

The role of distribution in the supply chain marketing essay

[Business](#), [Marketing](#)



[Type the document subtitle]C09617817Darren HughesThe role of distribution in the Supply ChainMeindl (2010) defines Distribution as being "the steps taken to move and store a product from the supplier/manufacturing stage to a customer stage within the supply chain". He comments on how distribution occurs between every set of stages in the supply chain and how raw materials are moved from suppliers to manufacturers, whilst finished goods are moved from manufacturing to the end customer. Distribution is considered to be a key factor/driver of overall profitability of a company because not only does it affect supply chain costs but it also affects the end customer directly. (Meindl, 2010, p86)Whilst Meindl describes distribution within the supply chain as the movement of the product from a to b, Christopher M (2003) discusses how the role of distribution has moved away from the conventional view of distribution as being "solely concerned with transport and warehousing". He suggests that the key to successful distribution today is the model of demand management. Demand management is regarded as "the process of anticipating and fulfilling orders against defined customer service goals". In order to optimize the process of demand management, it is essential that a firm has a well-integrated ICT (Information Communication Technology) system in place, as information is vital to its success. Information from the marketplace, from customers regarding usage/consumption, production schedules and inventory statuses are all accounted for. (Christopher, 2003, p27). Although this can be overcome by successful forecasting accuracy, Christopher explains that "while forecasting accuracy is always to be sought", it is in fact very rarely achieved. Instead the aim should be for a

firm to reduce its dependency on forecasting, by improved information demand and also by implementing systems that enable quick response or agility towards demand. (Christopher, 2003, p27) Quick response logistics has become top priority for many organisations, as it enables them not only to achieve cost reduction but also allows them to provide service enhancement. The idea of 'quick response logistics' is based upon a replenishment model within demand management. When simplified, as goods are consumed, the usage information is transmitted to the supplier/vendor, and this instantly triggers a response. This may result in faster, smaller consignment deliveries and although it may cost the supplier more, the benefits are visible through reduced inventory in the pipeline and whilst improved service in terms of responsiveness. Zylstra K (2006) shares similar thoughts with Christopher, as he recognizes how the traditional approach to improving distribution and reducing its costs revolve around "technology-enabled optimization and automation". These cost strategies are visible in within the total cost of distribution. Warehouse management systems (WMS), Transport management systems (TMS), route planning, automated storage and retrieval systems (AS/RS) and wireless data collection to name but a few. Automation may significantly reduce warehouse labour and overall distribution costs, but may be beyond the reach of many companies due to the significant capital investment required and its implication to fixed costs. (Zylstra, 2006, p34) The task of implementing an effective distribution system in a modern firm is often linked with reducing operational costs. As customers drive down prices and increase service requirements, there is tremendous pressure on all parts of the business to "Do more with less"

(Zylstra, 2006, p34). With that in mind, there have been various surveys made regarding the relative costs of distribution in industry, and according to Christopher (1990); their findings seem to suggest that on average, distribution costs represent about 15% of sales turnover for a typical company. He also comments on how averages can be misleading in some cases, as results vary depending on the nature of the business/industry (Christopher, 1990, p6). If a company can clearly identify the specific sources of total distribution costs, they may benefit by making it easier to identify potential 'trade-offs'. "A trade-off occurs where an increased cost in one area is more than matched by a cost reduction in another area" (Christopher, 1990, p8). For example if a distribution system has 5 regional depots with high warehousing and stockholding costs is compared with a system of 2/3 depots, the savings on haulage and reduction of stock-outs could possibly outweigh the extra costs involved in the 5 depot system. For benefits of such trade-offs to be achieved, it is necessary for managers to think in terms of total systems rather than of narrow functional areas. Whilst total distribution cost can primarily be the focus for firms, it is also important for a firm to develop a framework that allows them to achieve such operational excellence, in terms adapting a distribution network that is suited to their strategic goals. Christopher (2003) explains how today's customer is increasingly seeking added value and how logistics management can provide that value is to do with the 'Three R's'.

Reliability
Responsiveness
Relationships (Christopher, 2003, p28-30)
Reliability
With the current economic climate, it is especially apparent how customers across most markets and commercial environments are seeking

to reduce their inventory holdings. For example Just In Time (JIT) practices can be found in many industries ranging from car manufacturing to retailing. Such practices mean that it is essential that suppliers can guarantee complete order fulfilment whilst delivering goods at agreed times. With such an emphasis on reducing inventory whilst adding value, a prime objective of any logistics/distribution strategy must be reliability. Responsiveness Zylstra K (2006) and Christopher (2003) both emphasised the importance of 'quick response' in today's marketplace, and again this is very closely linked with the customer's demand for reliability. Essentially this means the agility of a firm, and its ability to respond in ever-shorter lead times with the greatest possible flexibility must be integrated in such strategies. Companies must focus on developing a logistics strategy that allows them to ship smaller quantities, more rapidly, direct to the point of consumption. Relationships The concept of single sourcing has been of trend lately, where customers are seeking to reduce their supplier base, allowing them to benefit with improved quality, innovation sharing, reduced costs and integrated scheduling of production and deliveries. The fundamental objective of this idea is to create a buyer/supplier relationship based upon a partnership. A good example of a logistics partnership is the growing use of Vendor Managed Inventory (VMI). This allows the supplier to be responsible for the flow of product into the customers operations. In order for such systems to operate effectively, there must be a mutual understanding of each other's goals and a strong relationship is the key to its success. The role of Network design in the supply chain Supply Chain Network design for many firms include, the assignment of facility role, manufacturing location, storage or

transport-related facilities, and the allocation of capacity and markets to each facility. A framework must then be established and the various solutions and methodologies must then be discussed. Supply chain network design decisions can be classified as follows. Facility role: this refers to the part each facility plays, and what processes are performed at each facility. Facility location: where should the facility be located Capacity allocation: how much capacity should be allocated to each facility Market and supply location: this refers to what markets should each facility serve and which supply sources should feed each facility. Meindl (2010) describes how network design decisions have a significant impact on the overall performance of a firm, as it not only develops the structure of their supply chain, but sets its constraints, which can then be used to increase supply chain responsiveness and reduce overall costs.

1. 3 Factors influencing Distribution Network design

The structure of a distribution channel is described by Visser & Van Goor as "the pipeline system through which goods have to flow before being at the right time and in the right place for the customers" (Visser & Van Goor, 2006, 62). It is particularly important for a firm to define the structure of their distribution system/infrastructure, as well as the choice of physical distribution channel and network. According to Visser & Van Goor, (2006), the most important factors within the structure of a distribution network are the primary process, location of inventory points and the flow of goods. They also recognize how a distribution network generally consists of a number of consecutive inventory points (i. e. the factory, central distribution centre, and national/international distribution centres), and that it is vital that a distribution network can co-ordinate the

different activities along the chain (i. e. sales forecast, inventory and transport). Meindl, 2010, explains how there are a number of vital factors that must be taken into consideration before a company can effectively and efficiently design a network, for example strategic factors. A company's competitive strategy has a significant impact on network design decisions within the supply chain, firms that focus on cost leadership tend to find the lowest-cost location for their manufacturing operations, not taking into consideration their distance to market. Comparing a company that focuses on responsiveness, their location to market is a key component of their strategy, thus meaning they will have a totally different distribution network design. A good example of this can be seen within the fashion industry, where some firms avail of cheap labour in Asia-Pacific due to low cost, others like Zara the Spanish apparel manufacturer has a large proportion of its production capacity in Portugal and Spain despite the high cost. The local production facilities allow Zara to react quickly to emerging fashion trends in Europe. (Meindl, 2010, p127) Other factors that must be taken into consideration include: Technological factors, Macroeconomic factors, Tariffs and incentives, Exchange rate and demand tax, Political factors, Infrastructure, Costs and customer response time. The goal when designing a supply chain distribution network is to maximize the organisations profits while satisfying customer needs in terms of demand responsiveness. Lean Philosophy" Lean is the concept of efficient manufacturing and operations which grew out of the Toyota Production System (TPS) in the early 20th century"(Wilson L, 2010, p7) Lean philosophy was first introduced in Japan post second world war, with the aim of providing automotive solutions with

only a limited availability of resources. Amongst the pioneers of lean, Toyota is by far the most influential, and the development of their Toyota Production System (TPS). TPS was developed from Henry Ford's application of Mass Production and the practices and principles in which he used at the beginning of the 20th century (Hines, Holweg & Rich 2004). TPS is made up of two underlying pillars: Just-in-time (JIT); Ohno & Taichii define JIT as "executing activities at the right time, at the right place in in the right quantity". Autonomation; this refers to the overall productivity of employees in the organisation(Ohno & Taichii, 1988)Lean is based on the philosophy of understanding value from the 'customer's viewpoint', and working towards continuous improvement in exactly how such value is delivered. This is achieved by eradicating resources and processes that are non-value adding and/or wasteful.(Brines D Jr. 2011)There is a lot of evidence to prove that the successful implementation of lean within an organisation can bring considerable improvements, however it is also evident that the transformation process for companies moving toward a lean way of thinking creates a lot of challenges for such companies. There are a number of reasons as to why an organisation may fail to implement lean successfully. It can arise from simply selecting the wrong sequence of improvements (e. g. lowering the level of inventories held before improving the process flow). (Kilpatrick J, 2003)Kilpatrick J (2003) defines Lean Philosophy as " A systematic approach to identifying and eliminating waste through continuous improvement, flowing the product at the pull of the customer in pursuit of perfection". Using this definition Alongside Womack and Jones (1996) it is clear how Lean methodology consists of five principles, and these principles

can only be mapped and implemented with the trust and empowerment of the entire organisation. (Jones, et al. 1999)Lean PrinciplesWomack & Jones argue that a lean way of thinking allows companies to " specify value, line up value creating actions in the best sequence, conduct these activities without interruption whenever someone requests them, and perform them more and more effectively." From this statement, the five principles of lean thinking can be understood: ValueValue streamFlowPullPerfection(Womack & Jones, p15, 1996)

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ValueWomack & Jones define Value as a " capability provided to customer at the right time at anAppropriate price, as defined in each case by the customer." They also describe Value as being the critical starting point for lean thinking, and how it can only be described by the end customer and that the ultimate end customer/user of the product, is differentiated with interim customers. Value also is product-specific, and Womack & Jones argue it is only significant when expressed in terms of a specific product. (Womack & Jones, p15, 1996)Similarly, Brines D Jr. describes how value involves identifying exactly what is meant by the value goal. The essential requirement is that " value is defined by the customer's perception, not defined internally by the organization." (Brines D Jr. 2011)Value StreamOnce the term value is understood and defined, the second principle is derived, and again the aim is for each product, to identify the value stream. Brines D Jr defines this as, " the entire process from raw materials to the possession of the customer." The investigation and analysis of this flow creates transparency within the flow almost certainly revealing waste: this includes

processes within the flow that are non-value adding. This is known as process re-engineering. (Brines D Jr. 2011)Womack and Jones define a value stream as " specific activities required to design, order, and provide a specific product, from concept to launch, order to delivery, and raw materials into the hands of the customer". Similarly to Brines D Jr , Womack & Jones comment that in order to create a value stream, you must describe what happens to a product at each step in its production, from design to order to raw material to delivery. There are three types of activities in the value stream – one adds value, and the other two are " Muda" (the Japanese word for waste)Value-Added: Those activities within a process that create value. Type One Muda: Activities that create no value but seem to be unavoidable with current technologies or production assets. Type Two Muda: Activities that create no value and are immediately avoidable.(Womack & Jones, p15, 1996)FlowThe next step in the process is to create an efficient flow within the value stream. What this means is that, all elements within the process that contribute stoppage, waste and backflow must be removed. (Rother & Harris, 2001). The ideal flow according to Womack & Jones (1996) is one in which " the product flows continuously through the whole value stream from the raw material to the final customer" This translates as a directive to discard the traditional method of group stages or the batch-and-queue mode where processes are grouped in stages based in different departments, where bottlenecks exist at each stage. (Brines D Jr. 2011)This can be achieved by implementing quick change tools within manufacturing as well as selecting the optimum size machines whilst ensuring that sequential stages with the process flow lie adjacent to one another. PullWomack and

Jones (2003) define the fourth principle of Lean philosophy as the "downstream customer", and this can also be understood as the make-to-order philosophy. Conversely, Hopp & Spearman (2004) have developed a more precise definition for pull. Hopp and Spearman (2004) propose a more precise definition for pull which differentiate pull from the make-to-order processes. Their logic is grounded that a pull production system is a system that "explicitly limits the amount of (WIP) that can be in a system". This is developed on the principle that waiting for customers to order, prior to production can lead to many complications. Furthermore, they differentiate between the pull strategy and its tactics, where the foundations of the pull strategy are the firm's standard working methods linked with level scheduling, whilst tactical pull is described as "setting the pace of production equal to the takt-time (the rate of customers demand) and adjust it continuously". (Hopp and Spearman 2004) By using a Pull system it allows companies to reduce their Work In Progress (WIP) and overall inventories within the supply chain whilst achieving a more efficient and smooth production flow. This results in a higher level of quality whilst a reduction in overall cost due to a reduction in defects as they become more visible. (Hopp and Spearman 2004) Perfection

Womack and Jones (1996), comment on how perfection is achieved through the complete elimination of waste or Muda. 'Perfection' comprises two corresponding approaches: Kaikaku (radical change) Kaizen (continuous improvement)" Kaikaku refers to all of the fundamental changes a company need to implement in order to move towards the lean enterprise (Womack & Jones, 2003). Kaizen or continuous improvement refers to all of the cumulative improvements needed

afterwards.(Womack & Jones, 2003)<http://www.lean.org/images/5stepslean.gif>(Pascal D, 2002). Benefits of LeanFor many firms the changeover to lean has not been straight forward , with workers being forced to leave their comfort zones, and to change ways of working to which they may have become accustomed over many years. However, once the process is under way, provided it is done correctly and quickly, it is found that it brings many benefits, as waste is eliminated, costs of production, as well as costs of plant and premises, are substantially reduced, leading to much higher return on investment (ROI). Along with this should go a significant increase in sales. This results from two main factors. One is that there are far fewer errors in production, leading to better quality products and fewer product recalls. The other is greatly reduced production times, meaning customer orders are fulfilled promptly. Because the customer is defining value at every stage, the company's reputation will greatly increase. Once these benefits begin to come through, worker satisfaction will increase and the whole company becomes a ' happy place'. (Wilson L, 2010, p7). http://www.excellence.mdina.com.mt/img/uploads/competencies/benefits_of_lean_1341767179.jpg(Mdina Partnership. 2013)Lean application in distributionThe distribution function within an organisation shoulders responsibility for successful customer service while being under pressure to reduce costs and inventory. It can become an even greater responsibility as the organisation grows and as the supply chain spans the globe. There is a substantial amount of cost and inventory involved in distribution. Therefore it is always a target for profitability improvement efforts. With products being moved over great distances, supply chains become ' Long', and with global sourcing taking a

firm hold on the modern marketplace, distribution is still under pressure to reduce costs and inventory. (Zylstra K, 2006). Longer supply chains require accurate forecasting, and good supplier relationships are essential.

Commitments must be made to vendors/suppliers for long supply chains much further into the future than for suppliers located closely. Such long commitments mean that customer orders forecast are also required much further into the future. However longer forecasts may not be accurate enough in order to maintain stable supply, causing continual updates and changes. As a result it is very difficult for firms to see how costs can be reduced. In order to break this Forecast and Cost driven approaches, Lean techniques can be employed. By improving product flow and implementing practices such as Pull replenishment, allows an organisation to reduce inventories whilst improving service. By applying Lean thinking to an organisation can help reduce variability, resulting in more accurate planning and scheduling. This is where it is evident within distribution and can be thought of as taking a Lean approach to distribution. . (Zylstra K, 2006).

Conflict in lean distributionIn the past the focus and resources have been spent in the manufacturing operations to cut costs and improve the solutions. The trend of outsourcing and focusing on the company's core competences highlighted the need for closer collaboration with suppliers. The incentives are the high level of value contribution from suppliers and increase awareness of supply chain competitiveness. During the last two decades the potential of competing with the distribution networks for improvements have become more central to provide value to the solutions (Zylstra 2006). The challenge for organizations and supply chains is to identify conflicts and areas

which are constraints for further improvement. The lean distribution strives to connect the fluctuating demand from the customers with the manufacturing operations. This creates a situation when the demand signal is determining the takt-time for production. However, since this will cause fluctuations in supplying schedules the challenge is to decouple or handle the signal to create stability and levelling in the production operations. The strategy and approach to these conflicts between the distribution and production operations are discussed by Reichhart and Holweg (2007). By developing capabilities in the order fulfilment strategy and the order processes, organizations can achieve a levelled demand in the manufacturing processes. One initiative is to improve the customer relationships and analyze the need and behaviour from an aggregated level. Another conflict is the objectives which aim at increasing the sales and the market share. These incentives facilitate behaviour of pushing products on the market (Reichhart and Holweg 2007). Therefore it creates a contradiction between the sales organization and the distribution of product according to lean principles of pull and flow. These contradicting objectives between different functions further emphasize the need for a more process-oriented organization favoured by Womack & Jones (2005b). Creating these sub-optimizations in isolation is increasing the costs of flexibility in the manufacturing operations but also costs of inventory in the distribution channels. Spare parts logistics (Wagner, Jonke & Eisingerich, 2012) Firms with a well-aligned spare parts logistics strategy can add value for their customers beyond primary product benefits, thus building long-term customer loyalty and achieving high profit margins. 1 Firms across different

industries now recognize spare parts supply not only as a legal obligation, but also as a chance to offset stagnating or declining revenues and to increase profits in their primary product markets. For instance, the after-sales business in the machine and plant construction industry accounts for approximately 25% of total sales (with two-thirds from selling spare parts and one-third from services) and up to 50% of total profits. ² Drawing on Christopher's definition of logistics, ³ we define spare parts logistics as follows: Spare parts logistics of the manufacturer contains the market-orientated planning, design, realization, and control of the spare parts supply and distribution, along with associated information flows within a firm and between the firm and its network partners. Therefore, spare parts logistics aims at a demand-driven, cost-minimal provision of the required spare parts for the defective or preventive maintenance of primary products to ensure an optimal level of availability or reliability of the product.