

INNOVATION IN SUPPLY CHAIN MANAGEMENT – STEPS ALONG THE WAY TO E-COMMERCE

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Technological innovation and information technology has now multiplied the productivity of individuals thousands of times in the last two generations. As well, our limited vision on the final benefits of such inventions as the transistor by William Shockley is no more evident than statements by people like Bill Gates in 1981 that “640k should be enough for anybody” or IBM’s CEO Thomas Watson in 1943 that the total market for computers would probably be no more than 5. In the 1890’s the Royal Society stated that “No object heavier than air would ever fly” – yet 20 years later we saw the Wright brothers achieve the “impossible”. In hindsight it is very easy to smile at these predictions by some of the greatest minds of the century. The reality is that our intelligence is limited and the rate of change and generation of information is so great, that many of us do not see the benefits of the available technology till it is too late. This is so particularly in the case of business and more so for small business.

Coupled with our inherent reluctance to seize opportunity, Australia’s environment has peculiar problems. Our problems first began during the profligate spending of the Whitlam government in 1972 to 1975.(1). The manifestation of this is the current account deficit and the total net debt.

In essence Australia’s CAD is cycling between 4% and 6% of GDP per year and the net debt has remained high at 44% of GDP for 7 years. ***Astute use of monetary and fiscal policy by the federal government has failed to solve the intrinsic structural problem.***

The main weapons have been interest rates (monetary policy) and control of government spending (fiscal policy). However, every time we reduce interest rates the domestic demand rises and we import more - the CAD then blows out even more.

The problem is one of poor international competitiveness and low commodity prices. We can do little about the latter but we can do a lot about creating strategic advantages to improve our competitiveness. The first step is to recognise what technology can do for us and focus on the way we can use it in the current global economy (3,4).

To take advantage of new technological opportunities, the processes of supply of goods and services to the world must be under tight control and management more able to use the plethora of information available. Management must raise the bar and not simply focus on the methods of the past. The strategic issues need to be linked to an improved operational effectiveness. This means that boards must understand Statistical Process Control (SPC) and process integration if Australia is going to compete globally – zero defects (7 sigma) is possible.

When individual processes are under tight control we can synchronise systems. Without tight process control, synchronised supply systems leading to a concept of near zero inventory will not work – enter Dr. Deming, the father of the Japanese manufacturing revolution (5). These methods are discussed in detail in “The Machine that Changed the World” (6) and later publications (7).

Whilst Japan’s economy is currently in crisis, no one can deny that they are still the best manufacturers of automotive and electronic equipment in the world. It is a pity the methods they used in manufacture were not also employed in their financial system and their basic infrastructure.

The end of World War II saw the birth of the manufacturing revolution in Japan led initially by General Macarthur and Dr. W. Edwards Deming. The strong statistical interpretation of reliable and accurate information enabled processes to be improved to hitherto unheard of quality levels. With continuous improvement over the next fifty years, defect levels in production in leading companies are now measured in parts per billion not percent. Leaders in the application of these new measures have been in such companies as Canon, Honda, Toyota and Panasonic and in general the telecommunications and automotive industries.

It soon became clear that as processes became more tightly controlled they could be reliably coupled so that individual processes could be synchronised in an overall production system. With renewed focus and continuous improvement, set-ups and down-time were reduced using tools like SMED(8) or eliminated and quality levels dramatically improved. Batch processes with inventory between steps could be replaced by synchronised continuous flow systems, with markedly reduced inventory or ultimately no inventory between processes except minimum batch quantities. For large production runs with small product variety, such improvements are easily understood and relatively easily implemented once statistical process control of the systems and processes are mastered.

For most Australian companies, initially aiming for small domestic markets with a wide variety of product groups, the task of moving from batch processes to synchronised continuous process flow is much more difficult. Nevertheless models can be developed using the underlying principles demonstrated by such companies as Toyota, Honda, Canon and Panasonic.

This is made even easier if Australian companies broaden their horizons and focus on global supply, not just domestic markets.

As mentioned earlier, our CAD is locked in to a cycle at 4% to 6% GDP per yr. Monetary policy control is not good enough! Australia has been in this debt trap for approximately 27 years and needs a way out. This not only means radical taxation reform but also a willingness of key management executives and boards to accept the challenge and start investing in strategic industries – reducing interest rates has not been sufficient incentive. The structural problems can be ameliorated using supply chain integration techniques.

Continuous improvement in the principles of process control of supply chains combined with rapid exchange of electronic data using the latest computer systems, means that complex supply chains can be integrated, working capital reduced, lead-times reduced, inventory reduced and the overall efficiency and costs remarkably decreased. This leads to large reductions in marketing and supply costs as well. In the retail industry this leads to RPO's (reverse purchase orders). Creative use of e-commerce in supplier-customer relationships using the latest technology, will lead to significant gains in the profitability of all partners. Inventory holdings can be reduced and better managed, lead times can be reduced, damage and storage eliminated, warehousing costs significantly reduced and more significantly, the time to market for innovation of product and process improvement diminishes greatly. In fact in such a supply chain, why have a warehouse? Does amazon.com have a warehouse?

It is not possible to suddenly take an existing establishment and purposefully employ all the available e-commerce techniques immediately. However, there are a number of simple techniques that can be used to advantage to start the supply chain revolution before Bill Gates' 12 points can all be applied(9). These include:

- vendor managed inventory
- line balancing
- finite scheduling
- just-in-time.

As an example of what can be done, the following details are presented.

After a diagnostic exercise, it was clear that there was a significant opportunity in a client's company to integrate raw material supply with production and combine this with integrated manufacture for export. The immediate advantages were:

- Supply to the global market with increased production run length with reduced cost and reduced inventory and waste.
- Synchronisation with a nearby supplier.
- Internal synchronisation of processes for regular flow by containers to export markets.

The results will be spectacular.

This is an example of the exciting potential remedies that can be implemented by the private sector. These remedies lie in the supply chain, in fact, for many businesses 75% of the total selling price is in the marketing and distribution costs.

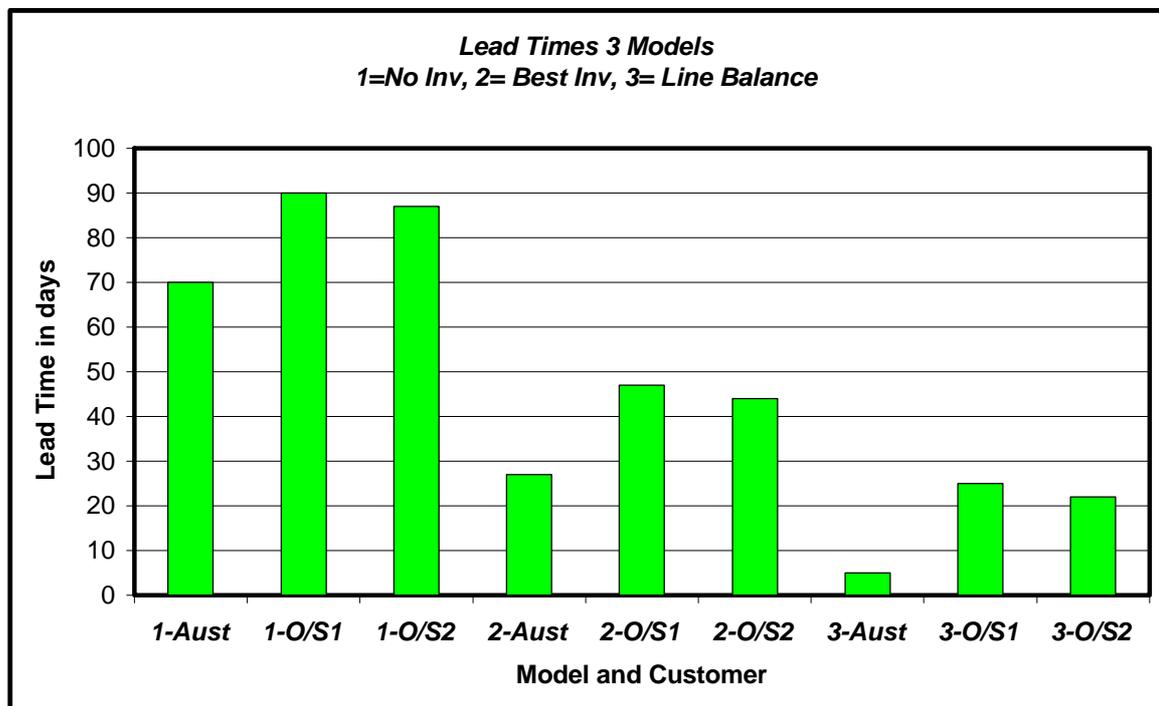
The new approach to reengineering the supply chain using IT solutions, truly opens Australia to a world market. Special Supply Chain Management techniques can be applied and specialist tools and relationships can be used to:

- Reduce inventory at all sites;
- Reduce costs;

- Speed up the process and reduce leadtimes;
- Reduce warehouse costs;
- Reduce loss due to obsolescence;
- Speed up responsiveness
- Link suppliers enterprises and customers in a continuous flow;
- Make all parties more innovative by being closer to the customer and having a supply system that responds quicker;
- Speed up the development and marketing of new products and services
- Internal Reverse Purchase Orders
- Increase productivity.

The benefits are significant to all parties that participate in this supply chain integration process. Typical short term projects can lead to inventory reductions of 75% and improvement in return on investment of 2% to 5% ROI and earnings return improvement on sales of 2% to 5% EBIT (this is in addition to the current earnings). The Supply Chain Partnerships Program (SCPP) offers real opportunities to make Australia truly globally competitive and to prepare a more innovative Australia for future globalisation (10).

Blakemore Consulting has recently designed a supply chain model which synchronises the planning systems in all partners and reduces leadtimes by up to 92% and inventory levels of up to 75% as shown in Figure 1 below.



In this figure o/s = overseas customers and model 3 is the ultimate goal when the major lead time contributor is the sea freight transit time.

To implement the proposed system, a cross functional order fulfilment group, incorporating planning and commercial functions, was set up. Later, the plan

will grow customer by customer in order of priority. At a later date when the benefits have been demonstrated to the customers, it is anticipated that they will take over the role of forecasting and inventory control. The “*model*” leadtimes are the target values that can be achieved if the processes are synchronised and the planning cycles are integrated. (The leadtime is defined as the average time taken to deliver to the customer’s door from the time the order is placed.)

Supply chain process integration offers countries like Australia, where geographical isolation is always seen as a drawback, the opportunity to compete on a more even footing with global suppliers of all types of manufactured goods. In particular, if we integrate with major suppliers, we can aim for continuous flow for high value added returns. If this is linked to planning cycles and planned and promoted usages with overseas customers, then costs of production, distribution and marketing can be dramatically reduced. Before full use of the available technology can be made, the system must be designed, the partnerships established, the system implemented and the processes in place and well understood ie strategic alliances should be set up (11).

The most important measures of the improvement in performance can be translated to the following **KPM’s (Key Performance Measures)**:

- **Lead Time** (Defined as the difference between the date of delivery and the date the order was placed [days])
- **Stock Turns** (Defined as Total Inventory divided by Cost of Goods Sold [COGS][Number])
- **EBITD** (Defined as Earnings before Interest Tax and Depreciation as a Percentage of Sales[%])
- **RONA** (Return on Net Assets Employed [%])
- **Value Added** (Earnings on [Inventory+Debtors+Shareholders Funds]% less 12%)

The data warehouse is already a reality for global supply (see amazon.com). Many industries need to re-engineer the use of their existing capital and asset infrastructure before they can make efficient use of the e-commerce tools that are readily available.

This executive note has briefly highlighted the magnificent opportunity that is available to all businesses. Recognition of the problem and a willingness to accept a new way of running the business is the first requirement. Australia can restructure and compete globally. We can no longer expect an increase in commodity prices to rescue us. Management and the Board have a clear responsibility to rise to the challenge and use the new technological tools that are now available.

Australian business can win in the global marketplace.

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