

# A marvel of the modern age

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You probably don't think too much about supply chain management. You might not even know what it is. But it's very important and it makes the world go around.

Supply chain management, or SCM, is the art and science of getting materials and products from one place to the other most efficiently.

Every truck on the roads, container on a ship or train, or supermarket item with a bar code scanned at the checkout is part of a complex system of supply and demand - a web of interlocking relationships at the core of commerce.

We take for granted that goods mysteriously appear in shops and that we buy pretty well whatever we want, when we want.

If a supermarket runs out of our favourite cereal or if we can't get even the most obscure item shipped to us immediately from its online store we regard it as something of an affront, a fraying in the fabric of the natural order of things.

Supply chain management is the marvel of the modern age.

These efficient systems, which ensure that shops have just the right amount of stock, that factories have just the materials they need, that ports unload just the right amount of stuff, almost defy comprehension.

Behind these systems is sophisticated computer software.

Supply chain management is at the core of most of the enterprise resource planning (ERP) systems that make modern corporations tick. Some say that ERP is a subset of SCM, not the other way around.

Companies such as SAP and Oracle and specialist vendors such as i2 and Manugistics take the software to a high level of complexity.

I remember visiting SAP's offices in the countryside south of Heidelberg, in Germany, 10 years ago and sitting through a two-hour presentation on warehouse management systems and on software that determined the most efficient way to stack a pallet.

It was riveting.

Increased globalisation in recent years led to a massive increase in the amount of commerce between nations. China is the world's workshop.

Sometimes I go into Tandy or Harvey Norman just to wonder at the low prices.

A DVD player for \$30! Flat-screen TVs, cars, clothes, computers; everything is so cheap.

Why?

Improved technology is part of it but the main reason is that manufacturers, wholesalers and retailers are devising better ways to move things around.

In the 1950s and '60s the Japanese perfected just-in-time manufacturing. Just the right amount of raw materials would be delivered to the factory, just in time for it to be used on the production line. Too late or too little and the production line shut down, with workers idle and other components banking up. Too early or too much and the factory had to buy and store more than it needed.

This giant balancing act is played out to near perfection by millions of companies. Breakdowns, bottlenecks and shortages occur but are anomalies.

The natural order of things is, apparently, quiet efficiency.

But it's not.

The normal state of affairs for most of nature is chaos or, at best, a Darwinian struggle for survival. It is supply chain management that imposes order and ensures work is done.

Australian John Gattorna is one of the world's experts on SCM. He identifies four supply chain types.

The first is "lean", where demand is predictable and service not so important. An example is a food manufacturer, which takes raw materials from competing sources.

"Continuous replenishment" has predictable demand but a close relationship with the customer. A good example is a car plant where demand for components and raw materials is well known and based on much historical data.

In a "fully flexible" supply chain, suppliers respond opportunistically depending on demand.

And the fourth type is "agile", where there is unplanned or unforeseen demand and suppliers must respond quickly.

The last two, with low predictability, are the most difficult - the reasons why companies such as DHL and Federal Express do so well. Such third-party logistics companies take up the slack to help organisations meld Gattorna's four supply chains into a whole.

Supply chain management is evolving. In a world of wafer-thin margins and tiny inventories, further improvements are often marginal. But the smallest speed improvement - or lower costs - magnified often leads to competitive advantage.

The most important new technology is radio frequency identification or RFID. I will explore its ramifications next week.

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