

Balancing Offshoring and Agility in the Apparel Industry: Lessons From Benetton and Inditex

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Abstract

Based on a case study from the apparel industry, the paper addresses how the organizational innovations adopted by Benetton and Inditex allowed them to balance lower production costs in developing countries with an adequate response time to frequent preference changes and increasing demands for customisation. Findings confirm the fragility of multinationals whose offshoring strategy has not considered the costs of coordinating suppliers in far-off locations and suggest organisational improvements that make production costs, variety and time to market goals compatible. Our research thus provides a view of the conditions and processes that can overcome in increasingly volatile environments the misalignment between demand changes and the limited reactivity of industrial infrastructures. Furthermore the innovation strategy of textile companies has created generalizable lessons for other sectors in which demand uncertainty is high, life cycles short, and customers are, to some extent, prepared to pay for "speed to market".

Key words: *offshoring, agility, apparel industry, organisational innovation, time to market.*

■ Introduction

The potential to fragment the supply chain (SC) and externalize certain phases of production is the result of increasing competitiveness brought about by globalization and of new horizons opened up by technological advances [1, 2]. Thus from the moment that cost-oriented offshoring is (still) most frequently performed, other key business issues such as agility or time-to-market are frequently relegated to second place, mainly because they conflict with this cost-based perspective [3, 4].

In this regard, recent literature has pointed to the fragility of companies that offshore operations without considering the cost of coordinating suppliers, both internal and external, in far-off locations [5, 6]. Many companies do not often pay sufficient attention to these collateral aspects, and as a result firms sometimes run into problems with their involvements abroad. Sooner or later, the capabilities are transferred back, either entirely or in part, to the original domestic location. In fact, as Kinkel et al. pointed out [7], every fourth to sixth offshoring initiative is reversed by a backshoring activity in the following five years. Thus the potential and risks of relocating manufacturing activities to low-wage countries are now the subject of debate, and both practitioners and researchers are now trying to achieve a comprehensive view of the drivers and its consequences [5, 8, 9].

While strategic offshoring decisions have often been taken to reduce costs, to access raw materials or to gain proximity to customers [3, 5, 10], over the years the risks of this short-sighted production offshoring strategy have come to light: quality problems, emergence of hidden costs, loss of knowledge or extended time-to-market, among others [5, 9, 11]. Although the reasons for backshoring are different from those for offshoring, many authors identify cost as the primary consideration for moving (and moving back) manufacturing [5]. In addition, time and flexibility aspects are frequently discussed in the literature as the other two major offshoring considerations [3, 8, 11]. Therefore there is a real challenge in trying to obtain the benefits of lower production costs while maintaining customer response and some companies try to base their manufacturing location decisions on integral analysis rather than simply relying on a cost-based perspective [9].

However, in spite of this managerial interest, the cost-agility trade-off has not received the same attention from academics [9, 11]. On the one hand, offshoring literature has focused predominantly on macro-economic analysis whilst operational matters have received relatively little attention [9]. On the other hand, although authors such as Jin [12] or, more recently, Purvis et al. [4] consider how to combine global and local manufacturing activities to optimise this binomial, real analysis of the balance between offshoring and

agility remains unaddressed. In fact, in view of this lack of evidence in the literature, many authors claim that more in-depth case studies are needed on the consequences of relocation and the specific triggers in each direction (off & backshoring), as well as new organizational models to overcome any difficulties arising [5, 6, 8].

Our research addresses this challenge through two case studies in the apparel industry (Benetton and Inditex) illustrating how organisational innovations allowed them harmonise production costs, variety and time-to-market. First, beginning with the basics, we offer arguments showing that the optimal level of offshoring in the fast-fashion sector is not just a production challenge but also the result of balancing production and time-to-market costs. Second our results show that the optimal level will necessarily be different for each company, given their specific goals and strategy, and will tend to change over time as their environment confronts them with new challenges.

■ Problem statement and research design

The main research objective of this paper is to illustrate how the intensity of offshore outsourcing over the last decades needs to be nuanced and how particular organisational innovations can ensure that production costs, variety and time-to-market are compatible. The textile and apparel sector is perfect for addressing this issue because of its unique charac-

teristics regarding the volatility of demand; a key aspect of this study because it is what makes it necessary to balance production costs in far-off locations and agility in the SC.

The case study is the most appropriate methodology considering the exploratory nature of our research and our need to respond to the questions “Why?” and “How?” [13, 14]. Thus, although a purely conceptual approach could achieve the same ends, case studies provide the depth required to determine if our propositions are plausible and, if so, to develop generalisable guidelines for transferring them to real-life businesses [15]. *Table 1* below briefly describes the main research phases.

Results

Changes in the apparel sector and the approach adopted by Benetton: tinto in capo

Throughout the 1980s, most European and North American apparel companies brought out two collections a year for which the trends and designs, set forth by opinion leaders, were established 270 days before they reached the market. The supply channel was still basically regional, with goods generally being produced close to the logistics center and mostly being distributed in mature markets.

However, in 1995, it became possible to import textiles from low-cost countries. The Multi-Fibre Arrangement (MFA), based on bilateral agreements between countries that imposed selective restrictions on imports, was abolished and replaced by the WTO Agreement on Textiles and Clothing, which established a ten-year sequential roadmap to deregulate the trade in textile products by 2005. Although the European Union had not imposed quotas on poorer countries such as Bangladesh (encouraging companies such as Inditex to procure goods there at a very early date), the large companies found in 2005 that they were free to develop their offshore sourcing strategies. To this end, exports of textiles and garments from China rose during the first few months of 2005 by over 100%, spurring new political tensions in the US and Europe because of the impact on employment but also reflecting the mass outsourcing processes of their large textile retailers.

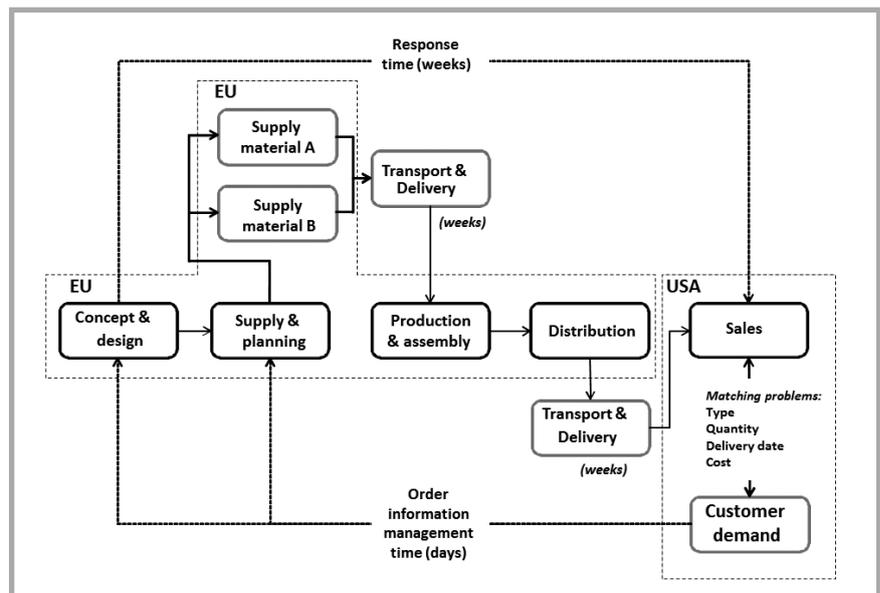


Figure 1. Regional supply chain.

Table 1. Methodology of research.

Step	Description
Goal of the research	To illustrate how the intensity of offshore outsourcing over the last decades needs to be nuanced and how particular organizational innovations from the apparel industry can ensure that production costs, variety and time-to-market are compatible.
Selection of cases	The specific choice of Benetton and Zara aimed to guarantee that the behaviour observed could be generalised so that the study would be valid elsewhere despite different competitive strategies [16]. Thus the representativeness of two companies does not stem from a random choice but from their specific characteristics and from how they help us address our research question [8]. Benetton addresses the high-end market and seeks to obtain large margins; for Inditex, it is as important to respond quickly to changes in demand to offer low prices [17].
Data collection	In both cases, information was taken from secondary sources, both external (research articles, books, etc.) and internal (annual reports, economic information, interviews, etc.) as of July 2014. In the case of Inditex, semi-structured personal interviews were performed as well as shorter telephone calls. We interviewed two external consultants and ten workers from different levels and areas: a department manager (2), area manager (3), purchasing staff (2) and ex-post treatment centers (3). In addition, two researchers were always present to minimise observer bias and identify any questions of interest during the data collection process. We also reached out to several informants with the same key questions. Consequently Cross-checking data from multiple perspectives allowed us to better understand the organisational innovations under analysis [18]. We would like to emphasise two contributions in the case of Benetton: (a) input from an external consultant who has been familiar with its technologies since 2008, and (b) an interview with the head of operations in the ex post treatment system. Since he was employed by Benetton for fifteen years during the eighties and nineties, we were also able to obtain information from him on the origin and development of tinto in capo.
Data analysis & discussion	All of the information was organised in a database to pool and summarise the evidence obtained from different sources. Data analysis was initially made on a case-by-case basis and then through a cross-case analysis with respect to both experiences [19]. Thus the Benetton solution (the tinto in capo technique) is described first and then the changes made by Inditex are analysed. The solutions adopted by the two companies to achieve a balance between manufacturing costs and an agile response to internal (objectives and strategy) and external changes (exogenous environmental changes) are identified, and the results can be generalised to propose particular lessons for any sector.

Figure 1 shows a typical regional SC of the 1960s or even the early 1980s, highlighting that most companies in the apparel sector had a shorter response time than those in a global “low-cost” SC which procure their goods from places such as China (Figure 2, see page 18). Back then, both the variety demanded by

customers and demand volatility were much lower than at present [20].

We can therefore see that the typology of SC in the apparel sector has changed drastically. Recent market developments, including more frequent preference changes and an increasing demand for

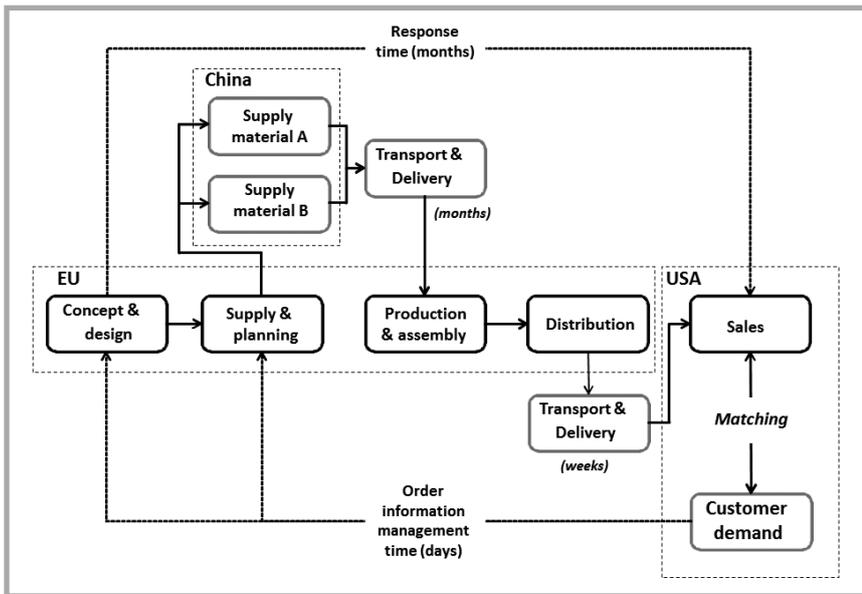


Figure 2. Global “low cost” supply chain.

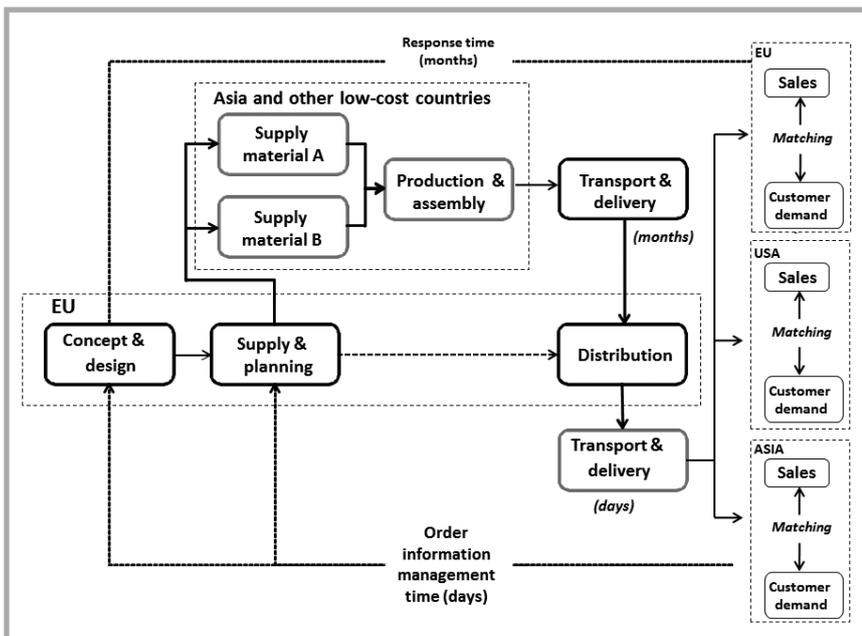


Figure 3. The challenge of outsourcing to Asia for Inditex: reducing the time-to-market.

customisation, have forced companies in the sector to search for new organisational models that allow them to harmonise a reduction in production costs with the need to contain the time-to-market costs that result from increasing requirements for flexibility and innovation. By adjusting the organisation of operations to constant and sudden changes in demand, the concept of the “season” was devalued and the generation of variety with short response times was emphasised. This new business model, often called “fast fashion,” is characterised by a large number of stores all over the world offering variety and short response times;

it requires a new balance of production capabilities and makes innovation competences a key issue. In addition to pressure on prices and timing, which also exists in other sectors, here retailers have to address ephemeral fashions that cause their products to quickly become obsolete. Thus this sector also requires a much faster and more flexible SC to assimilate the constant changes in fashion trends [21].

Benetton kept up with trends from the start and acted accordingly. Traditionally the production of garments began with dyeing the fabric, after which the garment was made. The problem with this

procedure was that the fabric production process was slow; to meet customers’ service expectations, large inventories of finished garments were needed, which often resulted in substantially increased costs when the colours turned out to be not particularly appealing to consumers. Against this background, Benetton made two decisions to balance the cost-agility offshoring trade-offs. First the Italian company decided to produce large volumes of undyed garments, which would be dyed only when fashion trends as reflected in sales indicated the most popular colours. This is how they invented *tinto in capo*, an innovative process of dyeing that allowed basic garments to be produced in large quantities and at a low cost for dyeing at a later stage of the production process.

Second, with respect to costs, this process, which was initiated in the original plant in Ponzano, was transferred to the Castrette industrial hub when production increased in the mid-1990s. Benetton’s headquarters remained there; a decade later, however, it started to transfer some of its suppliers to other countries to reduce production costs. These foreign hubs focused on a specific product and were run by a subsidiary that coordinated a group of SMEs, replicating in all cases the original model (and the new innovative process), from Castrette, where 70% of the company’s output is still produced. The company has maintained ownership of subsidiaries such as those in Spain, Portugal, and Croatia, as well as a controlling share in those in Egypt and India. Castrette decides what is to be produced by each of the foreign production hubs, and the network of subsidiaries sends the products to Italy for distribution to end customers. The aim is to secure full control of suppliers and materials, resulting in high-quality production in which information technologies, which improve the flow of communication between Castrette and the hubs, play a key role in achieving lead times of 35-40 days [22].

The refinement of Benetton’s organisational innovation: producing customised products at Inditex

In the early eighties, an embryonic Inditex had internalised the “pull philosophy” in a well-defined corporate strategy of vertical integration. However, with the company’s expansion into France, Portugal and the USA, serious bottlenecks arose in its SC that were associated with difficulties in coordinating the design,

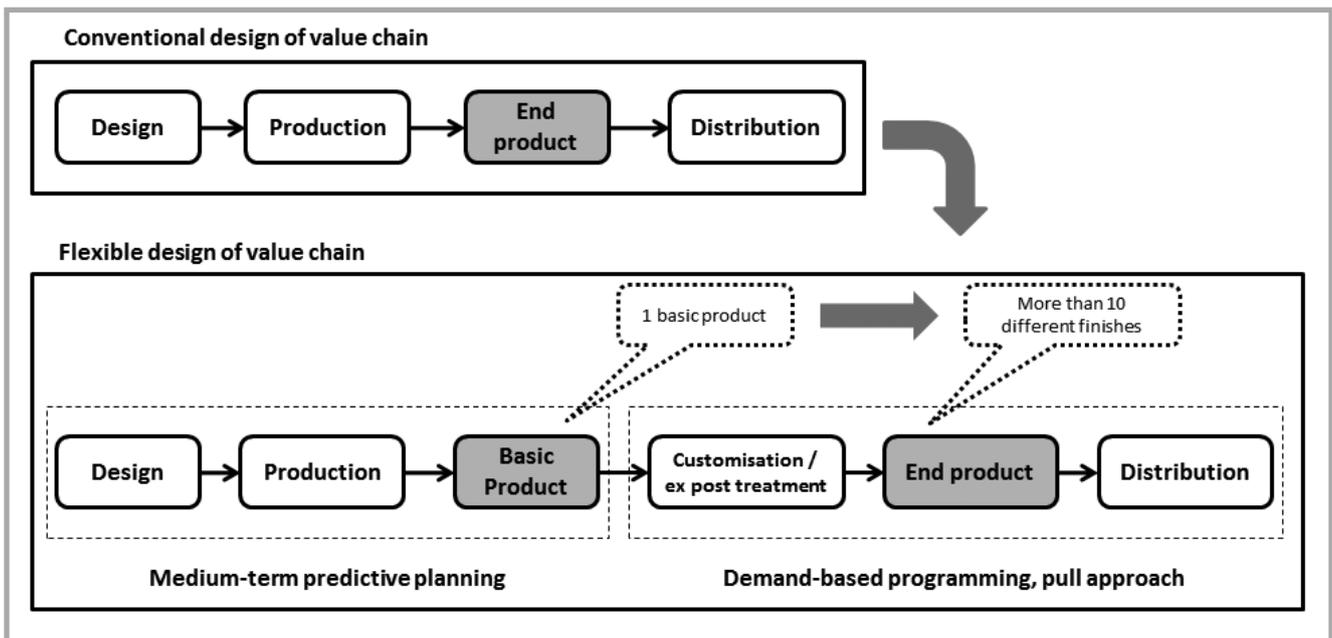


Figure 4. Reorganisation of the value chain in Inditex.

production and distribution departments. Tensions in stocks resulting from the increasing volatility of demand were partially resolved by the use of robots that sped up several phases of the production process and made them more flexible. All of these measures were enacted in parallel with improved methodologies to perform more accurate forecasts and improve production plans or raw material purchasing.

By 1995, the company was established in Europe and the USA and had started expanding into Asia; a completely computerised logistics center was set up in A Coruña, Spain, with a telecommunications system that could coordinate all branches of Inditex's flagship, Zara, all over the world. All production was now to be received at the logistics center for biweekly simultaneous distribution to all stores worldwide, with an average of just 24 hours elapsed from the time an order was received in the distribution center to delivery in European stores and with a maximum of 48 hours for delivery to stores in America and Asia. The high frequency of deliveries made it unnecessary to hold large inventories; moreover, the information system enhanced the absorptive capacity of the company to respond systematically to a global demand characterised by great variation in consumer preferences [23]. Figure 3 synthesises this process.

In this context, however, one of the greatest problems faced by Inditex was the

development and perfection of distribution through its many logistics centers. The challenge was to draw up a more comprehensive catalogue quickly satisfying consumers' wishes while maintaining low production costs. To overcome the cost-agility trade-offs and to close the gap between fast changes in fashion and the limited reactivity of industrial infrastructures, Inditex was inspired by Benetton's organisational innovation to adopt the *tinto in capo* process to face the offshoring process. Thus, based on delayed dyeing and with respect to certain garments, Inditex adopted an innovative two-stage production system for customised products, distinguishing between the sub-processes – production of the basic product first, followed by an ex-post treatment to adapt the product – which could take place in parallel by means of coordinated independent teams (Figure 4).

Stage 1. Producing a “basic product” (mainly trousers or shirts) that is always of the same type and that uses the same pattern achieves large economies of scale and reduces the company's stock of identical products (a relevant issue in the fashion sector) and waiting times. Preparation of the garment can even begin before information is received from consumers because the company will later customise the product pursuant to changing market trends. This stage can undoubtedly be optimised by offshoring because there is little technological complexity in terms of quality or specifications.

Stage 2. While the “basic product” is being produced, the design features are planned up to dyeing, including such measures as tinting, patching, washing, printing, laser tearing or wearing, buttons, zips, etc. With this organisational innovation, time-to-market is significantly reduced, and stores can be supplied earlier with products that are finished in accordance with the latest trends. In fact, this ex post treatment launches approximately 11,000 new models on the market every year. Thus, while many competitors in apparel retailing need an average of 3 months from design to placement in stores, Inditex needs just 2 weeks (reducing the time to market by more than 80%). Furthermore the new product catalogue has been expanded (for each basic product, Zara obtained 15 customised products) without causing any real tension in the SC; and, thanks to its agility, at the start of every season just 15% of Inditex production is complete, while the European average for the sector is 60% [24].

Although this process is still being used today, it has been slightly adapted over time in line with the group's brand strategy (low costs and time-to-market) and with changing market needs. Therefore, while it was carried out initially in the group's own facilities (“*ex post treatment without offshoring*”) in a similar way to the Italian “industrial hubs” in the case of Benetton [15], it was subsequently executed in the facilities of nearby suppliers (“*outsourced ex post treatment without offshoring*”), as discussed in detail in the

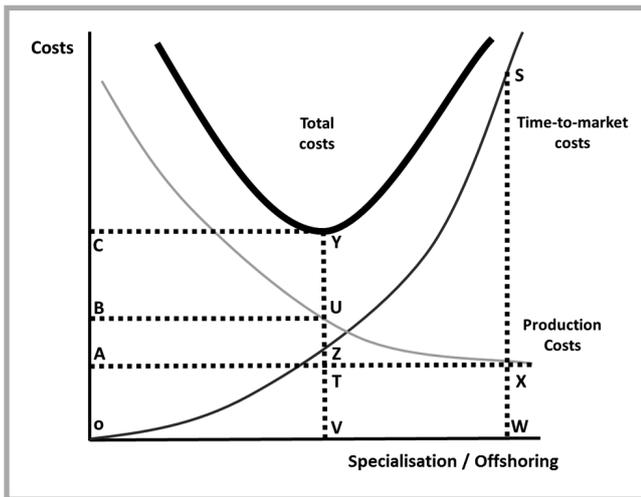


Figure 5. Production and time-to-market costs in terms of the degree of offshoring/specialisation.

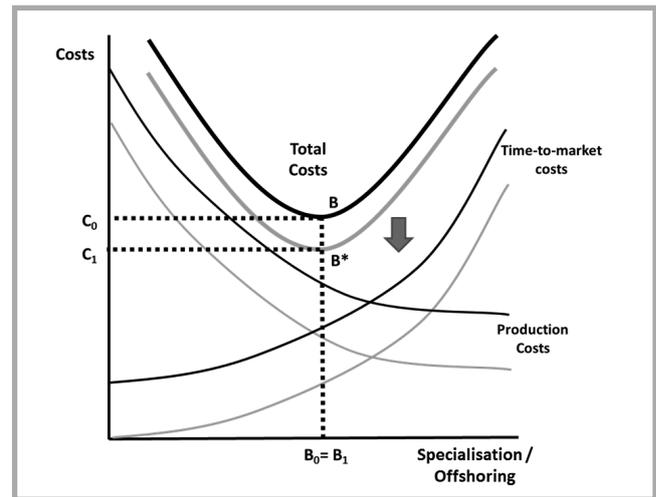


Figure 6. Initial proposal by Benetton and Inditex for the trade-offs between specialisation and agility.

next section. However, the current price pressure has meant, as noted above, that the “two-stage production process” carried out by nearby suppliers has mostly (80%) been transferred to suppliers in distant countries (ex post treatment with outsourcing and offshoring).

The importance of this new organisation stemmed not so much from the paradigm shift in the value chain of the group’s specific brands, but from the fact that Inditex was able to turn around a situation that seemed unapproachable not so long ago. The situation changed from reliance on a SC with a mobilization time of several months (conventional) to one in which the company is able to respond to market demands within days. Inditex has thus gained in ambidexterity by reducing its lead times while benefiting from lower costs than its competitors due, among other things, to savings in marketing and financial costs [25].

On the one hand, the two-stage production system reduces liquidity tensions and the cost of finance since, by shortening lead times, the company collects earlier. Thus Inditex can offer a wide variety of the latest designs fast and in limited quantities, and it can collect 85% of the total selling price of its garments – the sector average is 60-70% – contributing to larger profit margins [21]. On the other hand, this new organisation of the SC also affects expenditure on marketing and advertising, which is just 0.3% of the group’s annual revenue, in comparison with an average of 4% invested by its international competitors. There is not much point in doing direct advertising because the high

product rotation (every two weeks 75% of items in the store are new) drastically reduces the time to make products known. Hence the company’s promotion strategy is based above all on its stores and on word of mouth, whereas the heaviest investments go to speeding up and increasing the chain’s reactivity in general.

Discussion: generalising the experiences of Benetton and Inditex and the development of propositions

Assessing the optimum level of offshoring

In addition to identifying good practice in the organisational practices of Benetton and Inditex, a more abstract reflection is needed to code the knowledge so that the facts described can be organised and structured. Thus the inductive reasoning applied in this section should help us to develop three generic propositions regarding the cost-agility trade-offs and how apparel multinationals address them.

To start with, it is worth noting that as offshoring increases, production costs are obviously reduced, but time-to-market costs rise pursuant to increased complexity in shipments, the number of suppliers and intermediaries, etc. In our research, we thus observed, for example, that increasing offshoring to Asia and northern Africa during the 1980s multiplied the technical difficulties attendant in real-time cooperation and in a global network. The greater productivity resulting from resource specialisation caused, in contrast, an increase in the number of exchanges with suppliers utilising differ-

ent standards and procedures (and their associated costs).

Time-to-market costs increased not only due to the greater technical complexity of the exchanges, but also because the specialisation resulting from offshoring placed greater technological know-how in the hands of their suppliers. Therefore, because some of their own objectives were incompatible, the resulting information asymmetries ended up generating opportunistic behavior. In line with this analysis, Benetton and Inditex had to address problems associated with bad working conditions, stock-outs resulting from failures to meet lead times and quality complaints, among others [26]. **Figure 5** summarises this, comparing an “ideal” situation, in which time-to-market costs are zero (OW), with another in which these costs increase as the company moves production away from the market it aims to supply.

In the first case (OW), if the company assumes that transaction costs are negligible, it would only have to worry about finding the cheapest supplier who can meet its specifications, irrespective of where it is located. This was likely the situation during the initial phases of the mass relocation that occurred during the ‘80s and ‘90s, which offered minimum cost WX. Benetton and Inditex were among the first to note, however, that when time-to-market costs are also taken into account, the degrees of specialisation that lead to OW are economically infeasible as they generate WS costs. The optimal cost would therefore be the point that minimises the sum of both (production

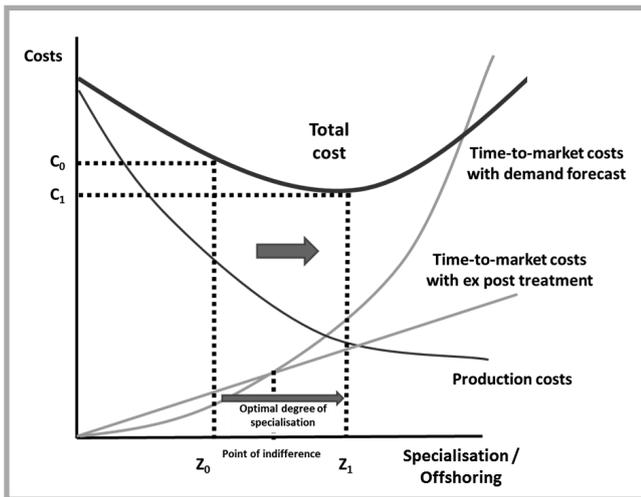


Figure 7. Development of Inditex towards a greater degree of specialisation.

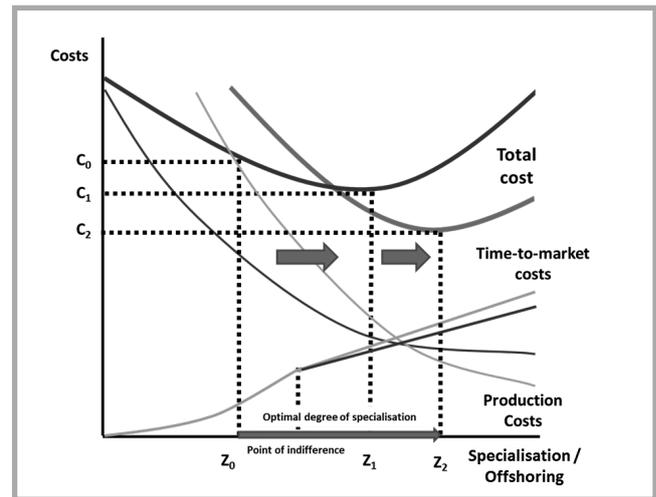


Figure 8. Move in Inditex towards greater offshoring with specialisation.

and time-to-market costs), that is, the point at which $VY = OC$. Hence a first proposition can be developed as follows:

Proposition 1. Achieving the optimal level of offshoring entails a clear quantification and balance of production and time-to-market costs.

Customising the optimal level of offshoring in accordance with the firm's strategy

As seen in the case study, although enhanced production methodologies improved risk quantification and forecasting, increasing demand volatility made more radical reforms necessary in both companies to overcome the offshoring trade-offs. It was not sufficient to consider SC organisation as just a matter of optimising a function. In fact, solving these problems required both Benetton and Inditex to adopt a global business vision that went beyond purely cost objectives and focused “from above” on any possible trade-offs between specialisation and agility. This change in perception led to Benetton's *tinto in capo* (“ex post treatment without offshoring”), which was eventually adopted (and improved) by Inditex. The consequences of this organisational innovation are shown in **Figure 6**.

Benetton obtained a reduction in total costs (a reduction from B to B^*) without greater specialisation in the company ($B_0 = B_1$). In fact, the company's marked verticalisation guaranteed high quality standards in line with its marketing strategy [17]. In addition, producing a basic product with standard characteristics – the *tinto in capo*

process – not only reduced production costs by helping to generate economies of scale, but it also addressed time-to-market concerns to the extent that the second stage (that of customisation) shortened customer response times. This improved reactivity reduced the costs of managing stocks as well as the number of obsolete products.

Our evidence suggests that Inditex took its inspiration from this innovation, the *tinto in capo*, and initially adopted it in its facilities in Galicia, Spain. It took the Benetton procedure and expanded it to encompass all types of finishes, not just dyeing, thus significantly reducing response times. Its strategy required it to reduce time-to-market while taking into account the costs involved [17]. With Inditex's strategy being based on low prices and a high rotation of goods, time-to-market constitutes a much more important variable for it than for Benetton, whose positioning is more centered on differentiation by image and quality. From this point of view, the optimal point for specialisation for the two companies cannot be the same (**Figure 7**). At Inditex the inclusion of a new ex post treatment was necessary but not sufficient in itself. This process had to be outsourced to reduce production costs while keeping low lead times.

Thus for each level of offshoring, companies can be expected to use an organisational solution that minimises total cost (production and time-to-market costs) while taking into account their strategy. In the case of Inditex, for example, total cost minimization led them to move on

and evolve from Benetton's starting point (**Figure 6**) by transferring this process to its local suppliers (“ex post treatment with outsourcing without offshoring”). In **Figure 7** we note how Inditex obtained a reduction in total costs (from C_0 to C_1) as a result of the company's greater specialisation (from Z_0 to Z_1). Transferring the dyeing technique to nearby suppliers allowed the company to focus on the basic product and generated economies of scale and learning effects. At the same time, the new organization of the SC reduced market response times, and stores could be supplied earlier with products in line with the latest trends. Even if time-to-market increased, total costs were still lower. Therefore, by comparing the positioning strategies and solutions adopted by Benetton and Inditex (**Figures 6** and **7**, respectively), a second proposition can be developed:

Proposition 2. The optimal point for specialization is reached differently in each firm according to their objectives and strategy.

The dynamic nature of offshoring

Figure 7 represents a local optimum that will necessarily be temporary. For example, if there is an exogenous change in the production cost curve (caused externally, for example, by regulatory changes or technological innovations), the optimum might be reached by an increase in the degree of offshoring. We found this in the case of Inditex, which stepped up its outsourcing to low-cost countries (particularly in Asia) in 1995 when, with the signing of the WTO Agreement on Textiles and Clothing,

the bilateral import quotas that had been negotiated under 1974s MFA began to be withdrawn.

However, pressure to lower prices led Inditex to transfer its two-stage production process, which was initially structured to be located in proximity to remote suppliers. Although this transfer was likely to increase time-to-market, the experience of Inditex suggested that customers would not be prepared to accept a price increase. In line with what is stated above regarding the need to minimise total costs to achieve a balance between production and time-to-market costs, Inditex responded by transferring its organisational innovation to the facilities of its low-cost suppliers. It could even be stated that, to some extent, the company “sacrificed” time-to-market for a significant reduction in production costs. This can be seen in **Figure 8** (see page 21).

When compared with the previous figure (**Figure 7**, see page 21), we note that Inditex obtained a gradual reduction in total costs (from C_0 to C_2) because it specialised more ($Z_0 < Z_1 < Z_2$). Moving this process to nearby suppliers made it possible to contain the time-to-market costs engendered by an increasing need to customise products and reduce the time-to-market. But with greater international rivalry and the development of physical and human capital in low-cost countries, the use of offshoring reduced production costs more than it increased transaction costs. This strategy – nowadays still important – does not necessarily have to be employed for all garments. Accordingly a third proposition can be developed:

Proposition 3. *Offshoring strategy is dynamic and should change in response to the objectives and strategy of the organization at all times.*

■ Conclusions

Decisions on the appropriate degree of offshoring have mostly been linked to the need to reduce production costs in developing countries [1, 4]. However, recent market developments, with more frequent changes in preferences and increasing requirements for customisation, point to the fragility of companies that engage in offshore operations without considering the cost of coordinating suppliers, both internal and external, in far-off locations [5, 7]. These coordination difficulties refer both to the complexity

of real time network cooperation when the number of suppliers grows and they move away from distribution centers, as well as to the cost caused by the information asymmetries which, in the presence of objectives that are not necessarily consistent or compatible, lead to opportunistic conduct that reduces the efficiency of the chain as a whole.

Reaching the optimal level of offshoring is therefore not just a challenge for production but is the result of balancing production and time-to-market costs. Furthermore, as shown by both case studies, this optimal level will necessarily be different for each company given their specific goals and strategy and will tend to change over time as their environment presents new challenges. Our analysis therefore suggests that the intensity of offshore outsourcing over the last decades, which has been based solely on a cost perspective [5], needs to be nuanced, subsequently delving into particular textile organizational innovations that can be transferred to other industries to harmonize production costs and time-to-market.

Certain recent developments in different industries could in fact be interpreted in this way. For example, Borroni-Bird, one of the creators of the General Motors hydrogen car, suggests that in mature markets customers could convert their family car into an all-terrain vehicle or a luxury saloon just by changing the shell. The platform could be manufactured in large production plants, while the casing would probably be produced by small flexible companies that can adapt the product to regional tastes. This would make it possible to combine lower production costs with the opportunity to reduce the transaction costs [27].

Along the same lines, something similar could be performed to generate variety in other sectors such as consumer electronics, where mobile telephones, television sets or mp4 players could be quickly customised from a basic product even in the destination market. Even mature sectors, such as food, could also adopt similar initiatives present for years in the textile industry. Particularly for product developments with a long useful life, such as preserves and frozen or pasteurised goods, it is perfectly feasible to produce one or more generic basic products in anonymous packaging that could then be customised and adapted to customer preferences.

This proposal would appear on store shelves as combinations of generic products in the form of ready-made dishes, preserves or pet foods, each containing different types of ingredients, packaging or accessories (forks, recipes, etc.).

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