

# CRANKING THE HANDLE FASTER

Peter Catton, FIOM, Catton Associates

## INTRODUCTION

At last manufacturing is really out of recession. The concentration of operations management has now to move from survival to profitability and as ever the key measure of a company's performance in achieving this is return on capital. The two main elements in this are to improve profit margins and capital turn, in accordance with the formula:

$$\begin{aligned} \text{Return on capital} &= \frac{\text{Profit}}{\text{Capital employed}} \\ &= \frac{\text{Profit}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Capital employed}} \\ &= \text{(Profit Margin)} \times \text{(Capital Turn)} \end{aligned}$$

To improve these ratios is in essence simple:

increase profit margins by increasing prices (sometimes difficult since my price increase is your inflationary pressure), reducing costs and by increasing sales whilst holding fixed costs constant;

increase capital turn by increasing sales, reducing capital employed by reducing stock, debtors days and the fixed capital needed by the business.

All this is well known and many articles and papers have been written about the techniques which can be employed in attacking each of the areas needed to improve return on capital. However, putting them all together to achieve *significant* improvements is much harder. Too often excessive efforts are made to achieve only minor improvements in the ratios. One company which did apply many of these techniques over two years increased profit margins by 9.6 points and increased capital turn from 1.8 to 3.9. Thus using the formula above, return on capital increased by 20.8%, a figure which many manufacturing companies would be glad to have as their total return on capital. So how did they do it and what were the lessons to learn?

## ACHIEVING INCREASED RETURN ON CAPITAL

At the end of August 1993, Linvar Limited appointed a new Managing Director. The company had a turnover of about £10 million and manufactured small parts storage, consisting of shelving, vertical storage carousels (often known as paternosters), plastic containers (Linbins) and benches at its Leicester site and materials handling equipment, consisting of vehicle loaders, conveyors, baggage handling equipment and document movement elevators under the Sovex name at its Nottingham factory. The company had been through difficult times, the result of which was that nearly all manufacturing at the Leicester site had been sub-contracted, some to the Nottingham factory, leaving a half empty warehouse and an office facility.

The remit of the new Managing Director was to improve profitability without running significant risks and almost the first action he took was to review product profitability, both at a contribution (or gross profit) level and also after allocating overhead costs as realistically as possible. The result showed that one product, workbenches, was not even profitable at the contribution level and that two, shelving and baggage handling, were making net losses of more than 10% after overheads.

Thus an early decision was to stop making workbenches. (Interestingly, this had the immediate effect of *increasing* sales of workbenches!) It was also clear that shelving and baggage handling would have to have their profit margins significantly improved or their volumes would have to be replaced by increased sales of the more profitable products.

## MANUFACTURING STRATEGY

From a manufacturing viewpoint, one of the key problems was that the company traded in products which required very different control mechanisms and strategy, namely:

- Static storage products, such as plastic bins and shelving, were sold from stock and bought in relatively large batches. These required accurate forecasting, sharp buying and accurate stock control and their route to market was via distributors or catalogue sales. These were sold from the Leicester factory.
- Bespoke standard products, such as vehicle loaders and carousels, used standard designs which were modified to suit particular customer needs and were made to order. The key to success in these products was good design, fast delivery and quality maintenance back up. Their route to market was via direct selling to the end customer. This product type was sold from both Leicester and Nottingham.
- Projects such as baggage handling and conveyors, which used standard items, modified, but most importantly, designed and installed over relatively lengthy periods on site. The most important elements in these were good project management and installation. They tended to be sold as sub-contract to other companies, typically building contractors. These were all manufactured at Nottingham.

This proliferation of product type was obviously a major handicap for a relatively small company and prevented a concentration on key capabilities and simplified systems. The logical solution was to segregate those products needing heavy design and manufacturing content, ie. the bespoke standard products and the project type work, onto the Nottingham site and to ensure that the static storage products business was run more as a 'wholesaling' operation from a smaller site, thus allowing the large Leicester site to be sold.

However, when presented to the main board, approval was refused on the basis that this would create a serious short term cash flow whilst the 'wholesaling' operation was set up, before the Leicester site could be sold.

## PRICING CORRECTLY

Meanwhile, in early 1994, old problems on two projects began to show themselves, where installations ran into problems. In some ways this was a demonstration of the difficulties outlined above. In sell from stock situations, which was the company's roots, product pricing is typically based upon a fully absorbed cost plus a mark-up. On projects, profit margins are typically very narrow, which, if most of the work is undertaken in house, still allows for very high contributions to overheads. However, where the bought in element is significant, these thin margins lead to a situation where risk is high and potential benefit is low. Thus when problems arose, as they did in these two cases, the company was actually worse

off having accepted the work than if they had refused the order in the first place.

The key lesson was learnt and subsequently, all project prices were viewed from both an absorbed cost basis and a contribution basis (where contribution was never allowed to be below 30%).

## REDUCING FIXED ASSETS

However, the key strategic problem was still unresolved, when, unexpectedly, a racking manufacturer, Apex Storage Systems based at Milton Keynes, offered to buy the shelving and plastics products. The manufacturing rationale was that the shelving would provide an excellent additional product to manufacture at their modern factory and that the distributors for the Linvar static storage products would provide additional outlets for their racking. From Linvar's view, the sale would allow the planned strategy to proceed, would lose one of the low margin products (the racking), would generate cash and would allow the large Leicester site to be sold, but would result in some loss of profitability and the human problem of segregating employees into those related to each side of the business and transferring some to Milton Keynes and others to Nottingham.

Clearly the benefits far outweighed the problems and the deal was signed on 30 June 1994. Immediately the capital turn ratios improved, since assets were more than halved. It could be said that the unexpected offer to purchase was 'luck', but having thought through the preferred strategy beforehand, this provided the final piece in the puzzle. The need to have a clearly thought through strategy allowed the 'luck' to be converted immediately.

As part of the agreement, the name 'Linvar' was sold, and the company was renamed 'Linpac-Sovex', the first part of the name being the brand name for the vertical carousel.

The immediate effort after the split had occurred went into transferring the Leicester carousel business to Nottingham. The problem was that the Nottingham site would have to produce at least 50% extra output by value, and more particularly, a product which was very bulky. The bottleneck became factory space and Just-in-Time manufacturing became a necessity, since there was no space to store significant amounts of stock.

## MAXIMISING OUTPUT THROUGH THE BOTTLENECK

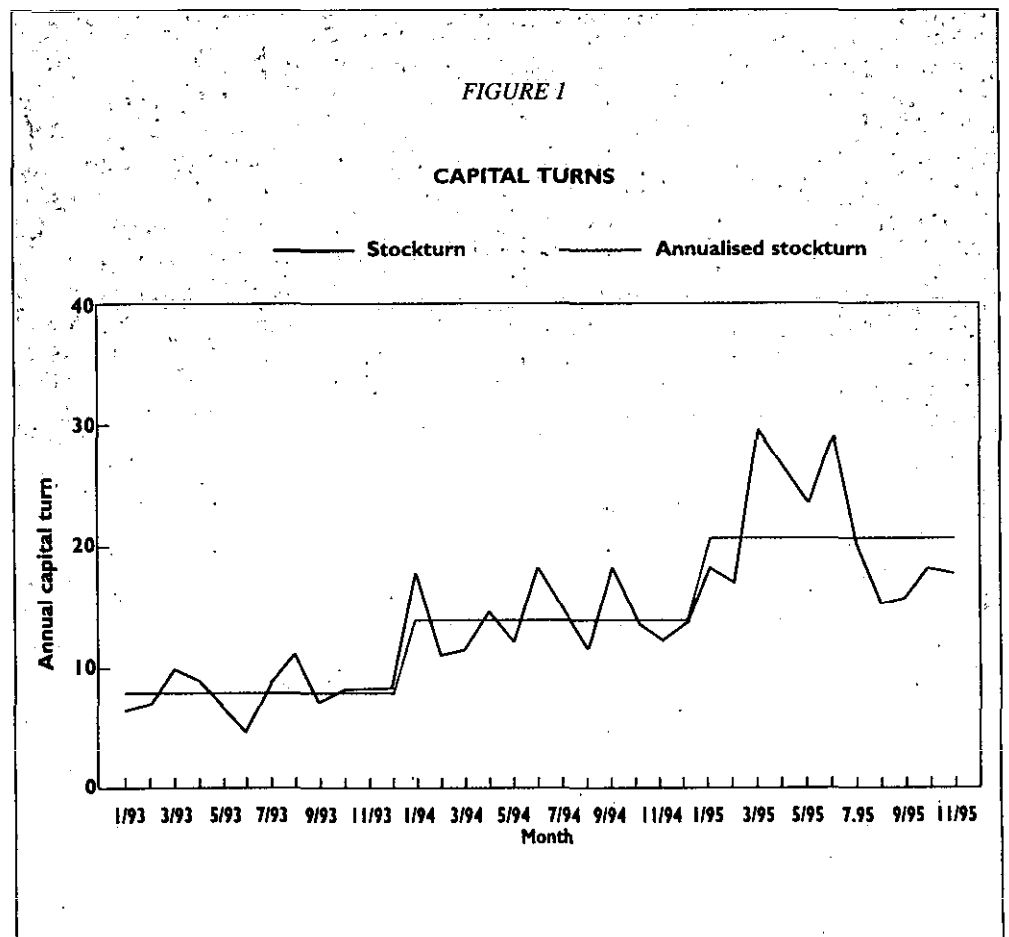
The first effort was to increase throughput capacity at Nottingham and the key machine constraint of the paint line was overcome by buying a new electric radiant heat drying line and overhead conveyor to add onto one of the existing modern paint booths. Though expensive to run compared to that which had been at Leicester, it had the advantages that its footprint was very small (meeting the key consideration of floor space) and its time to heat to temperature was minutes not hours; thus it could even be switched off over lunch breaks. This allowed despatching

of all the carousels to be undertaken from Nottingham within one month of the sale taking place.

The next step was to transfer into the factory all the sub-contract sheet metal work. On the face of it this would seem to be rather contradictory, given that the main constraint was space. However, it had the advantage that parts could be made to suit Linpac-Sovex's delivery requirement, not to meet the slot available at the sub-contractor, and remove the problem of bulk deliveries and where to store the bulky parts. Most important of all, it allowed Linpac-Sovex to obtain the contribution to its overheads rather than to give them to a sub-contractor.

As a consequence, sheet metal work was made as required in-house. An apparently overwhelming problem was that carousels are despatched in a knock down state and are only assembled on site. At Leicester a carousel had been kitted by putting all the parts together in the despatch area and then loading the lorry. At Nottingham there was literally insufficient space to do this and despatch up to the five machines a week required. The solution devised by the despatch and production departments was to have a curtain sided trailer always in the yard; produce the parts needed in the correct order and to load the trailer as they were packed. Once the trailer load was completed, the trailer for the next customer was called in and the procedure repeated. Mobile storage!

Although finished metal parts were not stocked, it was necessary to hold sheet metal stock in order to meet delivery times. Historically, this sheet had been bought cut to size, ready for folding. To continue to do so would have led to the company having to forecast what sizes to buy and having to buy in batches, which would have resulted in more space being taken up, higher stock levels and the problems of redundant stock which had already been inherited from the Leicester site. The decision was therefore taken to buy a reconditioned guillotine and to buy standard sizes of sheet metal to cut to size in-house. (Again this obviously brought in-house some of



the contribution which had been paid to the stockist for cutting the sheet.)

The remaining problem with this was that standard lengths of steel sheet did not match the commonest length required for the products and therefore there would be significant wastage in material and time in cutting to length as well as width. This was resolved by the local stockist offering to cut from coil to the exact length which was commonest and holding any excess in stock until it was required. The resultant cost per tonne for steel was not the lowest possible compared to imported standard sizes, but led to the most cost effective solution.

Not all the remaining efforts to improve capital turn and margins were on the shop floor. A decision was implemented not to quote for the larger baggage handling contracts, an area identified above as being low margin, which were also subject to civil engineering terms and conditions which tended to cause payment problems. This loss of turnover was made up by an export drive on carousels and vehicle loaders. In addition, increased emphasis was given to refurbishment and service work, which gave higher contributions and, in the case of servicing, did not use that scarce resource, factory floor area.

After almost a full year at Nottingham, the planned results were appearing, a recalculation of product margins showed that all were now making a positive contribution and the upward movement of capital turn is best demonstrated by the stockturn graph in Figure 1 which demonstrates a step turn from 7.9 to 14.0 with the sale of the static storage products and continued growth to 20.9.

## CONCLUSION

The key lesson to be learnt from this real life example is that significant improvements in return on capital can be achieved, but it does require a company wide targeting upon achieving the key performance indicators. The initial worries that the Nottingham factory would not have the space to cope with the additional throughput were allayed by using constructive thinking and attention to detail. After a year, everyone was confident that significantly greater output could be achieved if sales orders were available. Obviously this would improve yet further the return on capital.

Indeed Linpic-Sovex is a microcism of the current trends in manufacturing towards more output being achieved with fewer and fewer resources. The future of manufacturing is comparable to what has happened in agriculture over the last fifty years, where more food is produced in the UK using far fewer labour resources and less land. Perhaps in twenty years time manufacturing will also employ only 5% of the working population to produce all that is needed. This is the trend and the winning companies will be those leading the movement not trailing it.

## AFTERTHOUGHT

In fairness to readers, I have to confess that these results were achieved in taking the company from loss making to profitability. But if the urgency which applies to turning a company around can produce such benefits, why should not similar urgency be given to improving return on capital in any company?

## About the Author

**Peter Catton** is Vice Chairman of the Institute of Operations Management. Originally a consultant in Manufacturing and Materials Management with ICFC Consultants and Price Waterhouse, he was subsequently Managing Director of engineering companies. Until recently he was Managing Director of Linpic-Sovex.

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