wet it is outside. Unlike its elderly neighbour it will whisk you to wherever you want to go quickly, safely and economically and in climate controlled comfort. You'll have no doubts over mechanical problems stopping you from getting you there, which is more than you would reasonably expect from the classic – even if it's well maintained. The classic car is what it is: a simple piece of mechanical engineering while the modern car's greater complexity allows the motorist to do so much more.

Complexity is a word that receives a mixed reaction in the supply chain. Some see it as a problem that increases costs, hides issues and creates disorder. But a wholesale simplification of a supply chain with an over-emphasis on efficiency to the detriment of flexibility, mobility and resilience can actually render it less effective and make an organisation's objective unachievable.

For example, if that objective is to get flowers from the pickers in fields to shops anywhere in the world within 24 hours that is likely to involve a reasonably expensive and sophisticated supply chain. You could reengineer the supply chain to make it simple and dramatically reduce the cost but the likelihood would be that all the flowers would be 'dying off' by the time they get to the shop.

The key to finding the balance between simplicity and complexity is recognising where complexity is necessary, adds value and gives the organisation competitive advantage and the ability to innovate. Complexity that does not offer this is there simply for its own sake and this needs to be tackled so that costs can be reduced.

Complexity resides in three main areas: the physical supply chain; the product and service portfolio supported by the supply chain and the systems that manage the supply chain. The bigger each of these groups is – for example the more warehouses in the physical supply chain or a broader product offering – the greater the complexity.

The goal is to manage complexity in each of these areas to ensure that performance, rather than cost is increased. This requires thorough knowledge of your cost base but most importantly you need to understand what the goals of the supply chain are and then manage processes and systems in a more ordered way to create competitive advantage, deriving value by simplifying or eradicating those 'elements of complexity' that do not contribute to competitive advantage.

Global supply chain management is no classic car. Like the modern automobile complexity is inherent because it generally supports multiple sourcing strategies, outsourcing, manufacturing and a global need



to reduce inventory. De-stocking via a JIT mentality will require higher service levels to meet more exacting customer needs and to ensure their goods are delivered at the right price and at the right time.

That complex modern car is, of course, far harder to make than the simple classic and can only be produced economically by outsourcing the manufacture of its component parts to different suppliers in locations around the world who can develop and manufacture the best and most economic components.

To gain further competitive advantage the car company, like other organisations, may also wish to offer a broader product range and that will multiply the sources of supply, which invariably would involve more global locations.

It is therefore essential to have the right information systems to allow the organisation of all the suppliers to ensure the multitude of components can be brought together on the assembly line Just in Time on the assembly line.

In global supply chain management, therefore, the main area to address complexity is in the systems that manage the supply chain and the most important element of complexity to tackle is the 'islands of automation' that can occur. That is, where the information technology used to oil the supply chain is different at the origin to that used at the destination. This makes the movement of data about the goods being moved across the supply chain more difficult to understand and it is here that you can certainly manage complexity through simplification and standardisation, ie, using a standard set of technology to create competitive advantage.

Rather than have heterogeneous systems dotted through a chain the approach should be to apply a standard system that provides end-to-end visibility and takes complexity or variability out of a company's supply chain. Having more complete information being processed effectively enables companies to make faster decisions. Companies that can make faster decisions can work on lower inventory levels and subsequently secure competitive edge.

Furthermore, in complex systems where change is rife and risks abound, visibility and the reactive capabilities delivered through event management have become prerequisites to developing an agile and responsive supply chain. But an organisation needs access to the right tools.

It needs smart solutions that offer a global materials management approach and can provide a 'control tower-type' system that can aggregate data from many sources and across multiple suppliers, to provide end-to-end visibility of manufacturing capacity, inventory holdings, transport availability and all the necessary metrics on a global basis.

With such a tool, organisations can then look at reducing unnecessary complexity in other areas to achieve significant savings while improving service levels.



Take for example Wärtsilä, a market leader in ship power and decentralised power plant solutions, which has achieved significant saving basically by simplifying what was a particularly complex supply chain.

To support its intention to centralise spare parts logistics the company built a Central Distribution facility in the Netherlands, resulting in faster and more efficient spare part deliveries. CEVA provided 24/7 global spare parts transportation management and 'control tower' activities for Wärtsilä and took responsibility for shipments of spare parts to Wärtsilä's various warehousing facilities in Europe and for the spare part deliveries to Wärtsilä's international customers. Previously Wärtsilä's seven product companies in Finland, Italy, the Netherlands, France, Sweden, Norway and Switzerland, had been responsible for the global logistics of the spare parts for their own products.

The key to achieving this was providing a standard end-to-end system to provide visibility, transparency and service improvement of all flows.

The Fiat Group is another example. Without systems and data standardisation it would not have been able to establish its Chinese business which sees 150 suppliers from the region supply Fiat Group manufacturing centres in 49 countries. Once you gain visibility across the chain you then have the ability to manage complexity and to use complexity to innovate.

While the very act of integrating multiple suppliers into a system is of course complex it will enable a more efficient model than traditional global supply chain management, which is based on ordering product from global suppliers, consolidating it and then breaking it down for onward regional distribution. This is because it allows innovations such as direct ship, something Microsoft's Entertainment & Devices Division (EDD) has found in managing its complex situation of getting its products from point of component manufacture in Asia right the way through to their retail outlets in the US and they needed to make it more efficient.

EDD encompasses a wide variety of products within the home entertainment, mobile communications, music and gaming products. In addition it distributes more than 300 software products in 50 languages to some 150 countries. Customers include 'big-box' retailers, specialty retailers, game development houses, OEM partners, distributors and small boutique retailers.

Previously it had a single, primary consolidation and distribution center in Memphis to serve the US, Canada and Latin America with separate material flows for two main lines of business: hardware and software. Hardware manufacturing is outsourced to China; product arrives via a port in California and is transported to the Memphis DC by rail. Software is sourced from four manufacturing turnkey vendors within the US and product is shipped to Memphis DC, as well as distributors.



It was possible to manage this complexity to ensure Microsoft's delivery to customer in-store dates and software release dates, while reducing cost per unit and optimising its distribution network to ensure flexibility to adapt to future business needs.

This was achieved through an integrated solution for this complex supply chain that established a two distribution centre approach with West Coast and Midwest DCs together with freight management vendor solutions.

With full integration to CEVA's Supply Chain Technologies to support the supply chain product flow and end-to-end- visibility, the complexity was managed to allow origin DC bypass for direct shipment to retailers as well as destination DC bypass/cross dock and direct-to-store/domestic network capability to support new product launches as needed.

Microsoft's inbound and outbound transportation costs decreased and its distribution network was optimised to best serve major markets. In fact it saw an increase in units delivered by 1-2 day truck service from 67% to 85%, an estimated \$5.1M in annual savings through changes to terms of purchase, freight cost reductions, and improved container utilisation as well as improved service levels, while reducing total transportation and domestic logistics costs.

For Microsoft, and others, achieving end-to-end visibility through standard information systems is a key to managing complexity in the global supply chain.

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