

To Integrate or Not to Integrate?

a report by

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To say that supply chains compete has almost become a cliché. This phrase is largely accepted as a concise summary of what is happening to businesses in the 21st century as a result of globalisation, but how true is it? Does it bear close examination or is it merely an easy generalisation for a much more complex reality? If so, is it a dangerous oversimplification? The phrase certainly has the merit of highlighting the interdependence that exists in chains and how their performance depends on their weakest link.

For it to be true, the competing chains must exhibit a degree of integration. If, at each level in the chain, customers source from several suppliers, then the whole concept of competing chains makes no sense; they simply do not exist. The same is true where one supplier services several customers.

So, what constitutes a competing chain? One answer is to view the end-customer as the one for whose business the chains compete. Further back along each rival chain, a degree of integration exists between customers and suppliers – one supplier working only with one customer and vice versa.

How far has this become the norm in manufacturing and distribution, at least for a core of major products and services passing from supplier to customer? Buying pens would only be regarded as a core supply if, for instance, the customer was selling note-pads and providing pens as an add-on.

There is plenty of evidence to suggest that the trend is indeed towards more integrated chains. It has already happened in some companies and continues to happen in others. One study of 49 international companies showed that 62% had reduced the number of first line suppliers over the previous five years.¹ A more recent survey of 332 UK manufacturing companies looked at how relationships between

customers and their suppliers were set to change.² It showed that the trend towards greater integration in supply chains is likely to continue.

So, even if it is not yet the norm, it is seen as a goal worth striving towards. Therefore, business is in a transitional state en route to a new global structure – a case of 'norm' tomorrow. There are models that reflect such a progression. One model has a four-stage structure.³ Stage One is referred to as the functional stage, where the individual functions within an organisation work in isolation – working in silos. Stage Two is called the internally focused stage – breaking down the internal silos. Stage Three, externally focused, looks to achieve integration within the supply chains. Finally, Stage Four is seen as the creation of a virtual enterprise – managing rather than owning assets.

A second model, called vendor-managed logistics,⁴ sees companies advancing from the integration of transactions to the transfer of some part of the production function to a supplier. Here, there are five stages. Starting from a position where the customer controls everything (Stage One), Stage Two envisages the supplier taking over warehousing and supply. In Stage Three, the supplier starts to control inventory, while, in Stage Four, it assumes many of the roles carried out by the customer's buying function. Delivery is then often straight to the line. Finally, Stage Five sees an entire portion of the production function handed over to the supplier.

Why are companies looking to integrate their chains? Clearly, having supply chains in competition with one another is the result rather than the cause of these changes. It has been reported that the major drivers were increased profits and cost savings, followed by delivery performance. Others included working more closely with suppliers and developing long-term relationships.

1. G D M Frizelle (1998), *The Management of Complexity in Manufacturing*, *Business Intelligence*.
2. T Baines and G Kay, *Manufacturing Engineer*, Vol. 83, No. 3 (2002), pp. 137–142.
3. A Potgieter and W Steel (2003), "Use of Advanced Planning in the Optimisation of Supply Chains", Proceedings 'Optimal Supply and Demand Chain' Conference, Pretoria.
4. P E Christiansen (2001), "Vendor-managed logistics from a Purchasing Perspective", *Business Briefing: European Purchasing & Supply Chain Strategies*, World Market Research Centre Ltd, London, pp. 88–91.



Further reasons for seeking closer integration were revealed in a recent research study carried out by the universities of Cambridge and Oxford. These included cost savings as well, such as focusing on fewer products. Groups from the two universities observed three supply chains in detail. They took direct measurements of the chains and how they performed under differing sets of circumstances. The focus of their interest was the pattern of material and information flow. In particular, they wanted to know how these were impacted when customer and supplier attempted to work more closely. It meant that the findings were based on observations rather than merely on the opinions of the managers involved.

Therefore, some of the benefits of greater integration can be summarised as:

- providing cost savings, including shipping costs;
- offering faster and more reliable deliveries;
- having to deal with fewer suppliers;
- being able to reduce or eliminate inventories;
- having a more focused product range – this includes being able to delay product differentiation;
- having more integrated systems with savings in time and cost;
- being able to undertake joint development of new products – reducing time and cost to market; and
- being able to enter long-term strategic alliances with partners.

However, the research also uncovered the fact that there were considerable downsides to becoming more integrated. Eight specific problems were identified.

1. Integrated chains are prone to instability – One of the benefits of integration is the reduction or elimination of inventory. This brings its own problems. The most obvious is that there are few or no buffers in case things go wrong. The only alternative is to create spare production capacity at the supplier's premises. This way of working has its disadvantages. First, it can increase lead times as products are, in effect, made to order, meaning that the latest order always goes to the end of the queue. Second, it may be cost-ineffective as it implies plant and labour standing idle until required. Third, it removes capacity from the chain. With no opportunity to aggregate orders, more set-ups and changeovers are required, with the consequential loss of productive time.
2. Integration undermines independence of action – Having one supplier and/or one customer means 'forsaking all others'. Provided the relationship is cordial, there are benefits to be had. As trust grows, it is possible to dismantle some of the structure that is erected to ensure compliance when the partners are working 'at arms length'.

In consequence, costs fall for both parties and decision-making is accelerated. The problems occur when things go wrong. These could be caused by circumstances external to both parties, economic downturns, a serious dislocation in the chain such as accidents, fires or major plant breakdowns, infrastructural problems and so on. However, they can also occur when one of the parties, more often than not the customer, does not really want to 'play the game'. Therefore, one partner loses its independence for the benefit of the other.

3. Integration requires suppliers to follow goals that may be inimical to their shareholders' interests – At an operational level, inventory will be minimised if the supplier follows exactly the customer's requirements. In other words, the supplier's manufacturing facility acts as a 'slave' operation to that of the customer. However, that may not be the best way to achieve the maximum from the plant. As a result, opportunities are lost to reduce internal costs and increase the supplier's profit.
4. Integration imposes performance measures that may act against a company's goals – This is similar to the preceding point. A customer may wish, for example, to concentrate on offering the market considerable product choice. That is likely to result in the supplier receiving a high variety of small orders. However, the supplier's operation might be geared to long production runs. The customer's performance measures will monitor how effective it is in coping with this variety. That, in turn, will require tracking how well the supplier performs. Such a measure will conflict with the supplier's internal measures, which will be orientated to achieving low-cost throughput.
5. Integration locks customers into a single source of supply – For the chain to perform adequately under the new regime, both partners will probably have had to make investments in their manufacturing processes. It is easy to think of examples: relaying out the plant, modifying handling and storage equipment, even plant relocation. Each of these small and not so small changes make it harder to switch sources subsequently.
6. Integration requires the interchange of considerable quantities of data – A supplier can become increasingly effective by receiving more detailed information from the customer. This will cover both future plans and on-going requirements. Since more information equates to less inventory, that has to be a prerequisite for close integration. However, in providing such data, the customer could be in danger of

revealing information that they would rather keep under wraps, such as sensitive aspects of future plans.

7. Integration necessitates the harmonisation of information systems – Transferring or translating data from one system to another is both time-consuming and expensive. It is also prone to errors. All of these act against the aims of achieving integration. The pressure will therefore be to harmonise the systems. Once again, the information needs of one partner may not match those of the other. For instance, one may use an expensive and costly scheduling system while the other relies on some form of simple planning board. If changes are implemented to achieve greater harmony, again, it results in less flexibility for both partners.
8. Integration may create bottlenecks that undermine the stability of the chain – It must be remembered that bottlenecks occur not only as a result of increasing demand level; more changeovers and/or growing system unreliability will also have the same result. Problematically, a bottleneck may appear in a location other than the customer's or supplier's plant. The more prevalent bottlenecks are, the less likely the chain is to perform smoothly.

None of these points state that closer integration should be abandoned as a goal. The important question that it does raise is whether or not some of the savings identified here might be achieved by other means. For example, the growth of the Internet allows a customer and supplier to exchange large quantities of data without rewriting their internal systems. This can also be a practical way to safeguard sensitive information. Again, partners can co-operate to reduce product variety without losing flexibility. One well-known approach is to delay the point at which differentiation takes place until the last possible moment. Such co-operation does not have to mean closer integration at an operational level.

Finally, this and other research calls into question the value of seeing closer integration as a stage towards becoming a virtual organisation or, at least, with all the manufacturing subcontracted. There is now evidence that such a goal may not be worth striving for. Therefore, before pursuing greater integration, ask yourself:

- Do I really need to – what are the alternatives?
- Do I really want to – what are my long-term goals? ■