# High-Fashion, Low-Price Logistics of Apparel Industry

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# 1 Introduction

In a consumption driven society like ours, the retail industry is a huge part of our national economy. Every day billions of dollars are spent in the U.S on retail goods from basic pocket t-shirts to big-screen TVs. While most consumers interact only with sales outlets, numerous other entities such as manufacturers, wholesalers and distributors make up the rest of the very complicated supply network.

Traditionally retail goods are divided into durable goods like electronics, automobiles, and large appliances, which are expected to last a number of years, and non-durable goods, which include food, clothing, and other categories that have shorter lifespans. In this thesis, we examine the logistical implementations needed to support high-velocity retail operations in a high demand variability industry through an examination of super successful European fashion retailer Zara, and attempt to extend the analysis to formulate winning logistical configurations for the general retail industry.

# 2 Retail Industry Review

## *2.1 Major New Trends*

### 2.1.1 Traditional mom and pop stores are in jeopardy

The retail industry is changing as a growing list of new store categories begins to dominate the landscape. Mass merchandisers (Wal-Mart, Target), discount clubs (Costco, BJs, Sam's Club), so-called category killers (Home Depot, Barnes & Noble, Staples), and specialty retailers (J. Crew, Coach, Abercrombie and Fitch) have all developed successful retail models. As a result, both smaller mom-and-pop stores and traditional department stores, like Sears, Macy's (owned by Federated Department Stores), and Mervyn's (owned by Dayton Hudson), have found escalating competition. In 2001, while Wal-Mart and Target saw noticeable revenue growth of 15 and 8 percent, respectively, Federated Department Stores experienced a 15 percent decline in its revenue. The intensity of competition became evident even in the red-hot mass merchandiser category as is evidenced by Kmart's bankruptcy announcement in 2002.

### 2.1.2 E-commerce takes off

Though commercial websites account for only a miniscule percentage of retail transactions, the number is fast growing. Many major brick-and-mortar retail companies have now added online presence to their retail outlets. Companies like Amazon.com, which helped pioneer retail e-commerce, are being followed by brick-and-mortar and catalog retailers like J. Crew, which are expanding retail e-commerce into new markets.

While many e-commerce-only companies have been mortally stricken during the dot-com debacle of the late 1990s, the true impact and vast promise of electronic commerce has yet to be fully played out. In fact, many research firms point out that despite the internet meltdown, online shopping activities show steady, albeit slower than expected, growth. Although it seems likely that e-commerce will play a critical role in evolution of the retail industry, one cannot yet be certain in what ways the transformation would occur.

### 2.1.3 Rise of Big Brand Names

Today's retail industry is dominated by mega-brands such as GAP, Abercrombie and Fitch, Limited, and Nike. As a result, discount and mass retailers are finding it advantageous to introduce name-brand exclusive merchandise lines, which enhance their brands and bring in increased revenue; for example, consider the Michael Graves line at Target. On the other hand, more expensive department store chains are trying to lower costs and increase unit sales by developing store brands, which essentially offer consumers the same quality as brand names without the higher price tag (and with higher margins for the retailer). Canyon River Blues jeans at Sears is one example of a department store competing against established brand names.

## *2.2 Industry Breakdown*

### 2.2.1 Department Stores

Through the 1980s, names like Sears, J.C. Penney's, Macy's, and Montgomery Ward's dominated malls and downtowns all over America. Over the last decade or so, however, large department stores have suffered declining sales and foot-traffic. This is partly a result of changing shopping patterns and increased competition from discount stores, specialty stores and manufacturer-owned retail outlets. While department stores will likely play important role in the

future, we can expect a wave of consolidation as weaker companies flame out in this intensely competitive landscape.

### 2.2.2 Discount Stores

These are companies such as Wal-Mart, the largest retailer in the world, and warehouse stores such as Costco. Originally set up to serve members only, the deep discounters now face competition from category killers, non-membership warehouses, and mass merchandisers like Ross. Even more alarming is the growing realization among their harried shoppers that rummaging through endless aisles of merchandise just to buy some underwear isn't worth the savings.

### 2.2.3 Category Killers

These are the giant retailers that dominate one area of merchandise (The Sports Authority, Home Depot, Circuit City for example). They are able to buy bathroom tiles, file cabinets, electronic goods, or pet food in such huge volume that they can then sell them at prices even fairly large competitors can't match.

### 2.2.4 Specialty Stores

These include Abercrombie and Fitch, the Body Shop, and Victoria's Secret. These stores concentrate on one type of merchandise and offer it in some differentiated manner. Some are very high-end (Gucci) while others cater to the price-sensitive masses (Old Navy). Many are so successful that department stores have started to emulate their buying, marketing, and merchandise display strategies. Industry experts predict high growth in this segment. Many of the most successful retailers as of late have been specialty retailers that built a loyal following from customers seeking specific products that are perceived to be unique and of high-quality.

### 2.2.5 E-tailers

During the Nasdaq meltdown of 2000 and 2001 most of the web-only retailers went out of business. Still, some e-tailers (such as amazon.com or eBay) enjoy brisk business. The trend in web retail appears to be twofold: 1. rise of stores that specialize in very niche markets where having a serve-all web front end is more cost effective than physical stores and 2. as a complement to existing brick-and-mortar companies. For example, traditional retail behemoths like Wal-Mart and Barnes and Noble, hugely successful in their own right, have also set up online stores so as not to miss out on the revenue opportunities that the Internet offers.

# 3 Traditional Retail Supply Chain

## *3.1 Supply Chain Makeup*

Under the traditional retail model, retailers had to order products far in advance of the selling season. This was due to the fact that manufacturers gave discount for large production batches with longer lead time. Retail buyers were assigned to specific product lines – e.g. women's pants or blouses – and made purchasing decisions based on their best guess (formulated from forecasting software, market research, personal outlook, etc.). Once buyers decide on the emerging fashion trend for the upcoming season they will then apply rules of thumb to determine the quantity ordered for different styles and sizes. Under this configuration the buyers were evaluated on their ability to forecast a hit style and to procure the goods at minimum cost. And while the orders were not to be delivered until close to the actual selling season, amendments to the orders were rarely accepted by the manufacturers.

The typical shipment between an apparel manufacturer and retail customers is large and of low frequency – usually once a season. Once delivered, the retailer held the products in central distribution center(s) or as inventory in individual store's stockrooms. When the time for sale arrived, workers would retrieve the goods from the stock room or distribution centers. Inventory control was a cumbersome manual comparison of sales receipts and count of physical goods in the store. Unsold goods were sold at discount, sold to discount retailers (Marshalls, for example) or stored for future sales.

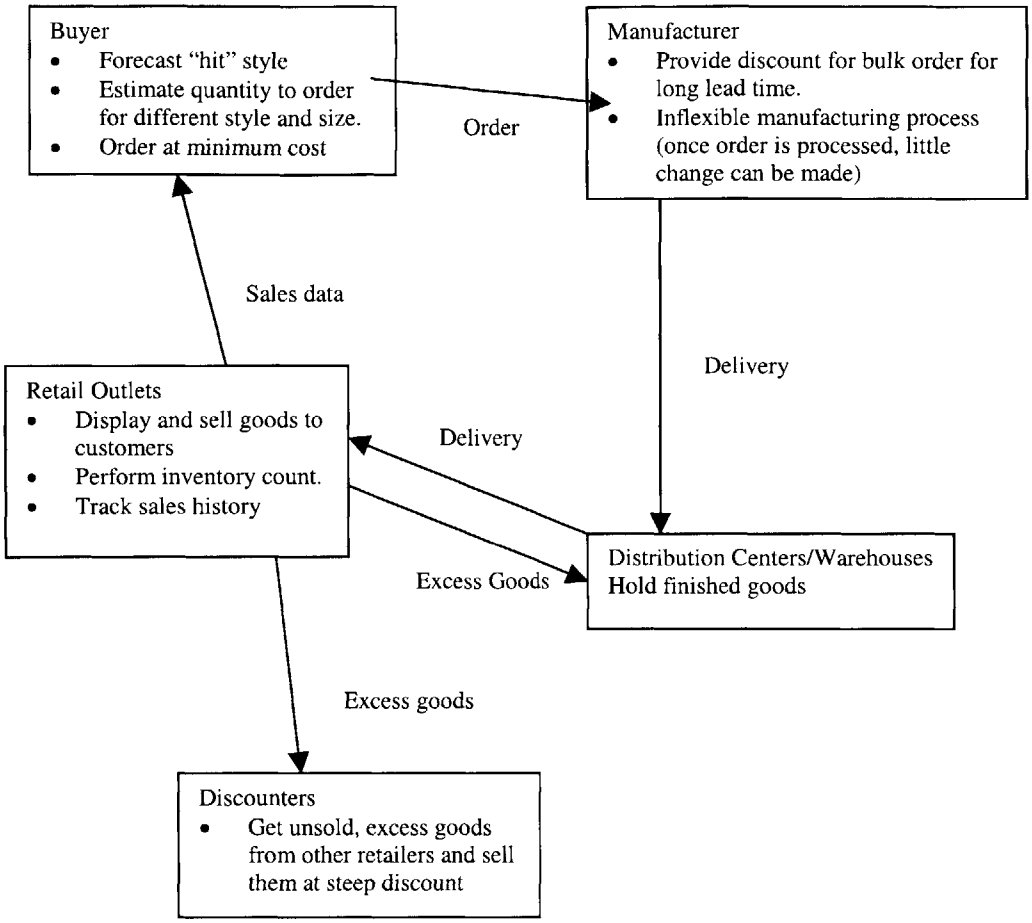


**Figure 1. Supply network for the garment retail industry.**

Characteristics of traditional supply chain:

- Bulk orders with long lead time.
- One order per season.
- Orders are inflexible.

Savings

- Frequent mismatch in forecast and demand due to long lead time and inaccurate forecasts - Costs

## 3.2 The Problems with the Traditional Supply Chain Approach

The obvious difficulty associated with running a retail operation is the variability in demand. Changing consumer tastes (for example, mini-skirt last year, knee-length skirt this year) and long lead time associated with manufacturing make ordering goods a risky practice. What exacerbates this is the increasing number of SKUs which raises the level of uncertainty regarding what product will sell or not sell in any given season. In practical terms, this means that a retailer carrying a broad array of goods faces increased costs both for carrying goods in inventory that will not sell (overstocks) and running out of a good that sells beyond expectations (stock-outs). The costs associated with demand uncertainty, which were previously connected primarily with fashion products – the problem of selling a highly perishable item – have grown enormously for retailers in many different industries. The variety of products offered has increased considerably in most consumer product sectors, from most segments of the retail food industry to home building products to personal computers.

SKU proliferation coupled with industry overcapacity highlight the costs imbedded in the traditional model of retailing. Three types of costs were especially high under the old model:

- Forced markdowns to clear out unsold goods
- Lost sales from stock-outs
- Inventory costs (including warehousing, shrinkage, obsolescence).

## 3.3 Improving the Traditional Approach

Initially the apparel companies' focus was on reducing manufacturing time. It was all about maximizing efficiency in cutting, sewing and dyeing. Much effort was devoted to increasing worker productivity and being able to manufacture goods faster and cheaper. It was believed that price differentiation was the key to winning the retail war. However, recent studies reveal the sweetspot for performance improvement is not local optimization of the manufacturing process but global optimization of the entire supply chain network. Further studies reveal that the successful apparel companies employ state-of-the-art information technology and management practices that integrate manufacturing and transportation to sales and marketing. Apparel companies who utilize advanced IT networks to properly plan out production according to scientific forecasting of consumer demand are able to drastically reduce inventory which in turn reduces excess goods unsold, which have to be liquidated through markdowns. The companies in the retail space are awakening to the fact that price competition is not the holy-grail to success. Rather, it is the ability to minimize forecasting error (both in terms of consumer taste and quantities ordered), efficient manufacturing process, and timely (no sooner and no later) delivery of desired goods to the retail outlets.

In short, the key to successful retailing today requires a flexible supply chain where continuous adjustment of product orders and transportation systems capable of delivering goods no sooner and later than is needed. The continuous adjustment in orders is needed because of the inherent difficulty associated with predicting consumer tastes. Therefore, the easier way to tackle this problem is to delay product ordering as much as possible, since the uncertainty decreases as a function of time. To accommodate this, manufacturing must be capable of

producing high quality goods quickly and the transportation system must then deliver finished goods to retail outlets faster than in the traditional model.

Unlike the traditional model where the manufacturer typically made a single bulk shipment per season, the new "high-velocity" retailers require frequent shipments in small batches as an ongoing replenishment. These orders are determined by real-time sales data as well as non-scientific survey of consumer preferences gathered at the sales outlets (e.g. sales clerks probing customers for favorite color, size, suggestions).

Mathematically put, this becomes a problem in optimizing the cost function which, at the highest level, consists of : production cost, transportation cost, mark-down cost, inventory cost and stock-out cost. Or to put it even more simply: find ways to operate with less inventory without sacrificing service level.

# 4 Role of Inventory

The motivation behind inventory is to manage unpredictability in consumer demand. In other words, inventory serves as a compromise a buffer against stock-outs. Inventory allows retailers to react quickly in case the popular goods sell out. On the other hand, holding excess inventory may cause overstock which must be liquidated at a significant discount, eroding the profit margin. The inventory problem has changed little over time, but as consumer tastes become more diverse and fast changing, increasing product varieties and decreasing lifecycle, managing inventory has become exponentially more difficult. As a result, retailers have been putting in huge resources behind management of inventory and constructing efficient supply chain to minimize necessary inventory. While this may appear to be an isolated problem, the approach a company takes to manage inventory has a far-reaching implication on its forecasting, manufacturing, transportation and sales process.

The problem with simply minimizing inventory is that inventory is not necessarily bad. High levels of inventory may be needed in order to meet excess demand by consumers. Not having enough inventory on-hand, for the goods that cannot be quickly replenished due to lengthy manufacturing or transportation time, can incur high stock-out costs. On the other hand, carrying inventory can be expensive in several ways. Retailers must pay capital costs in terms of money tied up in inventory, storage costs, and overstock costs. The level of inventory will depend on the forecasted demand, desired level of availability (customer service level), frequency of orders and the lead time and cost to receive replenishment.

# 5 Supply chain participants

A major step forward for retailers in supply chain management has been the upgrade in IT infrastructure, linking all entities in the chain by facilitating seamless flow information between them. Different participants in the supply chain have different requirements and roles. While the chain is different for different industries, in general five participants are involved from production of goods to its ultimate consumption. These participants are: supplier, manufacturer, distributor, merchant and consumer.

- The supplier produces raw material used by the manufacturer to make the final product. Examples include a zipper supplier for a clothing manufacturer, or a rubber supplier for a tire manufactuere. The supplier-manufacturer relationship can be recursive in that a supplier may also be a manufacturer for another supplier. The main distinguishing factor between supplier and manufacturer is whether one produces the actual consumer end product.
- The manufacturer is an entity that produces an end product (e.g., t-shirts, cars, TVs, toys, pet food, books). Each offers a final consumer-ready product.
- The distributor takes the product from manufacturers and transports it to merchants or, sometimes, to final consumers. Sometimes merchants themselves assume this role. GM produces cars and allocates them through dealerships which then turn around and sell directly to public. At times, distributors are entirely different third-party companies which serve as intermediary in product transportation. It is in this area of transportation where the need to streamline information flow initially surfaced. The area of transportation is so paper-intensive and complex that this is the area where the need for reduction of paper was first recognized and EDI was first introduced, with an

organization called Transportation Data Coordination Committee (TDCC) in the late 1960s. Although EDI is far from a seamless information technology integration, it was nonetheless a major step forward in acknowledging that information sharing between entities can result in remarkable performance improvement both locally and globally.

- Merchants sell products to final consumers. Sometimes merchants are totally independent corporate entity from manufacturers (e.g. BestBuy carries TVs from Sony, Panasonic and JVC) and other times they are manufacturer owned outlets (Abercrombie & Fitch, Cambridge Soundworks, GAP).
- Consumers purchase and utilize products and are the ultimate end of the product chain.

A retail company's success often hinges on its ability to manage relationships among the above parties. The companies that find ways to reduce friction between those players in the most efficient manner would likely survive and prosper. In next section, we examine supply chain practices of one highly successful European fashion retailer.

# 6 A look at High-Velocity Retail Oeration - Zara

## *6.1 Corporate Overview*

Zara is the new hottest name in fashion retail. Their bleeding-edge design and rock-bottom prices have been all the rage in Europe, and the company is slowly and deliberately expanding its presence around the globe. While Zara's loyal shoppers praise the company for delivering continually changing high fashion goods at reasonable prices, the company has also garnered industry-wide respect for running what is probably the most advanced supply chain operation in all of the apparel business.

Zara is a brainchild of Amancio Ortega, a Spanish retail billionaire. Zara is part of Inditex, a holding company headed by Ortega. Ortega, taking a page out of Limited's Leslie Wexner, created Inditex as a holding company over a broad array of fashion retail companies each serving a designated niche. Zara is the most well known name that accounts for 77% of Inditex's total sales. Under Ortega's guidance, in 2001 Inditex earned $230 million aftertax on revenues of $2.3 billion, tripling in five years. Cash flow (earnings before interest, taxes, depreciation and amortization) margin: 20%. Net aftertax margin: 10%. Even its archrival, Sweden's Hennes & Mauritz (H&M), nets only 8.4 cents per dollar of goods sold. The U.S.' Gap nets 6.4 cents (Dukcevich).

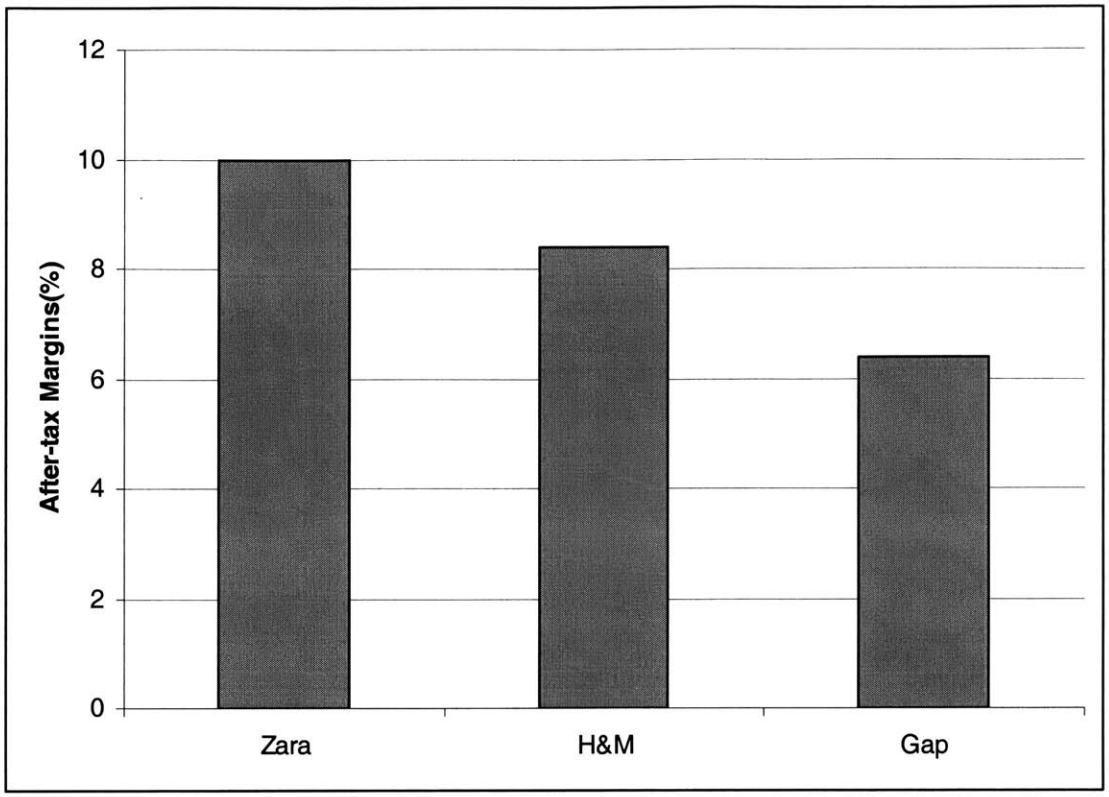


**Figure 2. Zara profitability (2001 data)**

## *6.2 Core strategy*

### 6.2.1 Outsourced vs. In-house manufacturing

While Zara's supply chain maybe unique, the core guiding principle is deceptively simple. In the high-fashion apparel business time to market is the key. For many years most retailers focused on advertising, sales promotions and, especially, labor costs. It has been a growing trend that apparel companies contract out manufacturing to third-world countries where labor costs are fraction of their own. For the sake of faster response time, Zara decided against farming out manufacturing. Where Limited Inc, one of U.S.'s leading apparel companies, continue to utilize

third-world manufacturing with lightening-fast transportation to meet ever-changing market demands and shorten response time, Zara decided to take manufacturing in-house and locate it near sales outlets for quicker turnaround. They deemed this approach more efficient than the lower costs to be gained from using third-world manufacturers. "The fashion world is in constant flux and is driven not by supply but by customer demand," says José María Castellano, CEO of Inditex. "We need to give consumers what they want, and if I go to South America or Asia to make clothes, I simply can't move fast enough."

Knowing what's hot today may be cold next month, Zara is organized to move a design concept from the drawing board to retail stores at a lightening pace. Fabrics are sourced globally – from Italy, France, the United Kingdom, China, the Netherlands, Morocco, India, Turkey, and Korea. Capital-intensive steps – creating patterns, cutting, and color treatment – are executed in factories owned by Zara's parent company, Inditex, in Galicia, Spain's northwestern province. Labor-intensive tasks such as sewing and assembly are outsourced to small shops with which Zara has collaborative and exclusive arrangements in Galicia, neighboring Castile, Leon, and northern Portugal. Zara provides these shops with the technology and logistics needed to get the job done on time and with the required quality. In return, it enjoys control of the end-to-end process, ensuring speed, quality and cost efficiency.

| Garments Production | | |
|---|---|---|
| External Purchases | Europe | 52.25% |
| | Asia | 2.20% |
| | Central America | 0.55% |
| **In-house Production** | **Inditex** | **45%** |
| Total | | 100% |

**Figure 3. Origin of garments (raw fabric). Source: Berengueres**

Today, about half the items Zara carries are made at its own state-of-art factories. The items made in these factories tend to be high fashion, highly-"perishable" items which are produced in smaller batches. Zara continues to utilize contract manufacturing but primarily for low demand variability items such as basic t-shirts and jeans. This is in stark contrast with most other retailers.

Zara has a twice-a-week delivery schedule that restocks sold-out merchandise as well as brings in fresh new styles which keeps the selection at stores ever-changing, giving customers reason to stop by more frequently. This is also very different from other retailers who release new styles only once a season. Driving this is Zara's follow-not-lead strategy. While companies like the Gap attempt to predict or even create a new trend via extensive advertising campaigns, Zara simply follows the current hot trend as observed on the fashion runway or street, as well as taking direct inputs from customers and sales clerks who implicitly track consumer taste. All in all, Zara cranks out about 10,000 new styles each year, far eclipsing its competition.

| Apparel Production | | |
|---|---|---|
| External Purchases | Spain | 11.20% |
| | Portugal | 12.30% |
| | Europe-Other | 11.20% |
| | Asia | 16.20% |
| | Other | 5.10% |
| In-house Production | Inditex | 44% |
| Total | | 100% |

**Figure 4. Origin of finished apparel. Source: Berengueres**

### 6.2.2 Sales Data and feedback to manufacturing

In determining new styles to manufacture, retail clerks play a significant role. Store managers keep in regular contact with regional managers, actively relaying customer feedback as well as their own view – gathered through extensive interaction with customers - on the next hot style, cut and color. Regional managers then relay the feedback to the design team at the HQ which analyzes the real-time data and quickly converts the trend to products. The epicenter of all this action is in Zara's warehouse facility in La Coruna, a behemoth of a building that is four-story and 5 million square feet (about 90 football fields). For Zara, a warehouse is not so much a physical storage facility, but rather a cross-docking operation. The huge building is connected to fourteen factories via elaborate rail system that carry merchandise between factories and the warehouse.

### 6.2.3 Operations Overview

Each bundle of merchandise is accompanied by a metal tab that denotes where in the warehouse the merchandise is to be delivered. The merchandise is selected, sorted and routed (much of this process is automated) until it reaches the area affectionately known as the "lungs" of the warehouse. Every Zara store is given a staging area here where it receives clothes on hangers from the upper two floors and folded items from the lower two. Once a store's order is complete, it is then carted to a loading dock where it is packed with other stores' shipments and loaded onto delivery trucks in order of delivery among the European destinations. Shipments for outside Europe are shipped by plane for expedited, but more costly, delivery.

The warehouse is run so that the majority of the items are in the facility for only a few hours. In order to keep that tight schedule the logistics team at Zara continually tweaks and improves the network - everything from the sequence and size of deliveries to truck routes and rail configurations. As the number of retail outlets grows, the tight logistics operation has become increasingly challenging. Even a delay of a few minutes could halt the process. An example would be a truck arriving in a city after a store opened, and the staff would be too busy with customers to take the delivery. Or worse, a truck would arrive after the early morning and not be allowed into the city's commercial downtown to unload - stalling the delivery until the next morning. Zara has responded to this problem by staggering deliveries by time zones. In the morning when European retailers take stock, Zara packs and ships orders to the Americas or Asia. In turn, European orders are fileld in the afternoon. The main objectives of Zara's logistics operation are straightforward: speed and flexibility. And to aid growth, Zara is building an entire new complex in Zaragoza, about 150 miles northeast of Madrid, that should double its capacity.

Rapid information flows are a critical component of Zara's high-velocity operation. All stores are electronically linked to the company's headquarters, and information is channeled to those who need it. The entire production system – from design to final retail – is digitally linked and controlled. Information sharing binds together the separate pieces of Zara's operation. It is shared openly across business units and flexible work centers that are highly adaptable and that have decision-making responsibility.

Customer alignment, speed, agility, and rapid information dissemination– all important supply chain attributes – have paid off handsomely for Zara. The company holds much less inventory than its rivals – 36 days worth of supply versus 94 for Cortefiel, its direct Spanish competitor, and 52 days for Sweden-based Hennes & Mauritz. The reason is that most fashion retailers design garments to last an entire season. To achieve cost efficiency, they produce the season's designs in bulk and then hold the inventory. Zara's ability to bring new designs to stores in less than two weeks allows it to carry less inventory and minimize accumulations of stock due to supply-demand mismatch.

## *6.3 Zara Differences*

### 6.3.1 Demand Reaction vs. Demand Forecasting

Zara's supply chain begins where one typically ends – at the retail outlets. Zara's store managers and clerks are equipped with state-of-art hand held devices which perform sales and inventory tracking. Furthermore, the sales staff keeps a close eye on consumer buying behavior, identifying in real-time the hot color, style and cut. This information is also relayed upstream in their daily contact with the regional managers. Regional managers gather inputs from retail staff in their respective territories and relay them to the headquarters where an army of design staff

(although many pundits complain that Zara never actually "designs" anything) awaits the breaking news on street trends. The designers also tour plazas, discos, cafes, university campuses, boutiques, competitor stores, and catwalks all of which are clientele hot spots – always on the lookout for new trends. This is in stark contrast with most retailers who attempt to anticipate new trends well ahead of time and often try to influence public taste via extensive advertising. The Gap is a prime example of such case.

### 6.3.2 Fast Manufacturing

Obtaining up-to-the-minute consumer demand patterns isn't worth anything if you don't have means to react to the information quickly. Zara's manufacturing process is among the fastest in the world. On average it only takes 10 to 15 days to transform a design concept to reach retail outlets. This is far superior to the 6 months lead time that is typical in the apparel retail business. Much of this is due to Zara's advanced manufacturing facility in Galicia and its close coordination with 300 small shops in Galicia and northern Portugal which perform final assembly.

Other big factor driving the success of Zara's fast-production strategy is the total control it holds over the process. Since Zara eliminates contract manufacturers in favor of in-house production, the company is able to maintain flexibility – a key ingredient in quick response to rapidly changing consumer taste. If a particular model or size sells out, Zara simply makes more. If it doesn't, then production stops. This coupled with Zara's twice a week product shipment to retail stores minimize overstock and inventory costs. This also implies that most of the goods are sold at the full retail price, keeping the profit margin up.

Unlike the Gap and H&M, their major competitors, Zara isn't guessing months in advance about what customers might like. Their combination of up-to-the-minute design and just-in-time production and delivery makes them far more efficient at moving inventory than the other two industry giants. Constantly changing inventory also gives customers one more reason to stop by Zara often : no matter what they have today, they will have something different next week.

### 6.3.3 No advertising

Zara does it all without advertising. Instead of hugely expensive ad campaigns, Zara invests in prime retail real estate in the fashion centers around the world, hoping to benefit not only from merchandising but from rise in real estate as well (the "McDonald's" approach). Zara gives excruciating thoughts to window presentation and store layout – making the store appear like a purveyor of fine designer labels rather than low-price fashion bargains for young men and women.

## *6.4 Zara Financials*

The advantages of world-beating time to market, according to Zara, more than offset manufacturing costs that run 15 to 20 percent higher than those of its rivals. Responding so quickly to shifts in customer tastes means, for one thing, that Zara almost never needs to have across-the-board inventory write-offs to correct merchandising blunders. And the company maintains steady profit margins of 10 percent -- in line with the best in the industry.

Today the reclusive 66-year-old Ortega, who has never granted an interview and is rarely seen in public, is Spain's richest man and the world's richest fashion executive, ahead of Bernard Arnault of luxury goods empire LVMH and the Fisher family, which founded the Gap. Inditex, the 3.25 billion euro ($2.8 billion) retail conglomerate that grew out of Zara, now includes five smaller chains: Bershka, Massimo Dutti, Pull & Bear, and Stradivarius, all of which carry styles ranging from upscale men's clothes to inexpensive teen fashions, and the recently launched Oysho, which sells lingerie. All told, Inditex has 1,315 stores in 40 countries. Zara's 519 stores account for more than 75 percent of total sales.

## *6.5 Zara Design Strategy*

At most fashion retail companies, the creative director (such as Tom Ford at Gucci) has the giant task of building the product vision for the upcoming season. The 3 major steps are:

1. Creative design (idea generation for new products)
2. Show collections, draft designs
3. Final designs

Zara, for the most part copies the first two steps from the most successful fashion houses. Some of their designers are quasi-spies who attend runway fashion shows and examine color, materials, cut and style. While many fashion houses create designs for the public, Zara's deigns are created by the public. Zara further hones their portfolio of designs by constantly checking sales data as well as informal interactions with customer, who happily divulge to sales clerks the style they like. Zara further reduces SKU by limiting each design to 3 sizes and 3 colors.


**Figure 5. Zara's digitized design system.**

## *6.6 Employee Empowerment*

Zara keeps employee morale high by hiring the type of people who enjoy what Zara sells. The average age of workforce is only 26 years old, and 78% of all workers are women. An overwhelming 80% work in retail while highly automated manufacturing only requires 8.5% of all workers. By keeping staffing lean and hierarchy flat, Zara creates a corporate atmosphere where every employee has strong sense of responsibility and satisfaction knowing that his or her actions directly contribute to well being of the company. A great example is the integral role the sales staff plays in the direction of the product line up. Unlike most retail companies where the

responsibility of sales staff is merely that of transporting goods from stockroom to store floor, Zara sales staff are expected to read customer taste and make suggestions on the next hot selling items.

## 6.7 Zara Manufacturing Allocation Strategy

Zara' product line can be categorized into to two categories – high component and low component fashion. High component fashion consists of clothes that are more fashion forward and trendy, carry higher margin but also more perishable as consumer tastes change over time. Low component fashion is something more basic, such as solid colored t-shirts or conservatively styled jeans and khakis.

As mentioned before, Zara's approach to dealing with ever-fluctuating demand pattern is rapid manufacturing and transportation which cut down traditional lead time of 6-12 months to mere 2 to 3 weeks. The drawback to this approach is the cost – where much of the savings associated with economies of scale in raw material procurement, vendor contracts negotiation and shipping is lost. Hence, Zara takes the hybrid approach to allocating manufacturing. The high-component fashion goods, which are highly perishable, are manufactured in Zara's state-of-art factories for fast delivery to market. The low-component fashion goods, which have much more steady demand patterns, are outsourced in bulk to countries with cheaper labor and are brought to market with cheaper, but slower transportation modes.

This hybrid approach enables Zara to maximize manufacturing efficiency by diverting proper resources to where they are most needed. In short:

1.Producing High component fashion – At nearby (Galicia, Portugal) factories and shipped twice a week via trucks.

2.Outsource Low component fashion (Basics) to cheap countries with long lead time.

Shipping frequently in small batches means greater overhead Transport costs but allows:

Tracking of customer preferences - Premium

And stores operate with less than 1 month stock - $savings$ + less risk

## 6.8 What Zara Does – Vertical Integration

Zara's flexible supply chain would not be possible without having full control over its process. For instance, if it were to run manufacturing on an outsourcing basis it would be much more difficult to turn design concept to a delivered product in 2-3 weeks time. Controlling the full product lifecycle – from design to sale – is what practitioners refer to as vertical integration or verticalization.

The verticalization is a result of companies seeking greater control over their supply chain which in turn can create a more responsive, flexible, and (sometimes) cheaper process. Middlemen and wholesalers are cut out of the distribution channel to ensure that there are lower costs and no losses of communication in the process. Manufacturers are becoming retailers, retailers are becoming manufacturers. Success is more likely in cases where one company owns or controls the complete process from production to distribution. Most fast expanding fashion companies are working vertically. For example: Wal-Mart, Zara, Uniglo, Mango, and H&M (all European fashion retailers) - all these successful international retailers fall in this category. Frequently, they work on a completely vertical system, while at other times, they use a mixed

system - selling their own brands as well as manufacturer brands (as most department stores are doing currently). More and more manufacturers are opening own stores and more and more fashion retailers are selling their own retail brands.

Some clear advantages of verticalization are cost savings due to elimination of middlemen, faster production due to reduced number of tiers in the supply chain, and alignment of manufacturer's interests with retailers, and vice versa. The total control also gives guarantee to that the goods are presented to consumers in manner consistent with the company's positioning.

# 7 Summary

We have examined ways to improve apparel retail process through a successful European retailer – Zara – who shattered traditional retail supply chain thinking by shifting from a focus on costs reduction in manufacturing to an emphasis on the quick response inventory and in process revolutionized the structure of its supply chain. The logical questions to ask next are then:

- Why aren't more companies adapting Zara process?
- What makes replicating Zara process so difficult?
- And finally – did Zara get it right?

Most companies are not going as far as building out their own manufacturing facilities, but they are attempting to streamline end-to-end process through implementation of corporate wide information networks. In particular, retail companies are rushing to implement IT infrastructure that would help them better track real-time sales data which would provide immediate feedback on what's hot and what's not. Enterprise-wide IT systems, such as ERP applications, are now being widely implemented precisely to put all departments on the same page. The idea is that the management can now have access to a real time snapshot of the entire company whenever needed. While the promise of ERP systems is great, their installations have been causing significantly more trouble than first anticipated. The examples of botched IT network are aplenty. And once installed, the performance of such system have been often well below initially hoped. One particularly bad case was Nike's implementation of i2's supply chain management software, which was so reported to result in Nike's depressed earnings for quarters following the installation (Wilson).

Even if a company is successful in installing IT infrastructure, difficulties arise in obtaining sales data for companies that do not own their sales channels. For instance, Reebok, who does only a small fraction of its sales through company owned stores, has to cope with thousands of retail stores and hundreds of different merchants who carry Reeboks. While Reebok does have a good grasp of the products shipped to the merchants from their warehouses, Reebok has no idea what's actually selling, and often ends up having to take back unsold merchandise months after it was shipped to retailers. In case such as this, it is obviously much more difficult to fine tune manufacturing according to sales data.

Second, rapid manufacturing may be suitable for fashion-forward apparel only. The costs associated with rapid manufacturing – capital invested in a state-of-art factories and labor costs for US workers – is justifiable for items that are highly perishable and thus, whose inventory costs are high. But for apparel that has relatively low demand fluctuation, there is no large cost advantage because perishability is low. For example, Dockers, a leading purveyor of khaki and other staple men's casual wear, the likelihood of customer taste shifting away from, say, khaki pants, is fairly low. In this case, a traditional supply chain requiring a long lead time but saving in material and manufacturing cost is likely to outweigh potential gain from lower inventory.

Third, the supply chain process is inherently hard to duplicate because it involves not only one or two strategic changes involving one or two departments, but a sweeping change over the entire company. It would often require a fundamental shift in sales process, IT infrastructure, manufacturing scheduling, organization structure, departmental responsibilities and compensation scheme. We see in Zara not just highly advanced manufacturing plants, but the entire company, starting with the sales clerks, continually surveying the market and reexamining customer trends. Zara also does outstanding job of promoting a positive culture – empowering

employees and making everyone feel like she's making a significant contribution to the company. To replicate Zara would require changes in both tangible and intangible aspects of a company.

Time will tell whether the Zara approach is truly a fundamental shift in retailing strategy. While Zara enjoyed tremendous growth during mid to late 90s, its long-term viability has yet to be proven. Zara's scale is still fraction of that of mega brands like the Gap and Levi's, and it is highly possible that such high-velocity operation does not scale, perhaps as evidenced by Zara's methodical approach to expansion. For example, Zara only has three stores in US and has no immediate plan to add new outlets. There may well be economic and regulatory variables such as rises in minimum wages or changes in union laws, for example that may render manufacturing in certain areas impractical. And for many retail goods that are not as perishable as a hot, pink blouse, a high-velocity supply chain may be unnecessary novelty. However, the Zara process deserves close scrutiny for its breakthrough approach to tackling the fundamental retail problem. Traditionally, retailers saw demand unpredictability as given and sought to maximize profit by minimizing manufacturing costs. Zara saw the same problem and decided that there is no sense in trying to predict the unpredictable, and set out to react – rather than forecast – to the changing taste. And in process, Zara realized that higher costs expended on lightning manufacturing can outweigh potential costs associated with misforecasts. Zara should be commended for thinking outside box and coming up with an original solution that takes a more global approach to solving the problem.

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