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Creating the Agile Supply Chain: Issues and Challenges

*Martin Christopher, Alan Harrison and Remko van Hoek*

**Introduction**

Demand for standard products has fragmented in markets as diverse as fast foods, sunglasses, breakfast cereals and banking, where niches are smaller and constantly changing. In fact, the niches are the market (Pine, 1993). The concept of *mass customisation* assumes that such trends will continue well into the next century, and that the challenge is for greater product variety to be achieved at prices comparable to those of the mass producers (Gilmore and Pine, 1997). This is unlikely to be achieved without a fuller understanding of the logistics tradeoffs that are implied. The purpose of the research design presented in this paper is to investigate these tradeoffs by studying the issues involved at organisational level.

The capability of lean production to meet the challenges of product diversity across all products and markets is now being widely questioned. Concern focuses on two major areas. First, there is the relative inflexibility built into lean supply chains by the requirements for long-term partnership and pull scheduling. Synchronisation of material movements upstream is achieved by fixing schedules in advance. Inflexibility is further reinforced by Japanese ideals like *nemawashi* (watering the roots) and the *ringhi system* (everyone must register consent), which slow down decision-making. Second, there is the “competitive greyness” (Skinner, 1996) of supply chain strategies that are defined by an “absolute standard” of an overarching practice such as the elimination of waste proposed by Womack and Jones (1996). While functional products with predictable demand benefit most from “physically efficient” supply chain processes (Fisher, 1997), innovative products demand “market responsive” supply chain processes that are focused on speed and flexibility rather than on cost. Figure 3.1.1 shows
Fisher's supply chain matrix: efficiency has been defined in “lean” terms of productivity and quality. A different approach to production scheduling called accurate response (Fisher et al., 1994) is proposed to distinguish stable demand items from unpredictable items. The latter are treated separately by assessing early market signals using a risk-based sequencing that demands highly responsive production facilities and supply chains.

A further approach is to reduce the lead time gap so that the manufacturing cycle is based on a richer mix of known orders and less on forecasts (Christopher, 1999). This is one way to “shrink the uncertainty cycle” (Mason-Jones and Towill, 1998). Effective strategies for such responsive supply chains are based on linking core capabilities to product differentiation (Swink and Hegarty, 1998).

An emerging development of the lean production mindset that claims to address the needs of market responsive supply chain processes is the concept of agility (Goldman et al., 1995; Preiss et al., 1996). Agility is defined by the Agility Forum at Lehigh University, PA, as “the ability of an organisation to thrive in a constantly changing, unpredictable business environment”. While Japan has “won the race to lean manufacturing”, agility is “based on some uniquely American strengths, such as entrepreneurialism, and information systems technology”. Some illustrations have been published to illustrate the application of agile concepts to operating companies, but the evidence so far is largely partial and US based.

Research design

We have initiated a program of research, an “agility audit”, to investigate the dimensions of agility in UK, Dutch and Belgian-based companies. A