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## The Evolving Supply Chain Management Context

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## The Evolving Supply Chain Management Context

EDWARD SWEENEY

### INTRODUCTION

A number of key issues are changing the strategic landscape of supply chain management (SCM) and logistics. Arguably, the three most significant such issues are:

1. Internationalisation (or globalisation) of supply chains.
2. Vertical disintegration.
3. The changing role of the supply chain as a source of strategic leverage.

Internationalisation is being driven by changing structures in the international economic and business environment. Vertical disintegration and the changing strategic view of the supply chain are both parts of the strategic response of firms to competitive pressures in the marketplace. The author recognises that these three issues are in many ways interrelated and interdependent.<sup>1</sup> Nonetheless, the following sections discuss each of these issues in detail. The Appendix to this chapter provides more detailed information regarding the issues raised specifically in an Irish context.

### INTERNATIONALISATION

The structure of the international economic and business environment has changed significantly in recent years. The growth of trade blocs throughout the world has resulted in increasing global economic integration. This evolution, largely based on the reduction of barriers to the movement of capital, goods, services, people and information internationally, has

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<sup>1</sup>For example, outsourcing of manufacturing to lower labour cost economies is facilitated by economic liberalisation in these countries.

facilitated increased international trade and foreign direct investment (FDI). The value of world merchandise trade reached about \$6.07 trillion in 2002. In 1990 it was less than \$2.85 trillion (UN 2004). According to the World Trade Organisation (WTO), international trade flows multiplied by a factor of 25 between 1950 and 2003 (WTO 2004). Annual foreign direct investment (FDI) expanded over 19-fold between 1973 and 2004, that is from \$21.5 billion to over \$410 billion (UNCTAD 2004). These trends have resulted in the increasing internationalisation of supply chains. This can be related to the 'buy–make–move–sell' model of product supply chains (NITL 2000).

**Buy:** Global sourcing of raw materials and other inputs has now become a reality for many organisations as the structure of the international economic and business environment has evolved (Fagan 1991; Trent and Monczka 2003). The WTO provides an interesting example in its 1998 annual report (WTO 1998). In the production of an 'American' car, 30 per cent of the car's value originates in Korea, 17.5 per cent in Japan, 7.5 per cent in Germany, 4 per cent in Taiwan and Singapore, 2.5 per cent in the United Kingdom and 1.5 per cent in Ireland and Barbados. That is, 'only 37 per cent of the production value ... is generated in the United States.' This phenomenon is large enough to be noticed in aggregate statistics. Feenstra and Hanson (1996) used US input–output tables to infer US imports of intermediate inputs. They found that the share of imported intermediates increased from 5.3 per cent of total US intermediate purchases in 1972 to 11.6 per cent in 1990. Campa and Goldberg (1997) found similar evidence for Canada and the UK.

**Make:** Access to lower cost manufacturing worldwide is now possible. For example, the expansion of China in recent years, based to a large extent on outsourcing (or 'offshoring') of labour-intensive manufacturing by companies from developed countries, is indicative of this (see Chapter 9). No other country has attracted as much FDI as China. In 2004, approximately \$60 billion of FDI was absorbed; between 1979 and 2004, the total was approximately \$560 billion (UNCTAD 2004). As a result, China is growing rapidly and attaining pre-eminence in global manufacturing in certain sectors. For example, the country already produces 50 per cent of the world's cameras, 30 per cent of air conditioners and televisions, 25 per cent of washing machines and 20 per cent of refrigerators (Pinto 2005). Similar trends have occurred in Eastern Europe. For example, *The Economist* (2001) has noted strong and growing FDI flows into the region.

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**Sell:** Furthermore, as markets have opened up internationally for a range of products and services, international (and in some cases global) selling has become the reality. The cases of China and India are worthy of particular comment. As pointed out in a recent survey in *The Economist* (2005), the two countries are home to nearly two-fifths of the world's population and are two of the world's fastest-growing economies. A recent report by America's National Intelligence Council (2004) likened their emergence in the early 21st century to the rise of Germany in the 19th and America in the 20th century, with 'impacts potentially as dramatic'. The liberalisation of markets has sharpened the focus on the need for more robust approaches to international marketing strategy (Bradley 2004; Cateora and Graham 2004). For example, the term 'glocalisation' (from 'global' and 'localisation') has been used to refer to the creation of the local (country or regional) market presence of a global enterprise (Fan and Huang 2002).

**Move:** All of the above has implications for the logistics and distribution strategies of companies (Waters 2004). Increased trade volumes globally have created the need for new logistics pipelines. The growth in the international 3PL sector is a reflection of this. The large number of mergers and acquisitions in the sector has been driven significantly by the desire of companies to have a stronger global presence (Eyefortransport 2001). With specific reference to the European freight industry, Peters (2000) notes that growth in the 1990s has offered a lesson that 'the country-by-country model for logistics is no longer valid; companies have begun to reorganise themselves into continental operations based on integration and rationalisation.'

In short, as economic and business globalisation has happened so supply chain architectures have become more global. The resulting challenges in terms of SCM and supply chain design (SCD) have been the subject of significant research, debate and discussion (e.g. Arntzen *et al.* 1995; Gourdin 2000; Simchi-Levi *et al.* 2002; Bolstorff and Rosenbaum 2003; Ayers 2003).

## VERTICAL DISINTEGRATION

Companies are increasing their focus on what they regard as their core activities or competencies. Oates (1998) defines core competencies as 'the central things that organisations do well'. The corollary of this is that activities regarded as 'non-core' are being outsourced. Greaver (1999) states that 'non-core competencies take up time, energy and workspace, and help management lose sight of what is important in an organisation.' Furthermore, the trend towards economic and business globalisation has

facilitated the outsourcing of various activities to overseas locations (offshoring – see above). Key supply chain activities are increasingly being outsourced to third-party organisations. This can again be related to the ‘buy–make–move–sell’ model of product supply chains.

**Buy:** Purchasing and procurement activities have generally not been outsourced in the traditional sense but the development of purchasing consortia has meant some sharing of responsibility for this activity between companies. Hendrick (1997) defines a purchasing consortium as:

A formal or informal arrangement, where two or more organisations, who are separate legal entities, collaborate among themselves, or through a third party, to combine their individual needs for products from suppliers and to gain the increased pricing, quality and service advantages associated with volume buying.

Essig (1999) notes that a purchasing consortium is often just one element of an overall supply strategy.

**Make:** The classic ‘make versus buy’ decision has been a central theme in the field of manufacturing strategy for decades (e.g. Hayes and Wheelwright 1984). The traditional focus was largely on the financial and economic analysis of in-house versus outsourced options for particular processes within a manufacturing operation. Manufacturing outsourcing decision-making processes now tend to take a broader and more strategic view (e.g. Hill 1999). Many large manufacturers have outsourced significant parts of their production activity to third parties (e.g. Edwards and Edwards 2000; Hassey and Lai 2003). For example, in the electronics sector, the trend is one of original equipment manufacturers (OEMs) outsourcing significant amounts of manufacturing to contract manufacturing companies. Companies in the electronic manufacturing services (EMS) sector, such as Flextronics, Foxconn and Celestica,<sup>2</sup> have grown rapidly as a result.

**Move:** Transport and a range of other logistics activities are increasingly being outsourced by manufacturers and retailers (Scott and Westbrook 1991; McKinnon 1999). The 3PL sector has developed rapidly as it has responded to its customers’ requirements for the supply of tailor-made services (Razzaque and Sheng 1998; Skjoett-Larsen 2000). The European Union

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<sup>2</sup>See <<http://www.flextronics.com>>; <<http://www.foxconn.com>>; <<http://www.celestica.com>>.

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PROTRANS project (PROTRANS 2003) developed a definition of 3PL based on a wide number of definitions which have appeared in the literature:

Third-party logistics are activities carried out by an external company on behalf of a shipper and consisting of at least the provision of management of multiple logistics services. These activities are offered in an integrated way, not on a stand-alone basis. The co-operation between the shipper and the external company is an intended continuous relationship.

This definition reflects the manner in which shippers' requirements have evolved in recent years. The emphasis now is on the provision of integrated multiple services and the development of relationships.

**Sell:** Selling as a process has generally not been outsourced in the traditional sense. Nonetheless, many of the individual activities which comprise sales channels may be owned by other companies: the actual selling of products to consumers may be carried out by retailers, who may in turn obtain the products from wholesalers; third-party owned and managed call centres may be an integral part of the selling process; and third-party agents, franchisees or distributors may also have some responsibility (e.g. Friedman and Furey 1999).

The above has resulted in a shift away from the traditional model of 'control through ownership' towards models which are based on management and control through effective supply chain relationship management. The former is based on the strategic logic of vertical integration. Vertical integration is the degree to which a firm owns its upstream suppliers and its downstream buyers (Greaver 1999). Harrigan (1999)<sup>3</sup> provides a good description of the logic underpinning this approach to strategic development. The latter, effectively a process of vertical disintegration, has taken place as a result of the trends outlined above (Mpoyi 1999; Langlois 2001). Recent developments in ICT, in particular Internet technologies, have facilitated this process and laid the foundations for the 'network economy model' (Reddy and Reddy 2001). According to Hugos (2002), traditional supply chain models have 'given way to virtual integration of companies'. In short, as outsourcing of various elements of supply chain functionality takes place, supply chain architectures are becoming more virtual. The traditional *fully vertically integrated* approaches are being replaced by contemporary *fully virtually integrated* approaches – a new FVI is evolving.

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<sup>3</sup>Prof. Harrigan of Columbia University presents a conceptual model based on four dimensions – breadth, stages, degree and form – based on analysis of data from sixteen industry sectors and the integration actions of 192 companies.

## STRATEGIC LEVERAGE

Classically, in the field of strategic management, the generic approaches of cost leadership, differentiation and focus have been identified. Porter's classic text (1980) described these alternatives as follows:

- A cost leadership strategy requires a company to be a low-cost supplier, and to sell either at below average industry prices to gain market share, or at industry average prices to earn a profit higher than that of rivals.
- A differentiation strategy requires a product or service that offers unique attributes that are valued by customers, thereby allowing premium pricing.
- A focus strategy concentrates on a narrow segment and, within that segment, attempts to achieve advantage through either cost leadership or differentiation.

A significant proportion of the overall cost base of companies is in the supply chain. In the automotive industry, for example, A.T. Kearney (1999) reports that, typically, component costs (30 per cent), manufacturing and assembly costs (28 per cent) and distribution costs (four per cent) together represent 62 per cent of sales price. Hence, any worthwhile cost leadership approach needs to focus on the optimisation of total supply chain costs and the elimination of non-value-adding activities (NVAs). An NVA may be defined as: *any activity (or resource or asset) that adds cost (or time) to any supply chain process without adding value from a customer perspective.*<sup>4</sup> Much of this *lean* thinking has its origins in the Japanese automotive industry, in particular in the Toyota Production System (TPS) and the just-in-time (JIT) paradigm (Ohno 1988; Womack and Jones 2003). The main objective of this thinking was the elimination of waste (or *muda* in Japanese). Christopher and Gattorna (2005) present evidence that effective SCM provides 'opportunities for significant cost reduction and increased profits'.

Customer service is becoming a key source of differentiation or an order-winning criterion in many sectors (Christopher 2005). An order-winning criterion (or order winner) is a feature of the product or service offering which differentiates it from the competition and is, therefore, likely to be a source of increased market share. An order qualifier, on the other hand, is a feature which must exist to ensure that a product or service gets into the market in the first instance and stays there (Hill 1993). The latter tends to have order losing rather than order winning characteristics. In many sectors

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<sup>4</sup>Author's definition based on Jones *et al.* (1997), Goldrat and Cox (1992), Womack and Jones (2003) and others.