2002-02-01

The Four Fundamentals of Supply Chain Management

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LOGISTICS SOLUTIONS
ISSUE 1 2002 / 14

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EDWARD SWEENEY provides a primer on the fundamentals of supply chain management

INTRODUCTION

Since its inception in 1998, NITL has been attempting to evolve a definition of supply chain management (SCM). This process has been driven by a number of factors. Firstly, there is no universally accepted definition of SCM. Secondly, many of the "definitions" that do exist are no more than trivial restatements of the overall objectives of SCM (e.g. "SCM is concerned with ensuring that the right products, are in the right place at the right time and cost, in the right quantity and quality"). Thirdly, there is an ongoing debate about the relationship between logistics and SCM. In an earlier article on SCM training and education in *Logistics Solutions* (Issue 2, 2001), I made reference to NITL's Four Fundamentals of SCM. In response to many enquiries about this, this article explains these fundamentals in some more detail. It is essentially an attempt to elucidate the essence of SCM in a way which goes beyond the trite one-liners but retains a compactness and clarity which is an essential ingredient of any worthwhile definition.

WHAT IS SUPPLY CHAIN MANAGEMENT?

A product or service is delivered to the ultimate customer through a complex interaction of several companies on the way, i.e. through a supply chain. The manufacturer's ability to give customers what they want, when they want it, at the price and quality that they want, is not just determined by the manufacturer's skill or expertise in running his/her own operation. No degree of improvement in the company itself can make up for suppliers not delivering, delivering wrongly or late. High inventory levels are often the result of an effort to buffer against such uncertainties. Inefficient production methods add additional uncertainties and unnecessary costs. The distribution of goods into foreign markets adds significantly to the cost of most consumer goods or components. Inefficiencies anywhere in the chain will reduce the chances of the manufacturer successfully competing against other suppliers. It is now recognised, therefore, that supply chains compete with other supply chains.

> **MANY COMPANIES DO NOT EVEN REALISE THE IMPORTANCE OF SUPPLY CHAIN** MANAGEMENT TO THEIR FUTURE SURVIVAL. IT APPLIES TO SMALL OR LARGE COMPANIES

Supply chain management is concerned with the total management of the supply chain. As such, it is an essential activity in any company's everyday life. Very often the company is let down not by their own actions, but by the actions of other parties involved. Many companies do not even realise the importance of supply chain management to their future survival. It applies to small or large companies, whether they are in manufacturing, process or service industries. Improving ones own business is no guarantee of success in today's competitive markets. The individual success of a company depends not alone on their in-house skills and expertise. Without the right companies up and down the supply chain to work with a company will never achieve true competitive advantage.

At the end of the day supply chain management is the management of all the activities in any of the companies involved in a supply chain to achieve two things: to provide the highest possible level of customer service at optimum total supply chain cost and investment.

Recent advances in supply chain IT and electronic commerce have provided businesses of all types and sizes with the potential to improve competitive advantage. The potential benefits associated with the embracing of these new technologies include potential access to new markets on a global basis, more effective integration of upstream and downstream supply chain partners and better streamlining of internal and

Figure 1

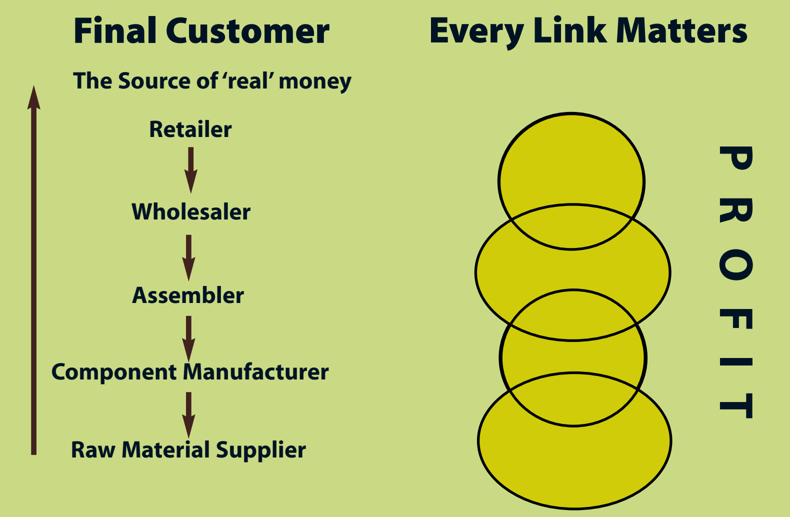


Figure 2

Supply Chain Management

FUNDAMENTAL	INDICATIVE DESCRIPTOR
1 Objectives	Customer Service/Supply Chain Investment and Costs
2 Philosophy	Supply Chain vs. Supply Chain (ie not Company vs. Company) - the chain is only as strong as it's weakest link
3 Manage the flows	Integrated management of the material, money and information flows throuhout the chain
4 Relationships	Re-appraisal of internal and external customer/supplier realtionships

external business processes. In short, the technological potential exists to simultaneously improve customer service levels and to reduce supply chain costs.

However, if this potential is to be realised in practice there is a need to re-evaluate current supply chain configurations. A mismatch currently exists between the technological capability and the supply chain or logistical reality. This mismatch has sharpened the focus on the need for robust approaches to supply chain re-engineering.

MATERIAL, INFORMATION AND MONEY FLOWS

A representation of a simple supply chain is shown in Figure 1. Material flows through the chain from the raw material supplier through the component manufacturer, assembler, wholesaler and retailer and eventually reaches the final customer. Value is added in some way at each point in the chain. The final customer can be regarded as the source of real money. The money paid by this final customer flows back down through the chain. The key point is that every link in the chain matters. As pointed out previously, a weakness anywhere in the chain results in the chain as a whole failing to achieve its competitive potential. In other words, the chain is only as strong as its weakest link.

For the chain to be as competitive as possible, the material, information and money flows need to be managed across the companies in the chain. This has implications for the way in which companies deal with their customers and suppliers. Traditionally, relationships with suppliers were often adversarial. Customers played one supplier off against another often with a view to achieving unit price reductions. This approach inevitably led to problems in relation to achieving high levels of service with the final customer and in relation to the real costs incurred by companies throughout the chain. Supply chain management is not a "zero sum" game based on adversarial relationships. Rather it requires companies to work in a spirit of partnership based on shared objectives and interests. It requires the development of "win-win" relationships to replace the "zero sum" game which often resulted in everyone losing in the long term.

THE VALUE CHAIN

Another way of thinking about the supply chain is based on the concept of value. As pointed out previously, value is added at each point along the chain. Value is something which a customer is prepared to pay for. A value-adding activity is, therefore, an activity along the chain which adds value to the product or service and which the final customer is willing to pay for. Conversely, a non value-adding activity (or NVA) is an activity which adds costs but does not necessarily add value from a customer's perspective. The elimination of NVAs along the chain is an important part of supply chain management.

THE FOUR FUNDAMENTALS OF SUPPLY CHAIN MANAGEMENT

All of the foregoing can be summarised by the four absolutes or fundamentals of supply chain management (see Figure 2). These fundamentals refer to the objectives, the philosophy, the "three flows" and customer/supplier relationships. These are now explained further.

FUNDAMENTAL 1

Firstly, the objectives of SCM are to achieve high levels of customer service in targeted markets/segments and to optimise total supply chain investment and cost. This service/cost approach has long been regarded as central to supply chain management. This approach requires companies to have a clear understanding of both issues. Customer service requirements, dictated by the market place, sets the spec for the supply chain. Achieving this level of service at the optimal cost focuses attention on the elimination of NVAs throughout the supply chain.

FUNDAMENTAL 2

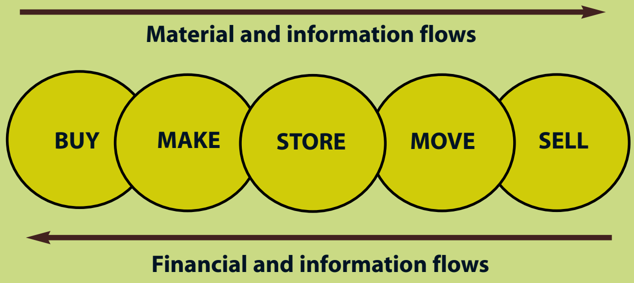
Secondly, every product or service is delivered to the final consumer (the only source of "real" money in the chain) through a series of often complex movements between companies which comprise the complete chain. An inefficiency anywhere in the chain will result in the chain as a whole failing to achieve its true competitive potential. In other words, supply chains are increasingly competing with other supply chains rather than, in the more traditional axiom, companies simply competing with other companies. The phrase "supply chain" is used to indicate that the chain is only as strong as its weakest link.

The representation in Figure 1 (above) is of a "macro" supply chain shows materials flowing from the raw material supplier through the various stages in the chain to the final customer. Money then flows back down the chain. The point is that every link matters and that value is added, and profit generated, at each link along the way.

You can describe most businesses in terms of the five functions buy, make, store, move and sell - known as the "micro" or internal supply chain (See figure 3).

Traditionally these functions have been managed in isolation, often working at cross purposes. Supply chain management means thinking beyond the established boundaries, strengthening the linkages between the functions, and finding ways for them to pull together. A recognition that the whole is greater than the sum of the parts calls for more effective integration between purchasing and procurement (buy), production planning and control (make), warehouse

Figure 3 **"Micro" (Internal) Supply Chain**



management (store), transport management (move) and customer relationship management (sell).

FUNDAMENTAL 3

For a supply chain to achieve it's maximum level of effectiveness and efficiency, material flows, money flows and information flows throughout the entire chain must be managed in an integrated and holistic manner, driven by the overall service and cost objectives. This view of a macro chain indicates the way in which material, money (funds) and information flow between the companies which participate in the chain. Flows in the micro chain can be thought of in a similar way.

> **THE ENTIRE SUPPLY CHAIN DOES NOT HAVE TO BE IN ONE COUNTRY, SO SUPPLY CHAIN MANAGEMENT** ALLOWS IRISH BASED COMPANIES COMPETE IN THE WORLD MARKET AS PART OF A GLOBAL SUPPLY CHAIN

FUNDAMENTAL 4

Finally, this holistic approach requires a reappraisal of the way in which both internal and external customer/supplier relationships are created and managed. SCM is not a "zero-sum" game based on adversarial relationships, rather, it needs to be a "win-win" game based on partnership approaches. This point is relevant to the interactions between the key "internal" supply chain functions of buy, make, store, move and sell, as well as to relationships between an organisation and it's external customers and suppliers. One of the biggest manifestations of the application of supply chain philosophy in recent years has involved the move away from adversarial relationships throughout the supply chain towards relationships which are based on mutual trust and benefits, openness and shared goals and objectives.

WHY IS SUPPLY CHAIN MANAGEMENT IMPORTANT?

Supply chain management is quickly becoming regarded as one of the key value-adding business processes in companies. Value is added both through enhanced levels of customer service (and, as a result, revenues) and through optimisation of the supply chain cost base. A recent MIT survey indicates that the implementation of supply chain management by US companies resulted in significant reductions in inventory and other supply chain costs and improvements in customer service (for example, on-time deliveries, order cycle times and stock-outs – see Figure 4).

WHY IS SUPPLY CHAIN MANAGEMENT IMPORTANT IN IRELAND?

"World Class Best Practice" companies have endorsed the concept of supply chain management. Companies in Ireland will have to do the same if they are be competitive in world markets. This is particularly true as a result of Ireland's very open economy - over 80 per cent of what is produced in Ireland is exported off the island. Given Ireland's peripheral location, companies based here must be better at supply chain management than companies in more favourable locations. Supply chain management shows that transport is only one, and not even the most important, cost in the total supply chain. Distance from raw material sources and markets need not be a disadvantage if companies in Ireland can be 'world class' in the other supply chain management elements. These supply chain management elements include, for example:

- Agile and lean manufacturing;
- development of supplier partnerships;
- just in time inventory management;
- effective use of 3rd and 4th party distribution and logistics service providers.

If companies in Ireland can be world class in these they can successfully compete in world markets. In addition, the entire supply chain does not have to be in one country, so supply chain management allows Irish based companies compete in the world market as part of a global supply chain. The large number of multinational companies which have chosen to locate in Ireland makes this even more important. Finally, developments in E-business have created 'virtual' supply chains, a development which Ireland is well placed to exploit. LS

Figure 4

Why is Supply Chain Management Important?

"Effective supply chain management can cut costs, improve service and enhance revenues and that's just the beginning"   Prof. P. Metz, MIT

MIT Survey: Implementation of 'supply chain management' in US resulted in:

- **50% reduction in inventory**
- **40% improvement in on-time deliveries**
- **27% reduction in order cycle time**
- **Nine-fold reduction in out of stocks**