



# ROLE OF SUPPLY CHAIN MANAGEMENT IN SUPPLYING CUSTOMIZED PRODUCTS

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**Abstract:** *A customized product is a special product designed and manufactured for individual customers to meet their individual needs. In today's volatile competitive environment, it is very important to understand customer demand and how companies supply customized products. In recent years, lean and agile supply chain management concept has evolved to hybrid concept of leagile supply chain management. The ultimate goal of supply chain management is to be flexible, efficient in customer responsive and more agile.*

**Key Words:** *Leagile supply chain management, customized products, fashion industry*

## 1. INTRODUCTION

Mass customization (MC) is the company's ability to provide individually custom designed products and services to different customers using information technologies, high process agility, flexible processes etc. There are several prerequisites and considerations for successful implementation of MC strategy. The critical factors for leading MC to success are as follows [1]: customer demand for customized products, market turbulence, supply chain readiness, and knowledge driven organization. In developing MC strategy, many companies are seeking to design dynamic supply chains, which should be configured according to customers' requirements in order to ensure high responsiveness. The ultimate goal is responding to increasingly demanding customers in a global market. A key feature of present day business is the idea that it is supply chains (SC) that compete, not companies, and the success or failure of supply chains is ultimately determined in the marketplace by the end consumer [2]. The shift to mass customization affects the relationships between the company and its partners in the supply chain i.e. there is a far greater cooperation within supply chain. Supply Chain Management (SCM) has gained attention as it focuses on material, information and cash flows from vendors to customers or vice-versa. SCM has been considered as a competitive strategy for integrating suppliers and customers with the objective of improving

responsiveness and flexibility of companies [3]. In past years with increasing product customization, the companies need much more than traditional supply chains. In many cases effective MC can be achieved by postponing the task of differentiating a product until the latest possible point in the SC. One way of achieving this is to combine the lean and agile strategy in one hybrid SC strategy.

## 2. HYBRID (LEAGILE) SUPPLY CHAIN STRATEGY

In the past years supply chains have evolved from traditional product orientated push to fully consumer oriented pull systems. There are some instances where pure agile or lean strategy might be appropriate for supply chain. Furthermore, in real world, desired characteristic of supply chain is cyclical. However, there often there are situations where a combination of agile and lean strategy may be appropriate, i.e., a hybrid strategy – leagile strategy. Independently on supply chain characteristic, MC paradigm requires enhanced flexible and efficiency in the supply chain. In such a way a lead time of delivering customized products is shortened. In the 2000s customized leagile supply chain, companies, suppliers and suppliers of suppliers operate as lean/agile as possible [4]. The goal of a hybrid strategy should be to build an agile response upon a lean platform. Figure 1 illustrates idea of hybrid strategy.

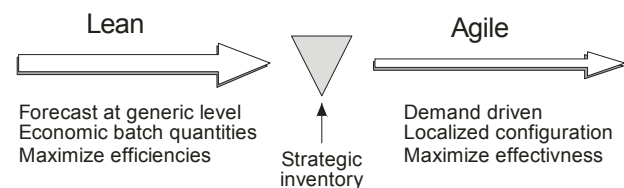


Fig. 1. The decoupling point [5]

The supply chain can thereby adopt a lean manufacturing approach upstream, enabling a level schedule and opening up an opportunity to drive down

costs upstream while simultaneously still ensuring that downstream of the de-coupling point there is an agile response capable of delivering to an unpredictable marketplace [6]. The challenge of SCM is to seek to develop “lean” strategies up to the decoupling point, but “agile” strategies beyond that point Naylor et al. [6] define leagility as “the combination of the lean and agile paradigm within a total supply chain strategy by positioning the decoupling point so as to best suit the need for responding to a volatile demand downstream, yet providing level scheduling upstream from the decoupling point” [7]. The decoupling point is the point where customer’s order i.e. real demand penetrates upstream in a supply chain. It is point where order-driven and the forecast driven activities meet, figure 2. It dictates the form in which inventory is held.

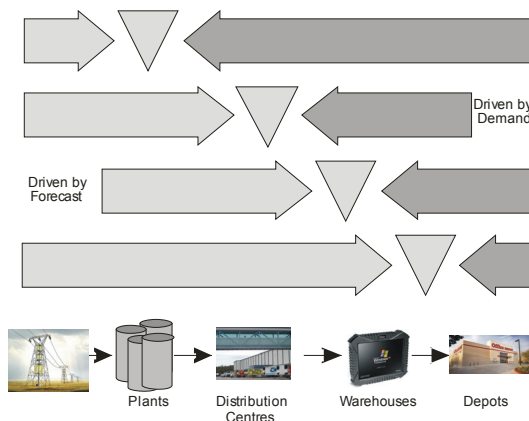


Fig. 2. *Material flow decoupling points and strategic inventory* [8]

By implementing the strategy of leagility the concept of postponement can be realized. Postponement, or delayed configuration, is based on the principle of seeking to design products using common platforms, components or modules but where the final assembly or customization does not take place until the final market destination and/or customer requirement is known [8]. The advantages of the strategy of postponement are several. The ability to customize products locally means that a higher level of product/service variety may be offered at smaller prices, which provide the means for realization of mass customization. There are actually two types of decoupling points in real-world supply chains [8]. The first is the one is the “material” decoupling point where strategic inventory is held in as generic a form as possible. This point ideally should lie as far downstream in the supply chain and as close to the final marketplace as possible. The second decoupling point is the “information” decoupling point which should lie as far as possible upstream in the supply chain. The challenge to SCM is all about the effective management of these two decoupling points. By achieving this goal, flexibility in the supply chain needed to respond to more complex products configuration and their fast changing characteristics is obtained. The flexibility and responsiveness of SC is further enhanced by data and information sharing in SC using various advanced information technologies. In achieving effective mass

customization active appliance of internet based SCM in companies supplying customized products is of crucial importance.

### 3. ZARA’S HYBRID SUPPLY CHAIN

The Spanish fashion chain Zara provides a good example of how market understanding and supply chain advanced design can respond to final customers. Hybrid supply chain strategies recognize that, within a mixed portfolio of products and markets, there will be some products where demand is stable and predictable and some products where the converse is true [9]. By utilizing hybrid strategy of supply chain, Zara demonstrates one of the most effective fast-response systems in fashion industry.

Zara is a vertically integrated retailer. On the global market, Zara compete with one of the biggest apparel companies like US-based The Limited and Gap, as well as the highly successful vertically integrated European retailers, Mango, Mexx and the Italian fashion giant Benetton. Unlike similar apparel companies, Zara controls most of the decision steps in the supply-chain: it can design, produce and distributes new garment and make it available in stores worldwide in just 15 days. However, Zara was only able to achieve the success in its supply chain by developing highly responsive systems and deploying the latest IT tools to facilitate the exchange of information between members of its supply chain. Compared to the competitors, Zara have an edge over most of its competitor’s strategy by having very low inventory to sales ratio This quick-response supply chain has enabled Zara to experience annual profit growth of 20% and enjoy a net margin of 10.5%, which is tops in the industry [10]. The fashion apparel industry is characterized by extremely short product life cycles of one season lasting less than several months. Generally, in apparel industry there are two types of supply chains: build to order (BTO) like Adidas and last minute responsive (LMR) like Zara as example. Zara is one of the worlds most successful and dynamic apparel businesses, producing fashionable new styles clothing based on the best selling products. The main group of customers is 18-35 year old women. The customers are loyal, frequent shoppers who visit a Zara stores on average 17 times per year. In order to retain customer’s interest the shelves is constantly varied and updated. About 70% of the products are changed every two weeks. Also, there are only few products available in store, making a sense of buying “now or never”. One more thing that could be observed in Zara’s business is fact that the company is instead of more quantities per style focused on more styles. Consequently Zara produces around 12.000 styles a year.

The whole process of supplying goods to the stores begins with cross-functional teams—comprising fashion, commercial, and retail specialists—working within Zara’s Design Department at the company’s headquarters in La Coruna, Spain. The team designs are guided by fashion trends and by combined information from

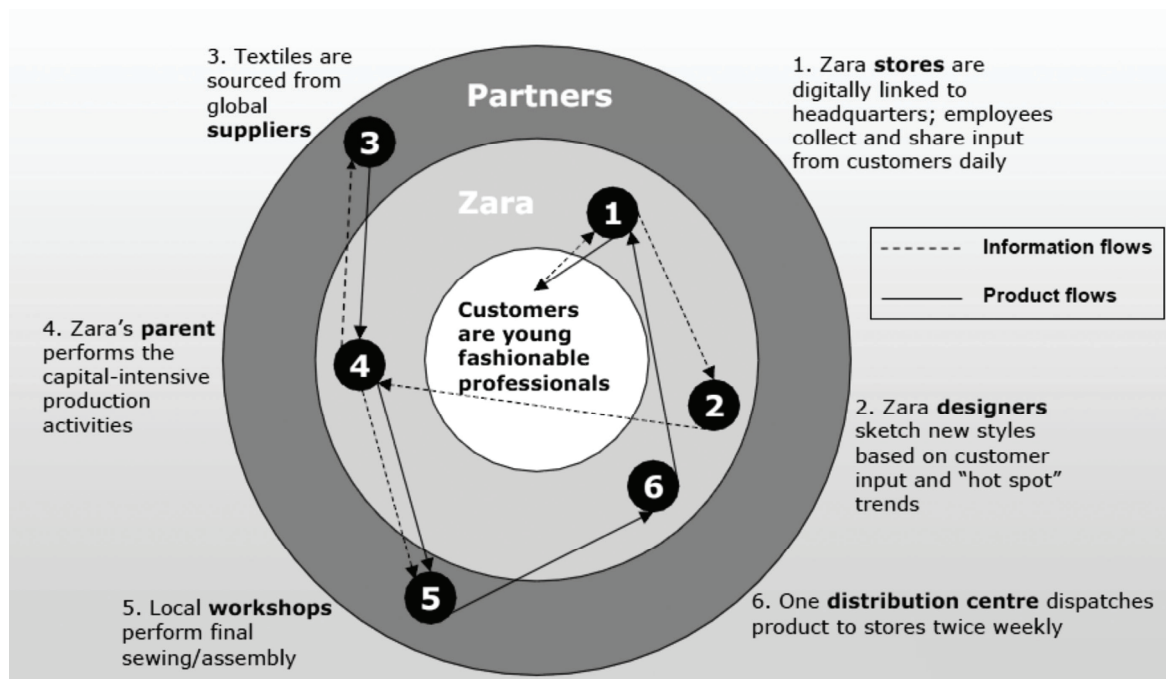


Fig. 3. Product and information flow at Zara [11]

visiting university campuses, discos, competitors' stores, pubs, cafes and other venues to observe what young fashion leaders are wearing. The design is also affected by information gathered from point of sales and other information from all of the company's stores and sites around the world. After carefully analyzing all the information, Zara designers could give a dose of adaptation or customization to the final models. Zara's commercial managers and designers conceptualize: what the garment will look-like, what fabric it will be made out of, what it will cost and and at what price it will sell [12]. Information and communications technology is at the heart of Zara's business and is well developed. The information and product flow at Zara is presented in figure 3. Textiles (raw materials) are mostly procured from Mauritius, New Zealand, Australia, Morocco, China, India, Turkey, Korea, Italy, and Germany. The rest are produced by quick-response in Spain, using Zara's own highly automated factories and a network of smaller contractors. In enhancing flexibility, most of materials Zara buys are semi processed. Also, approximately half of the material is purchased in 'gray', to be dyed or printed and finished by one of subsidiaries. The turnaround time for this process is only one week, illustrating how high production costs in Europe are offset by the benefits of proximity and control [5]. In such a way along with fast garment design in as shortest time as possible customers have products they are looking for. About 300 small local workshops, each specialized in one particular part of the production process or garment type, are incurred for the labor-intensive finishing processes. In order to maintain good quality and to fulfill deadlines, these subcontractors receive technological, financial and logistic support from Zara. Finished goods are forwarded to the company's two distribution centers

in La Coruna and Zaragoza where they are labeled, price tagged (all items carry international price tags showing the price in relevant currencies) and packed. From there they are carried by third party contractors by road and/or air to their penultimate destinations. Road is used for journeys of 24 hours or less, while airfreight is used for longer distances. All deliveries are completed within 48 hours. Store prices reflect the price position agreed for goods sold in Spain, plus the cost of distribution. Hence a shopper in the UK will pay 50 per cent more for the same item as a shopper in Spain. For customers in the US and Japan the price is more than double [5]. Zara's core competencies can be summarized as [12]:

1. The high turnover of its products.
2. Low level of inventory due to Fast supply chain - 1 week final production cycle, two day outbound logistics, fast adaptation of leading trends.
3. Efficient distribution system.
4. Commitment of its employees.
5. Scanning the fashion trends, market trends and meeting the consumer demands relating to fashionable clothes.
6. Flexible production system.

In such a way, company is in position to create large variety of products and to quickly respond to customer needs and moreover to gain competitive advantage. There are three key elements that are inevitable in achieving mass customization strategy [13]. They include:

1. Elicitation - a mechanism for interaction with the customer and obtaining specific information.
2. Process flexibility - production technology that fabricates the product according to the information.



3. Logistics - subsequent processing stages and distribution that are able to maintain the identity of each item and to deliver the right one to the right customer.

All of the above mentioned elements are highly developed and connected via powerful communication network which gives a high level of flexibility and responsiveness in all stages of the value chain. Besides, additional advance of Zara is successful implementation of postponement strategy. That allows he company to finalize designs and produce garments after the reliable information from the stores are obtained. In sum, Zara is one very few companies in apparel industry that have been able to realize the mass customization strategy via the usage of agile supply chain i.e. implementing hybrid strategy.

#### 4. CONCLUSION

Supply chain management is of crucial importance in today's business. The trend of increasing product/service customization have forced many companies to design more than traditional supply chain models. In order to quickly respond to the frowing individualiyazion od demand and in order to enhance customer satisfaction, companies are contantly seeking for adequate flexible supply chain strategy. Many companies have managed to achieve significant succes due to the unique ways by which they organize their's supply chain. The supply chain tends to become more efficient, more responsive and more customized. Particularly in fashionable markets, where demand uncertainty and short product life cycle are common, responsive, flexible supply chain are required. Zara provided a good example of how hibrid supply chain strategy realized through postponement concept is succesfully implemented in practice.

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