A simple analogy is with an oil pipeline. Imagine a pipeline from a refinery to a port that is 500 kilometres long. In normal conditions there will be 500 kilometres equivalent of oil in the pipeline. If there is a change in requirement at the end of the pipeline (say, for a different grade of oil) then 500 kilometres of the original grade has to be pumped through before the changed grade reaches the point of demand.

In the case of the logistics pipeline, time is consumed not just in slow-moving processes but also in unnecessary stock holding – whether it be raw materials, work-in-progress, waiting at a bottleneck or finished inventory. By focusing on improving key supply chain processes companies can dramatically improve their competitiveness, as the case of Johnstons of Elgin (see box below) illustrates.

Johnstons of Elgin

Johnstons of Elgin can trace its history back to 1797 when Alexander Johnston first took a lease on a woollen factory at Newmill in Aberdeenshire, Scotland. Over two hundred years later, the mill of Johnstons of Elgin is still on the same site and is the UK's last remaining vertically integrated woollen mill – the only mill still to carry out all the processes from the receipt of raw materials to finished product at a single location.

In the mid-nineteenth century, the company developed a successful business, producing 'Estate Tweeds'. Estate tweeds are a derivative of 'tartans'. Tartan is a distinctive plaid traditionally worn by Scottish highlanders to denote their clan. The patterns of Estate Tweeds were specific to an individual estate – an estate being a (usually) large house or castle with significant land attached. The people who worked on that estate would often wear clothes made from the custom-designed and -produced tweed. This proved to be a very successful line for Johnstons and is still produced today to specific customers' orders.

At the same time the company had begun to import cashmere and slowly developed a range of fine woven clothes made from this fibre. Much later, in 1973 Johnstons entered the cashmere knitting industry through a separate factory in Hawick in the Scottish borders.

The impact of low-cost competition

For many years cashmere-based products had tended to be highly priced and as a result bought only by a more affluent customer. However, with the increasing globalisation of markets, partly influenced by the reduction or removal of trade barriers, new sources of low-cost competition began to emerge as the twentieth century moved to a close. Products labelled as 'cashmere' were now selling in supermarkets in western countries for a fraction of the price that traditional manufacturers and retailers were charging. Admittedly many of these low-cost imports were not of the same quality and contained only enough cashmere wool to enable them legally to be labelled as cashmere; however they very quickly had a severe impact on the sales of UK-produced cashmere products. For example, in 2008 a cashmere pashmina could be bought in Tesco for £29 compared to as much as £200 in a department store such as Harvey Nichols.

Many traditional manufacturers were not able to withstand this competition and the steady decline in the UK knitted garment industry – which had been evident for years – looked set to continue.

Johnstons of Elgin was not immune from this competition pressure and in 2006 it saw its profits fall from £2.2m to £336,000.

A shift of focus

For many years Johnstons had been predominantly a menswear business with highly stable products with long life cycles (e.g. suiting fabrics), but over time the company has become predominantly a womenswear business with a higher fashion content and with much shorter life cycles. At the same time, there had been a transition from a business producing mainly standard products on a repetitive basis to a much more customised product base, often made as own-labels for major fashion houses such as Hermes.

As a result, design had become a much more critical element in the product development process. It was also recognised that becoming a design-led company could provide a powerful platform for competing against low-cost country sources.

However, it was not sufficient to be innovative in design if new products could not be introduced rapidly and production adjusted quickly to match uncertain demand.

Time-based competition

As is common in the textile and apparel industry, generally the time from design to market was often lengthy at Johnstons. Partly this was caused by the inflexibility of the traditional production and finishing processes, but also a significant cause of delay was the need to produce samples of the finished fabric for clients and often to make frequent changes to the design of the product at the request of those clients.

Not only did these delays add significantly to the cost (the cost of a sample might be in the region of £80 a metre) but also it meant that the time-to-market was extended. As Johnston's traditional markets became much more fashion-oriented with shorter life cycles, timing becomes critical and hence there was a growing recognition in the business that there was a pressing need to reduce lead-times.

As competition increased and as many of the product categories (e.g. a plain cashmere scarf) had become, in effect, commodities, it was recognised that design was an increasingly important source of differentiation.

There was an emerging view that the current design process might be an inhibitor to greater agility. Whilst a number of innovations had occurred in manufacturing, e.g. the introduction of late-dyeing of yarn and the purchase of new equipment that can produce in smaller batches, design still tended to follow a fixed cycle.

For their own range of products (as distinct from those manufactured for other customers) their design process followed a regular cycle: work on new designs and colour ideas begins in February, June is the deadline for the first review of new product ideas with a sign off at the end of August. These products would appear ▶

in the shops the following April/May. For those products Johnstons manufactured for other customers, e.g. fashion houses or retailers, the design cycle had to be shorter and more flexible. These customers, who were of growing importance to Johnstons, were highly demanding in their requirements – often making late changes to product designs and specification.

Many of their retail customers, such as Burberry, had increased the number of seasons for their range changes, e.g. from two to four a year. They were also requiring the introduction of new colours in mid-season with the need for pre-production samples.

Agile or lean?

The textile industry in Scotland in 2007 was significantly smaller than it had been even ten years previously. Estimates suggested that there were only about 17,000 people working in the industry compared to probably twice that number a decade before. Similarly, the number of firms involved in the industry was under 500 compared to over 1,000 in the 1980s. However, the fall in the level of activity has been compensated for, to some extent, by the increase in the value of the output of remaining industry. It is estimated that the industry in 2007 was creating a turnover of over £1 billion including export sales of £390 million.

James Sugden, the Managing Director of Johnstons at the time and also the Chairman of the Scottish Textiles Manufacturing Association, was quoted as saying:

> *"There is no future in bulk manufacturing (in this industry), but there remains considerable mileage in the value of the "made in Scotland" brand which can drive forward luxury sales worldwide if the quality of the products can be maintained to back it up. The brand is one that commands a lot of respect because of the history of design and innovation, not just in textiles."*

SOURCE: THE SCOTSMAN, 14 FEBRUARY 2007

However, Sugden recognised that this opportunity also brought with it a major challenge. As a result of the reduction in the total capacity of the industry and the disappearance of many of the specialist process providers (e.g. finishing), there was a lack of capability to cope with large increases in demand. The problem was particularly acute when dealing with large international brands such as Chanel – an order from such a company, whilst welcome, could place great strains on the capacity of a small business such as Johnstons.

Whereas in the past the focus had been on reducing capacity to take costs out of the business, now there was a need either to find better ways to use existing capacity or possibly to access capacity elsewhere.

The problem with capacity was not so much the number of machine hours available but rather the availability of skilled people. As the workforce was gradually ageing the pool of experienced workers was diminishing – this was particularly the case with those tasks involving hand-sewing.

To overcome these problems Johnstons instituted a major review of all their critical supply chain processes. Using process mapping they were quickly able to identify the opportunities for reducing non-value-adding time and removing bottlenecks. They also recognised that in their new, more fashion-oriented marketplace they needed to introduce more cross-functional approaches to decision making. Significant improvements were made in reducing the time from receipt of order to final delivery – partly through the installation of an enterprise planning system but also through a continuing focus on process improvement. As a result the company has managed to improve profitability even against a backdrop of challenging market conditions.

Reference

1. Stalk, G. and Hout, T.M., *Competing Against Time*, The Free Press, 1990.

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