



Global operations

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Malavika Srinath, Research Analyst at Frost and Sullivan, examines the move towards technologically evolved supply chains...

Due to an increasing customer demand for long distance procurement over the last few years, supply chain management structures in the freight market have undergone tremendous changes. Shrinking industry margins are forcing companies to re-think their business models and strategies. Structural changes to supply chains are no longer limited to manufacturing systems within their geography of production, thereby creating networks that span the globe. Manufacturers no longer want full control of their supply chains and this has led to the growth of 'transport solution providers' who offer their customers end-to-end supply chain solutions.

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Seamless information flows across the entire network, as a result of an integrated communication system, have become vital to the survival of logistics providers and their new supply chain models. The need for speedy freight delivery has made these operational structures heavily dependent on technology in order to be effective.

Transforming supply chains through technology

Recent years have seen the movement of manufacturing and distribution operations towards countries like India and China, with the aim of shifting the 'points of supply' to lower cost markets. Third party logistics providers have found retaining customers increasingly challenging if they are unable to provide worldwide solutions that meet demanding requirements. Today, pan-global freight operations are heavily dependent on technologies such as RFID, which enable visibility and security through the supply chain and ensure timely delivery of freight.

Although the earliest use of RFID can be traced back to the Second World War, the technology was also used to track livestock on farms. The technology itself is simple – an RFID tag embedded in an object is read by a scanner which then sends information to the computer system detailing the location of the object – namely a truck or a pallet. This process is repeated across various levels of the supply chain until the object reaches its final destination. The use of RFID tags within commercial operations was the result of mandates issued by retail giants like Wal-Mart. These were intended to accelerate the adoption of the technology, thereby making supply chains more effective, but the 'slap & ship' attitude of existing providers in the market did more damage than good. Half-hearted attempts to use the technology in supply chain operations were primarily attributed to high costs. As late as

2003, the cost of a single RFID tag averaged US\$0.50. The holistic integration of RFID into a company's systems also involved heavy capital investments – a cost that many companies found difficult to justify.

However, despite market attitudes, the years 2004 and 2005 reflected a changing trend. Many large market players like SAP, Oracle, Sun Microsystems and IBM began to introduce new RFID packages that could be seamlessly incorporated by their customers into existing supply chains. At a time when companies are struggling with increasing overheads and highly demanding customers, these packages provide a relatively cost-effective way to integrate operations. For example, 'just-in-time' manufacturing is wholly dependent on the speed of delivery to the customer, which has given rise to the use of computerised vehicle routing and scheduling systems based on RFID.

While trends indicate that companies are likely to spend over US\$260m to integrate this technology into their operations by 2007, it is also becoming clear that RFID cannot be used in isolation. Real-time information – facilitated by satellite-based communication systems – is becoming more valuable than 'point-to-point' information. Already, many freight operators are beginning to use Global Positioning Systems (GPS) and mobile technology in addition to RFID, to identify the exact positions of vehicles and manage traffic flows. Spending on tracking retail products alone is slated to grow from US\$91m in 2004 to US\$1.3bn by 2008 and other industries are likely to witness similar growth. The figure below illustrates the supply chain network and the role of technology within its operation.

Intermodal supply chains

Technology-based communication platforms are transforming supply chain structures internally, but rising traffic levels within Europe are impacting supply chain operations externally. Road transport has always been the primary mode of transporting freight from one point to another. However, with the accession of new countries into the European Union, governments across the continent are facing the problem of heavily congested traffic flows, driving them to find ways to effectively control vehicle movement along motorways and cities.

Increasing freight movement on roads has impacted supply chains and has also resulted in an unbalanced development of other modes of transportation such as air and sea. By 2012, goods transported by road in the European Union alone are expected to increase to 1,650bn tonnes per km.

While directives issued by the European Commission have been relatively successful in controlling congestion, logistics providers can no longer depend solely on road transport to move freight from the manufacturer to the final customer. Increased traffic on roads results in delivery delays – a risk providers cannot afford to take. With much of the focus now on re-organisation of freight networks across different modes of transportation, technologies such as RFID and



Active Traffic Management Systems are key in ensuring a seamless flow of real-time information. The launch of European satellite Galileo is expected to give rise to new navigation systems, which will aid information flows across intermodal supply chains.

Outlook for the future

Technologies such as RFID and GPS have become an intrinsic part of today's global operations. Along with an increased visibility across the supply chain, companies shipping expensive, perishable items like pharmaceuticals, chemicals and food benefit hugely from speedy delivery of freight. But as the needs of customers become more demanding, there will always be scope to improve supply chain models and to develop systems which will be interoperable across the globe. Supply chains can only fully succeed when the value of collaborative communication platforms is realised. Due to the different levels of technological supply chain capabilities that exist worldwide, difficulties continue to exist.

In a market driven by the need to achieve greater economies of scale and increased efficiencies, an analysis of future trends is clearly the key to identifying new opportunities. With new markets in Eastern Europe and Asia opening their doors to European manufactures, the technological development within new supply chains is inevitable.



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