

Introduction

Today many of the products that we consume have been brought to us through globally integrated distribution systems. Striking examples are the fruit and vegetables that we purchase in our local supermarket that arrive fresh from far flung corners of the globe, and the motor vehicles that we drive around in which contain components from many different countries. We tend to take the delivery of these products for granted without realising the real complexity of the planning that is involved in making sure, that for example, all of the components for a modern VW Beetle arrive at their final assembly point at just the right time. This case study, therefore, introduces you to some of the processes that go on behind the scenes by examining supply chain management.



Supply chain management

Supply chain management requires specialist skills and is all about efficiently bringing together all of the links and stages involved in creating a high quality supply chain. In this case we show how Exel manages the supply chains for many of the world's leading businesses. Exel is a global leader in supply chain management, providing customer focused solutions to a wide range of manufacturing and retailing industries. Exel's comprehensive range of innovative logistics solutions encompasses the complete supply chain from design and consulting through freight forwarding, warehousing and distribution services to integrated information management and e-commerce. Exel now has contract logistics operations in 31 countries accounting for 84% of world GDP. Combined with Freight Management activities that cover over 120 countries around the world, Exel has unrivalled global coverage.

Supply chain management



Based on years of experience and application of state of the art technology, Exel is able to design improved supply chain systems for organisations which add more value for consumers. Creating an effective supply chain involves not only increasing the speed of delivery, but also the quality of delivery – so that the end-consumer will benefit from more desirable and hence more valuable end-products.

With Exel managing the supply chain for a business like Volkswagen or Ford the company is able to concentrate on its core business. Meanwhile, Exel provides innovative solutions as to how to reduce costs and accelerate the movement of products locally, regionally and globally. As well as providing the systems and solutions Exel also manages freight by providing airfreight and sea-freight backed by an extensive transportation network. Customers can track the movement of their goods through an extensive internet based tracking system. Because Exel manages the

movement of freight for many companies it is a major purchaser of transportation and is thus able to pass-on the benefits of economies of scale, substantially reducing transport costs for customers that do not have the same purchasing power. In addition Exel organises the warehousing and distribution of goods along the supply chain. With considerable experience in this field it is able to design large-scale distribution outlets which are often shared between various customers who again benefit from economies of scale in storage and distribution.

Supply chain network

In recent years Exel has also enabled a range of businesses to take advantage of business-to-business and business-to-consumer e-commerce activities. For example, a company selling goods to customers using the web is then able to deliver speedily to the end consumer using Exel's supply chain network. Exel has helped many leading companies across the globe to build effective supply chains including Pepsi-Cola, Unilever and Ford, and plays a key part in many industries such as:

- chemicals where safe delivery is essential
- healthcare where prompt delivery and temperature controlled conditions are important
- retailing where cost effective and waste eliminating systems are essential
- high-tech where instant and regular delivery is essential.

However, this case focuses on the contribution that Exel makes in the automotive industry where Just-In-Time and Lean Production systems are essential.

Just-in-time and lean production

Just-In-Time (JIT) is a very simple idea but one that is essential in modern supply chain management. JIT sets out to cut costs by reducing the amount of goods and materials a firm holds in stock. JIT involves:

- producing and delivering finished goods 'just in time' to be sold
- partly finished goods 'just in time' to be assembled into finished goods
- parts 'just in time' to go into partly finished goods
- materials 'just in time' to be made into parts.

The principle that underpins JIT is that production should be 'pulled through' rather than 'pushed through'. This means that production should be for specific customer orders, so that the production cycle starts only once a customer has placed an order with the producer. Stocks are delivered when they are needed. Consequently, this approach requires much more frequent delivery of stocks. Developing a JIT approach requires sophisticated planning and considerable experience in this field. This is why leading companies contract out their supply chain management to a specialist company like Exel with considerable experience of this area.

Just-In-Time is the key element in what is termed lean production. Lean production is a philosophy and a way of working involving eliminating all forms of waste (where waste is defined as anything that does not add value in the production process and supply chain).

The idea behind lean production stems from Japan where for many years supply chain managers have been seeking to eliminate 'muda' ie any activity which involves wasted effort, materials and time. Exel is particularly effective in ensuring lean production because it is able to reduce 'muda' at every stage in the supply chain from designing efficient warehousing systems, to sophisticated tracking methods in freight forwarding, developing e-commerce links, and cutting out any wasteful processes at any stage of distribution.

A further advantage of JIT is the benefit derived from eliminating lineside storage of parts and the associated "clutter" which inhibits efficient movements to/from the production line. By reducing the storage of parts at the production line, a manufacturer is often able to increase the speed of the production line and produce more cars with the same number of resources, lowering the overall unit cost of production.

Helping Volkswagen to transfer its JIT system from Spain to Mexico



One of the best examples of modern supply chain management is in motor vehicle manufacturing. Modern cars are an example of global products containing research and design features which involve the collaboration of many people from many nations. The components that go into the final assembly are likely to be produced in many separate locations and involve a range of assembly and sub-assembly activities.

For young people one of the most exciting new cars is the new VW Beetle. Traditionally a German product, a lot of VW models are produced today in North and South America, taking advantage of a pool of skilled labour in countries like Mexico

and Brazil – and with ready access to the lucrative United States market.

The challenge for supply chain management

When Volkswagen decided to produce its new Beetle model, the goal was to transfer the lean manufacturing technique and highly effective just-in-time supplier park model from the VW/SEAT assembly plant in Martorell in Spain, to Puebla in Mexico.

The solution

Exel has worked with car manufacturers to develop a park system of managing end operations of the supply chain for motor vehicle assembly. Many of the key end component suppliers are located close to the final assembly point. Exel has created and manages the JIT system that ensures a smooth running supply chain of parts to the new Beetle final assembly plant which eliminates waste from the process.

Volkswagen collaborated with Exel, which designed, engineered and now operates the innovative Park in Spain, to transfer the park model to Mexico. The Supplier Industrial Park in Spain was created near the factory and now includes 35 suppliers. Subassembly activities are carried out at the Park, guaranteeing JIT delivery and zero stocks at final assembly lines.

Exel is responsible for primary transport from the component suppliers' main plants to the Park. The company is also responsible for warehousing, picking, subassembly and sequencing operations, and deliveries to the assembly lines. When new deliveries are required for assembling the cars messages are communicated from the plant by EDI (Electronic Data Interchange) giving Exel sometimes only 105 minutes to notify suppliers and prepare and deliver subassemblies to the final assembly line. The Exel JIT sequencing operation is the cornerstone of the supplier industrial park that serves the Volkswagen assembly plant.



The results



Adopting the supplier park model in Mexico has helped VW to reach its present level of 1,380 vehicles per day. Exel is providing supply chain services not only for the new Beetle, but also for the A4, a redesigned Jetta and also the Golf models.

As an experienced logistics leader, operating globally, Exel has an established infrastructure in Mexico, servicing clients such as Procter & Gamble and DaimlerChrysler. However, Exel had to virtually start from scratch to staff the supplier park in Puebla. It created a team of skilled and experienced managers from Mexico, America and Europe, and hired line workers and sequencing personnel from the Puebla area who were provided with intensive training. Exel employs around 850 people at the

Puebla facility.

Conclusion

Supply chain management is an exciting and important area of study. Specialist companies like Exel are able to save the world's leading businesses large amounts of money, time and effort by creating an effective supply chain. Next time you see a new VW Beetle you will be better able to appreciate that the high quality of the product and its value for money are not only a result of high quality design and engineering, but also a direct result of lean production, just-in-time methods and premium supply chain management.

