

The 'On-demand' Supply Chain

Supply Chain Strategies to Meet 21st Century Business Challenges

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INTRODUCTION

World-wide, manufacturing businesses face unprecedented pressures. All manufacturing firms are facing a global recession. Firms have now entered a new era, the 'on-demand' era.

In particular, the increasing speed of technological change means that product lifecycles are ever shorter and that products are becoming commodities much faster on a global basis. Customer Demand is also

becoming increasingly volatile and the need for more customised products is complicating the manufacturing process. Markets and competitor supply chains are becoming global

Firms have now to develop 'On-demand' supply chains, not only to survive these pressures, but also to use supply chain as a strategic weapon to gain overall success. An on-demand supply chain is one that is integrated end-to-end across the business and with key partners, suppliers and

customers – so that it can sense and respond with flexibility and speed to any customer demand, market opportunity, or external threat, no matter how frequent or sudden.

We have identified the key attributes of an on-demand supply chain.

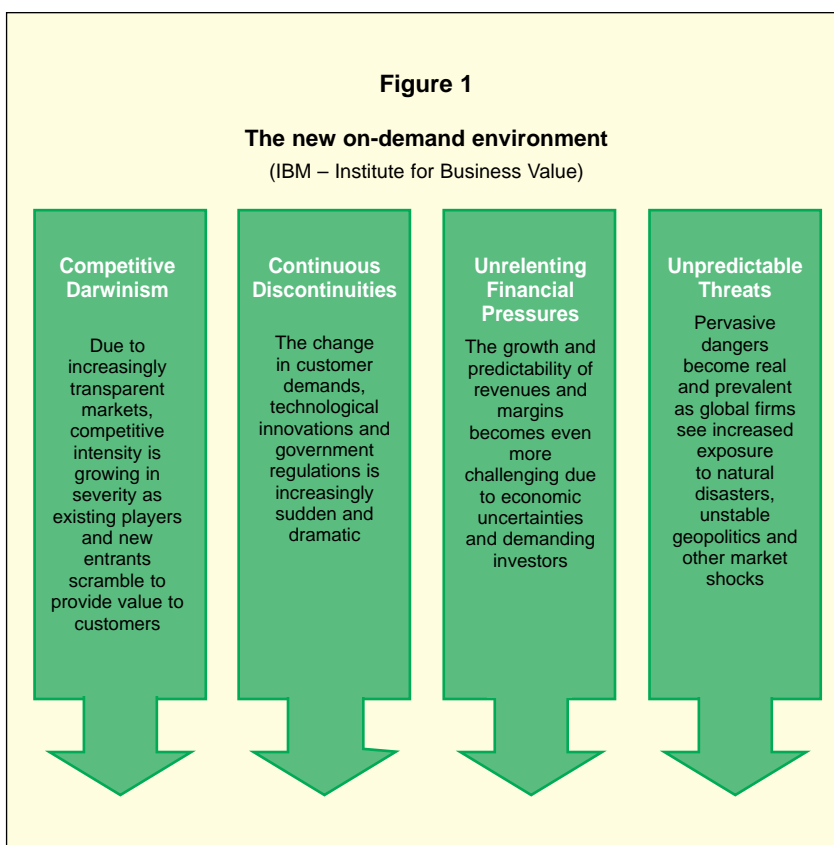
● **Focused Supply Chain:** Identify core supply chain capabilities and strategic supply chain competencies to be managed in-house with the intention of continuously adapting them. Select and orchestrate a network of strategic supply chain partners to manage the non-core and non-strategic tasks.

● **Responsive Supply Chain:** Sense and respond to ever changing customer demand and market fluctuations based on an integrated view of the environment (customers, employees, suppliers, partners and competitors).

● **Variable Supply Chain:** Build variable cost structures to do business at a high level of productivity, cost control, capital efficiency, and financial predictability. This means the ability to operate flexibly and to adapt supply chain capabilities when required.

● **Resilient Supply Chain:** Cope with threats, disruptions and changes without impacting the overall supply chain efficiency.

This article discusses how on-demand supply chains are being developed, and how businesses are using on-demand supply chains to deliver competitive advantage.



DEPLOYING THE STRATEGIC SUPPLY-CHAIN ENABLERS:

1. Knowledge

As business becomes increasingly global, customers have wider channel choice. This will lead customers to buy, communicate and need support seamlessly across multiple channels and partners. A greater percentage of business is being driven through channel partners. Therefore, a business needs clear knowledge of the sales funnels of these partners, and efficient and effective ways to support them.

Businesses have more data on their customers than ever before. This data needs to be analysed to provide real-time and accurate access to relevant customer information, to sales forces. These sales forces also need globally consistent selling processes to service more and more complex markets, and global clients.

As product lifecycles diminish, businesses need to decrease the product's time-to-market, and to increase the speed of new product introduction (time to fully launch a product). This must be achieved while simultaneously controlling the cost of innovation. One knowledge-based solution is collaborative research. For example, organisations providing on-demand research services, enabling partners to work with them to create innovative products, faster, and at lower cost.

2. Processes

As businesses focus on their core capabilities, non-core supply chain processes are increasingly being outsourced. Businesses need to maximise supply chain efficiency and responsiveness, not just internally, but across the extended supply chain without increasing inefficient working capital. To do this, businesses need visibility, efficient communication, and collaboration with strategic supply chain partners. So ERP and Supply Chain Planning systems need to be able to collaborate with partners' systems, to support extended business processes, to cut across organisational boundaries, to reduce cost and increase performance.

Figure 2

The new on-demand environment (IBM – Institute for Business Value)



Focused

A supply chain that is concentrated on differentiating competencies, using tightly integrated strategic partners to manage selected non-differentiating activities; focused on the customer - discovering their needs to provide a superior customer experience



Responsive

A supply chain that responds fluidly to meet customer requirements with a fundamental understanding of the interdependencies between the various processes to improve productivity, efficiency, and responsiveness; a supply chain integrated end-to-end



Variable

A supply chain adapting cost structures and business processes **flexibly**, to **reduce risk** and to **increase** levels of productivity, cost control, **capital efficiency** and predictability.



Resilient

A supply chain prepared for **changes** and **threats** (economic, technological or political); enabling the business to continue operating with consistent on-demand imperatives

THE TRADE-OFF BETWEEN EFFICIENCY AND RESPONSIVENESS

A key element of any supply chain strategy is the trade-off between efficiency and responsiveness. Responsiveness refers not only to the ability to sense and respond to wide fluctuations in demand, but also the ability to meet ever shorter lead times, the ability to produce a wide variety of product, the ability to innovate faster, and the ability to meet a very high service level.

The more of these responsive capabilities that a supply chain has, the more costly it becomes to operate, and therefore less efficient. The supply chain responsiveness/efficiency frontier (Figure 1) demonstrates that for a given level of responsiveness, there is a maximum level of efficiency that can be achieved in a specific environment. Supply chains range from those that focus on being efficient, producing and supplying at the lowest possible cost, to those that focus on responsiveness. The basic design of a supply chain will be predicated by the market that it is designed to serve.

The frontier curve represents the performance of the best supply chains. Not every business is able to perform on the frontier. The best performing businesses are deploying strategic supply-chain enablers – knowledge, processes, organisation and technology – in order to retain their position on the frontier. The effect in the long term is that the frontier is continually shifting outwards, as the technology and the business practices evolve.

Figure 3

The supply chain responsiveness/efficiency frontier



[1] Chopra & Meindl, 2001

3. Organisation

To effectively support rapidly changing business, employees need access to highly efficient education and development programmes. They need access to information on their customers, their business, and their partners, and the tools to collaborate effectively with them. Businesses need the ability to efficiently capture, maintain, and disseminate organisational and institutional knowledge on-demand.

Organisations need to be able to quickly adapt to change. Organisation models need to support more project / initiative oriented work, and move away from more rigid organisational structures.

Transactions and processing that occur in support functions, such as HR, finance, and IT must operate efficiently. Businesses cannot afford high costs and poor quality in these functions.

4. Technology

A business' IT infrastructure needs to be designed to support the strategic supply-chain direction. It has to be adaptive – capable of absorbing new technological

developments. It needs to be integrated – connecting all the pieces of the extended supply chain. This requires the adoption of open standards. It needs to be autonomic – self-managing and self-tuning.

In short, companies that operate on the frontier are transforming their supply chains from the traditional static model, to an on-demand model - one that is integrated end-to-end across the company, and extended with key partners, suppliers, and customers, so that it can respond efficiently, with speed, to any customer demand, market opportunity, or external threat.

HOW ONE COMPANY HAS DEVELOPED AN ON-DEMAND SUPPLY CHAIN

One organisation that we studied formed an Integrated Supply Chain (ISC) organisation in January 2002 with three objectives:

- Dramatically to improve operational efficiency – driving cost out and providing competitive advantage
- To apply on-demand supply chain techniques across all subsidiary businesses

- To transform the supply chain to better support on-demand business.

In 2002, the ISC drove roughly 13% of cost and expense out of the business. It is positioned to do the same in 2003. Some of this saving will come from reduced component cost, by standardising parts and increased component sharing across products. But a significant proportion of the saving is expected to come from transformation to the on-demand supply chain.

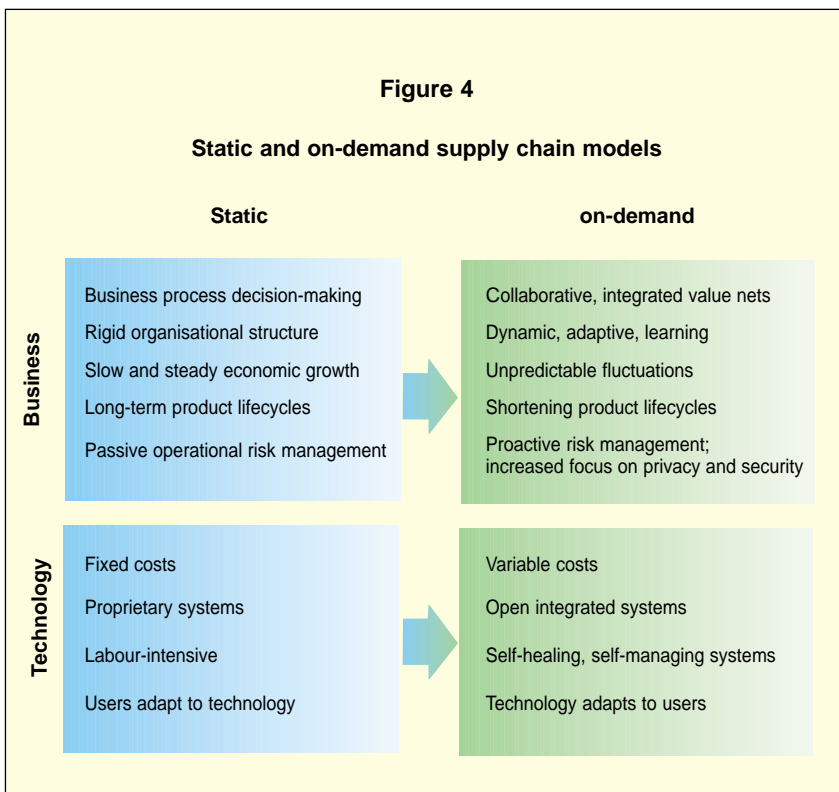
1. Outsourcing non-core processes

In manufacturing, this organisation constantly reviews the most efficient and effective way (make-versus-buy) to source product. The objective is to leverage the low-cost benefits of an increasingly capable outsourced manufacturing sector, whilst optimising in-house capacity. Through one global outsourcing arrangement, this organisation has:

- Built a supply chain for a whole product family, which is capable of fulfilling demand without any product or component being handled in-house
- Gained the benefits of manufacturing in low-cost locations, without the investment that would have been necessary to realise these benefits in-house
- Leveraged the efficiencies of a World-class manufacturing partner – improving maximum daily capacity by 20%
- Improved the fixed to variable cost ratio by 10%.

Outsourcing manufacturing operations has contributed towards greater supply chain efficiency. In considering further outsourcing, the organisation has to consider such potential benefits against other considerations, such as:

- Assuring the capability to execute at current or better quality and service levels
- Leveraging the best tax and labour rates
- Proprietary technology (versus standardisation)
- Strategic value of retaining manufacturing capacity in-house.



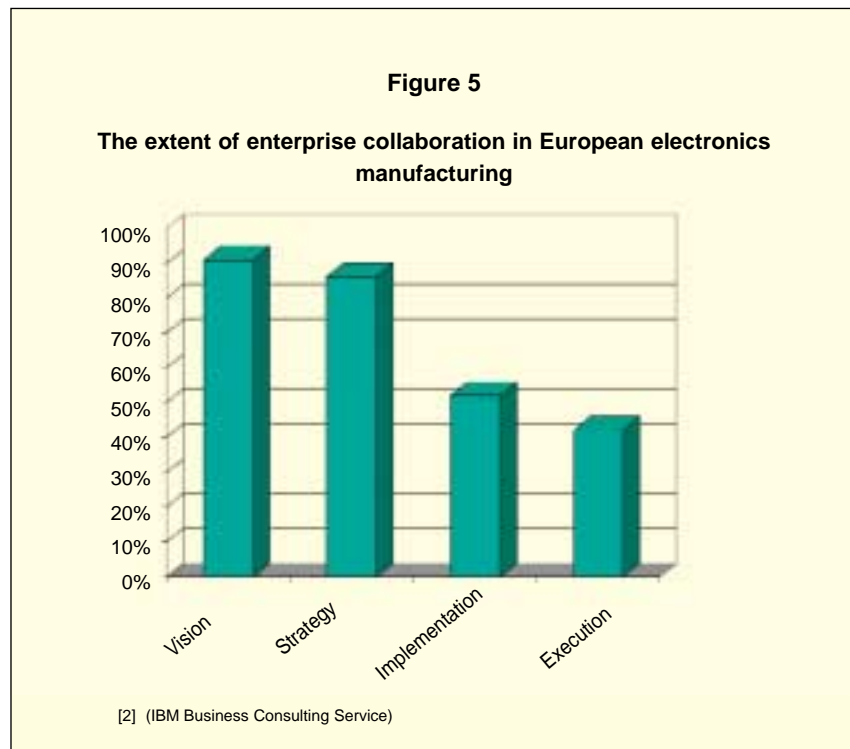
2. Leveraging technology

Though this organisation has made significant savings in manufacturing costs, even greater savings have been made in procurement. These comprised operational savings (lower cost of electronic orders); strategic savings (use of leveraged contracts by sub-contractors); and compliance savings (use of procurement negotiated rates for indirect items such as travel, sub-contracting, etc.).

Consequently, 92% of purchasing transactions are now 'hands-free' from requester to supplier, via pre-negotiated agreements, which flow through e-procurement. Cutting out such administrative work has allowed the organisation to focus on high value-add procurement work, including strategic sourcing, price negotiation, and supplier relationship management. Hands-free e-procurement has also allowed them to benefit from a reduced cycle time from requisition to order placement – reduced from 2 to 3 weeks to a matter of hours. This allows the organisation to react faster, and to take advantage of changes in market pricing.

3. Leveraging knowledge

Suppliers, channel partners and distributors are connected to this organisation through the web, giving end-to-end visibility across the extended supply chain. A recent example demonstrates how this brings benefits. A channel partner ordered a complex high-tech product, requiring delivery in two weeks. But the order confirmation showed a delay. The partner went on-line, and found that the delay was due to a modem component, which was not an integral part of their solution, and was not needed right away. Because they had access to this information, they modified the order, and received the product in two weeks, ordering the modem for later delivery. This 'end-to-end' view of customer's orders not only improves the customer experience, it also delivers significant cost savings, particularly in terms of inventory reduction.



In building an on-demand supply-chain, it is important to remember that optimising one component may not be optimal for the supply chain as a whole. Building large lot sizes in advance of actual orders may optimise manufacturing, but it will burden the downstream supply-chain with excess and unwanted inventory. Each strategic decision must be judged through its effect on the extended supply chain. The key to building an on-demand business is remembering that the supply chain extends not only across internal breadth of the business but also externally, to key partners, suppliers and customers.

HOW OTHER BUSINESSES ARE DEVELOPING THE ON-DEMAND SUPPLY CHAIN

A key building block of the on-demand supply chain is, therefore, effective collaboration with key players. We recently conducted a survey, investigating the maturity of such enterprise collaboration in European electronics manufacturing companies. When asked if they had an enterprise collaboration vision defined as a future way of working, 91% of participating companies responded affirmatively

(see Figure 3). 86% have a detailed strategy for collaboration. About half have actually started implementation, and more than 40% are reaping the rewards of collaboration already.

Amongst those businesses participating in the survey, one recently designed and implemented a new supply planning and execution process, which enabled them to collaborate and synchronise with their supplier base. Their collaborative forecasting and planning process gives them visibility into any existing capacity constraints – both in-house and with collaborating suppliers. This enables them to give rapid supply-based order commitments to their customers. The business has greater visibility of up-coming demand/supply mis-matches, giving more time for such issues to be resolved. Key business benefits from this implementation include:

- Supply and demand planning time reduced from 45 days to 10 days
- On-time delivery from below 60% to above 90%
- Minimum order-to-delivery cycle time reduced from 35 days to 2 days
- Time to benefit: less than 9 months
- Return on investment: more than 6 times already.

Another business in the survey decided to go downstream first and to establish collaboration with its major customers. This manufacturer implemented on-line product catalogues, together with the ability to configure product on-line. The system brought benefits to both the business and its customers:

- Customers are able to enter orders electronically and track status
- Vendor managed inventory for spare parts has been implemented at customer sites to improve reaction time on service requests
- Through a common database that can be accessed by both the manufacturer and customers, it is now possible to exchange critical project documentation much faster, with full version control.

Not all forays into enterprise collaboration need to involve expensive systems implementation. One survey respondent had implemented a very simple and cost-efficient means of exchanging

inventory information with his customers. Web cameras have been installed at customer sites pointed at the stock area containing vendor-managed inventory.

- Implementation time: less than four hours
- Implementation cost: less than €500
- Benefit: Improved on-time delivery by 15%.

CONCLUSION

Integrated extended supply networks are nothing new. For example, the Italian textiles industry is renowned throughout the world. Yet, with the exception of Benetton, there are few large players. A successful industry has been built on the effective collaboration of a lot of small, often family-owned, businesses.

What has changed is the technology, which allows businesses to collaborate on a global scale, at much faster rates than ever

before. Through such collaboration technology, businesses operating at the frontier are using information better, and focusing more on their core processes.

There is still much more to be done in building the on-demand supply chain. In particular, businesses will have to do more to build organisational models that are adaptive, fast learning, and dynamic – in order to deal with fast-changing business pressures and to bring them an ever-greater competitive advantage.

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About the Authors

Keith Burgess works in Supply Chain and Operations Solutions for IBM Business Consulting Services - helping clients in the strategic deployment of supply chain systems, in order to deliver significant business benefit. In nearly ten years as a consultant, Keith has helped many well-known companies across Europe to improve the performance of their supply chains, from procurement and manufacturing strategy through to distribution and retail. Keith is an Associate member of the Institute of Operations Management, and a member of the Institute of Logistics and Transport.

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