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1. Structure of the textiles-clothing industry and market in Italy

Introduction

A common character of all phases of the textile-clothing value-chain is the “physical” importance of the product, which implies – for the transaction completion - a direct or mediated control by a third party on the features of the exchanged good, being it the yarn, fabric, intermediary or completed final good. This aspect is even more relevant when a buyer is a final customer, with a smaller endowment of the typical tools which can be used for reducing uncertainty on product features and quality currently used in the business to business relationships (i.e., framework contracts, quality control centres, etc.).

Three distinct components can be identified in the industry:

1. A number of medium sized companies with a well known brand
2. Several equally medium-to-large companies with no brand, which produce for large distribution compartment stores or as providers of the first group
3. A multitude of small firms specialised in one single production phase, whose customers are one or more of the other companies of the sector.

The extreme fragmentation and variety of actors, combined with the product physicity generates a wide range of problems and difficulties related with the large scale use of e-commerce. The quality and specificity of most of the components determine the resulting quality of the final product.

- In the current phase, a few trends are emerging, linked with the leading role played by those clothing makers with a well-known brand and by the wholesale trade: as the market is strongly pulled by demand trends, the main need expressed by all actors is to have access to as detailed as possible sales data. This would allow, on one side, to quickly adapt production planning (which frequently are launched in the dark) to market trends, so avoiding or at least decreasing the risk of overstock, and, on the other side, to have at hand up-to-date evidence of the customers taste, to be used to address the collection preparing work.

- There are some – even if not many – initiatives at the upper part of the value-chain, which address cost reduction, procurement and sale process optimisation, rather than the improvement of the access to the market. Even at this stage, there is the need to increase the customer visibility and to influence in some way its choices. Nevertheless, distance from the market requires - for such a need to be dealt with – agreements with the downward links of the value-chain which are closer to the customer. The more upward is the firm, the more problematic is to rapidly choose a strategy giving start to an initiative of such a type.
• The cases analysed in the present report are located at the two extremes of the value-chain. On one side, a leading firm in the polyamidic yarn production, with production plants in Europe and United States which – as part of a strategy in which ecommerce represents a progressively growing factor for the competitive presence in the market – has introduced some first tools for optimising the management process of the already existing sale and purchase relationships. It plans, taking advantage of the current experience, to focus on a second phase on the expansion of the market through on-line channels. On the other side, two clothing makers with strong brand, which adopted a similar strategy of control on the market through a network of single-brand shops integrated in the company information system with full visibility in both directions. The other integrated experiment field is the electronic management of the sub-contracting relationships up to the point of directly planning the sub-contractors production. In between these two extremes, it is possible to find several activities and firm typologies which are so different one from the other that it is quite difficult to produce a generalised view or a classification of the various experiences. An exam of the filière characteristics, of the type of final market, of the sector composition in terms of number, size, specialisation of the firms, allows to expect as main trend the value maximisation of the final customer control and to leverage on the customer even in the management of partner and provider relationships. Most of the strategies with impact on business management will address the customer monitoring, besides those ICT investments aimed at reducing transaction costs.

**The players and functions in the value chain**

The textile-clothing sector, which is the subject of our discussion, is part of a wider context that is generally defined as the fashion system.

According to the latest available data (1998) from Confindustria (the Italian Manufacturers' Federation), this sector is worth approximately 60,000 million Euro in terms of turnover and includes, of course, the textiles and clothing sectors, the tanning industry, the leather industry, and the footwear and eyewear industries.

The value and distribution of the turnover and employees in the textiles-clothing industry as such is, however, indicated by the following table.
### Tab 1. The Textiles-Clothing Sector: Production Turnover and Employees in 1998

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Turnover in millions Euro</th>
<th>%</th>
<th>Employees</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wool industry</td>
<td>5,885</td>
<td>12.4%</td>
<td>87,800</td>
<td>17.7%</td>
</tr>
<tr>
<td>Cotton industry</td>
<td>5,394</td>
<td>11.4%</td>
<td>42,165</td>
<td>8.5%</td>
</tr>
<tr>
<td>Linen industry</td>
<td>439</td>
<td>0.9%</td>
<td>nd</td>
<td>nd</td>
</tr>
<tr>
<td>Silk and hosiery industry</td>
<td>2,214</td>
<td>4.7%</td>
<td>13,000</td>
<td>2.6%</td>
</tr>
<tr>
<td>Other fabrics</td>
<td>1,213</td>
<td>2.6%</td>
<td>13,930</td>
<td>2.8%</td>
</tr>
<tr>
<td>Dyeing/printing/finishing</td>
<td>5,550</td>
<td>11.7%</td>
<td>48,519</td>
<td>9.8%</td>
</tr>
<tr>
<td>Total textiles</td>
<td>20,697</td>
<td>43.8%</td>
<td>205,414</td>
<td>41.5%</td>
</tr>
<tr>
<td>Total clothing</td>
<td>26,583</td>
<td>56.2%</td>
<td>290,000</td>
<td>58.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>47,280</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>495,414</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Source: Largo Consumo, Confindustria, Associazioni industriali (Industrial Associations) 1998*

The sector is extremely open to international trade: in 1998 the textile sector exported approximately 37% of its production, whereas the clothing sector sold approximately 53% of its total production value abroad.

We must underline that a part of the textile-clothing sector's export is considered as temporary: it is the intermediate goods interchange\(^1\), the exports on manufacturing account of products that are then re-imported for the final production. This share of international trade, which has increased in recent years, is a clear signal of the process of production internationalisation that is under way in this sector.

### International Trade in Clothing

(in millions Euro)

![Graph showing international trade in clothing from 1994 to 1998](image)

\(^1\) In Italian, "traffico di perfezionamento passivo".
Before beginning to discuss the players and the value chain of the Italian textiles-clothing industry, we must make the definition clear: the complete textiles chain begins with fibre production and ends with the item of clothing being used by the end consumer.

By way of example, the links of the chain and the activities carried out are illustrated in table 3.

<table>
<thead>
<tr>
<th>Activities</th>
<th>Particularities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Production of fibres and spinning</td>
<td>Natural fibres</td>
</tr>
<tr>
<td></td>
<td>Synthetic fibres</td>
</tr>
<tr>
<td></td>
<td>Fibre mixes</td>
</tr>
<tr>
<td></td>
<td>Fibres in flocks</td>
</tr>
<tr>
<td></td>
<td>Continuous yarns</td>
</tr>
<tr>
<td>2. Weaving</td>
<td>Orthogonal weavings</td>
</tr>
<tr>
<td></td>
<td>Knitted weavings</td>
</tr>
<tr>
<td></td>
<td>Unwoven fabric</td>
</tr>
<tr>
<td>3. Ennobling of fabrics</td>
<td>Dyeing and printing</td>
</tr>
<tr>
<td></td>
<td>Mechanical and chemical treatments</td>
</tr>
<tr>
<td>4. Clothing manufacture</td>
<td>Handmade production</td>
</tr>
<tr>
<td></td>
<td>Clothing industry</td>
</tr>
<tr>
<td>5. Distribution</td>
<td>Retail</td>
</tr>
<tr>
<td></td>
<td>Wholesale</td>
</tr>
<tr>
<td></td>
<td>Direct...</td>
</tr>
<tr>
<td>6. Consumer</td>
<td></td>
</tr>
<tr>
<td>7. Clearance and recycling</td>
<td></td>
</tr>
</tbody>
</table>

**The macro industry-chain**

This paragraph illustrates the characteristics of the main actors in the industry chain. We must, however, underline that often - and increasingly so in recent years - the separation is not all that clear, especially between manufacturers of clothing/garments and distributors, by virtue of integration strategies that are radically modifying the structure of the industry chain.
For convenience, we will take into account this simplified chain when listing the players:

![Diagram showing the players in the textiles-clothing chain]

**The producers of fibres and yarns**

The manufacturers of fibres and yarns are upstream of the textiles-clothing chain. The manufacturers of natural fibres (cotton, linen, wool, silk) are often commercial farms and have a mainly international market. The market price of the fibre varies considerably depending on the climatic conditions and commercial relations. The manufacturers of synthetic fibres have, instead, a strong link with the chemicals industry.

The yarns industry deals with the transformation of the fibre flocks into longer yarns, which are necessary for the subsequent weaving phases (in the case of cone production) and for the production of genuine articles of clothing that take the name of knitwear.

According to the latest Industry and Services Census published by ISTAT in 1996, approximately 4,500 Italian companies fall within the category examined, and the division by number of employees, in the two classes of activities of production of natural and synthetic fibres, is as follows:

<table>
<thead>
<tr>
<th>No. of employees</th>
<th>Preparation and spinning of textile fibres no. of companies</th>
<th>Manufacture of synthetic and artificial fibres no. of companies</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 5</td>
<td>2,748</td>
<td>3</td>
<td>61.5%</td>
<td>6.3%</td>
</tr>
<tr>
<td>6-19</td>
<td>1,180</td>
<td>13</td>
<td>26.4%</td>
<td>27.1%</td>
</tr>
<tr>
<td>20-49</td>
<td>325</td>
<td>8</td>
<td>7.3%</td>
<td>16.7%</td>
</tr>
<tr>
<td>50-249</td>
<td>186</td>
<td>11</td>
<td>4.2%</td>
<td>22.9%</td>
</tr>
<tr>
<td>more than 249</td>
<td>27</td>
<td>13</td>
<td>0.6%</td>
<td>27.1%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4,466</strong></td>
<td><strong>48</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*Source: Istat, Industry and Services Intermediate Census 1996*

As regards the spinning of natural fibres, the medium- and small-sized companies prevail. The companies that manufacture artificial and synthetic fibres are decidedly larger structures.
Textile manufacturers

As already mentioned in the previous paragraph, the yarns produced can be devoted directly to the production of clothing - and in this case we are referring to the knitwear cycle - or they can be processed for the production of fabric. Alongside this macro-phase are all the ennobling processes of the fabrics, which varies according to the type of yarn and treatment carried out. By way of example, the phases of fabric finishing and ennobling include the processes of darning, washing, milling, drying, cropping, calendering, decatizing, steaming etc.

The 1996 census reports almost 30,000 textiles industries. Of these, almost half is made up of companies that produce knitwear or that manufacture knitted products.

Although they have a very similar structure in terms of company distribution, it is evident that fabric manufacturers are on average larger than the knitwear manufacturers, or rather the distribution of employees shows a higher representation of the large fabric-making companies, as such, than the knitwear companies.

**Tab 4. Companies and Employees in the Weaving Industry**

<table>
<thead>
<tr>
<th></th>
<th>Fabrics</th>
<th>%</th>
<th>Knitwear</th>
<th>%</th>
<th>Fabrics</th>
<th>%</th>
<th>Knitwear</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 5</td>
<td>11,098</td>
<td>67.9%</td>
<td>8795</td>
<td>66.1%</td>
<td>22,818</td>
<td>12.6%</td>
<td>18,636</td>
<td>17.5%</td>
</tr>
<tr>
<td>6-19</td>
<td>3,467</td>
<td>21.2%</td>
<td>3502</td>
<td>26.3%</td>
<td>36,555</td>
<td>20.2%</td>
<td>37,716</td>
<td>35.3%</td>
</tr>
<tr>
<td>20-49</td>
<td>1,152</td>
<td>7.1%</td>
<td>756</td>
<td>5.7%</td>
<td>33,937</td>
<td>18.8%</td>
<td>20,842</td>
<td>19.5%</td>
</tr>
<tr>
<td>50-249</td>
<td>548</td>
<td>3.4%</td>
<td>223</td>
<td>1.7%</td>
<td>51,625</td>
<td>28.6%</td>
<td>20,820</td>
<td>19.5%</td>
</tr>
<tr>
<td>More than 249</td>
<td>71</td>
<td>0.4%</td>
<td>20</td>
<td>0.2%</td>
<td>35,732</td>
<td>19.8%</td>
<td>8,707</td>
<td>8.2%</td>
</tr>
<tr>
<td>Total</td>
<td>16,336</td>
<td>100.0%</td>
<td>13,296</td>
<td>100.0%</td>
<td>180,667</td>
<td>100.0%</td>
<td>106,721</td>
<td>100.0%</td>
</tr>
</tbody>
</table>


Clothing manufacturers

The Istat census indicates that there are 47,350 companies belonging to the clothing sector with a total of 348,000 employees.

The distribution of the companies and employees according to number of employees is instead as follows:
### Tab 5. Companies and Employees in the Clothing Sector

<table>
<thead>
<tr>
<th></th>
<th>Companies</th>
<th>%</th>
<th>Employees</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>up to 5</td>
<td>32,780</td>
<td>69.2%</td>
<td>61,816</td>
<td>17.7%</td>
</tr>
<tr>
<td>6-19</td>
<td>11,037</td>
<td>23.3%</td>
<td>121,210</td>
<td>34.6%</td>
</tr>
<tr>
<td>20-49</td>
<td>2,842</td>
<td>6.0%</td>
<td>77,960</td>
<td>22.3%</td>
</tr>
<tr>
<td>50-249</td>
<td>633</td>
<td>1.3%</td>
<td>58,818</td>
<td>16.8%</td>
</tr>
<tr>
<td>250 or more</td>
<td>58</td>
<td>0.1%</td>
<td>30,255</td>
<td>8.6%</td>
</tr>
<tr>
<td>Total</td>
<td>47,350</td>
<td>100.0%</td>
<td>350,059</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

*Source: Istat, Industry and Services Intermediate Census, 1996*

If some sectors are excluded, such as the accessories and home linen sectors and, considering a progressive decrease in the number of employees from 1996 onwards, the figure indicated by Confindustria (1998) of 36,000 companies and 290,000 employees is in line with the census data.

The 20 leading Italian groups in 1998 had an overall turnover of more than 10,500 million Euro, whereas the value added represents approximately one third of the overall turnover. Despite the strong production fragmentation there is, therefore, a high concentration of the value produced on the main industrial groups. Attention must therefore be focused on the behaviour and production and distribution characteristics of these groups in order to take advantage of the evolutions and opportunities offered by the use of Internet technologies and electronic commerce in particular.

### Distribution

The distribution system of the textiles-clothing sector is a crucial factor in the entire industry chain. Until a few years ago, most of the Italian distribution system was made up of medium- and small-sized stores; it was fundamentally a scenario of independent retailing operations which the first chain stores and traditional large-scale retailing came alongside.

It was these stores that controlled the contact with the end consumer and, however, given their reduced dimension, the base relationships of the industry chain were played out upstream with a fundamental role of manufacturers and designers. The manufacturers supplied the product to the distributors and left the problem of sale entirely with them. Technically, they dealt only with the sell-in and left the distributor with the control of the sell-out.

Now the base relationships have reversed: demand and the consumer side strongly condition the supply system and the role of the distribution has become increasingly crucial; in the meantime the distribution has become better structured and grown in terms of numbers.
Thus, industries with strong trademarks, designers and fabric makers tend to merge downstream. This is a widespread trend despite certain characteristics relating to the different markets and products of the "made in Italy".

To explain the factors linked to this downstream movement of the manufacturers’ and designers' activities, three main reasons can be identified.

First and foremost, most of the economic value is found at the bottom of the industry chain. The table below shows that currently 50% of the value produced is concentrated in the production industry chain at the distribution phase, whereas the amounts assigned to the other activities are reduced.

Secondly, the control of the distribution and therefore the end consumer allows to achieve customer loyalty and sales stability, thanks also to more targeted communication policies.

Lastly, controlling the consumer allows to quickly detect the market evolutions and the requirements of the demand side, thus reducing the response times of the production activities.

For these reasons today we see downstream integration along the chain - especially for the companies that have recognised trademarks - by means of an increasing presence of single-brand stores in the distribution system as a whole.

In 1997 there were 4000 single-brand stores attributable to the Made in Italy companies - of which 72% abroad - and the values have certainly increased in recent years.

A comparison with previous years shows the significance of the phenomenon.

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Owned</th>
<th>Under franchising agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1995</td>
<td>2,205</td>
<td>738</td>
<td>1,467</td>
</tr>
<tr>
<td>December 1997</td>
<td>4,000</td>
<td>1,258</td>
<td>2,742</td>
</tr>
<tr>
<td>Variation %</td>
<td>+81%</td>
<td>+70%</td>
<td>+87%</td>
</tr>
</tbody>
</table>

Source: Pambianco, "Made in Italy" Strategies 1998
The value produced by the single-brand stores abroad is worth approximately 8% of the "Made in Italy" exports on the whole and approximately 21% of the luxury goods band.

A cross system in which distribution is increasingly controlled by the industry prevents one from identifying the separate values for this sector of the industry chain; we must stress, however, that a large slice of the distribution remains in the hands of independent and separate companies and this continues to strongly condition the fluidity of the production process.

The production and distribution cycle of the textiles-clothing sector and information flows among the operators.

To understand the main processes and flows of information of the clothing manufacturing business, we can simulate the rather common case of a company that produces a medium-to-high quality clothing item.

The mechanisms of this process and the upstream and downstream relations with the other industry-chain operators also allow us to identify the critical management aspects and to better understand the role played by Internet technologies, which we will illustrate though specific cases.

Merely by way of example, a clothing manufacturer producing for collections carries out the following activities: firstly, he designs and creates the samples of the collection and then presents the collection in the so-called periods of the “shows”; then the sales campaign begins and the sums collected from the initial sales will allow him to complete the phase of purchasing the raw materials and, at the same time, the launch of production. The production phases are normally managed by external workshops that deal with the cutting and making-up of the articles. Lastly, the articles are brought back to the company's finished-products warehouse and distributed to the customers.
There are further processes among these typical phases that we will illustrate in more detail below. These, however, vary depending on the type of company, its size, the specific products offered (i.e. jacket rather than casual clothing) and the market bands in which it operates.

1. **Design and development**: it is the activity aimed at the creation of the clothing samples. This process involves the design creation phase, the prototyping and creation of the base model, and also preparing for the launch of production with the definition of the guidelines for the sizes and the patterns placing.

During the typical management of the collections, the fabric samples are presented in February for the collection's release in the spring/summer of the following year, and in September for the autumn/winter of the following year.

As for the exchange of information, the process is divided into the following types of flow:

- between agents and garment makers, before the decision to purchase, for promotional and public relations activities, or between fabric- and garment makers for the promotion of the brand name and image. These are relationships that influence the design creation;
between fabric- and garment makers for the co-design of the fabric and article of clothing;

between fabric makers/agents and garment makers for the negotiation phase: presentation of the fabric samples, technical sheets, price list;

between fabric makers/agents and garment makers for the administrative management of the process (commission of trial metres, order of sample pieces, sales campaign orders (blind orders and orders upon settlement);

between fabric makers/agents and garment makers for operational assistance in the design activity. This is a phase of strong cooperation on which the success of the negotiation depends.

2. **Collection of orders and market management**: this phase follows the presentation of the collections and the purchase by the customers. To illustrate the possible cases and moments for the collection of orders we can state that this process takes place during the sales campaign, the re-assortments and flash collections.

Of course, the process of orders collection and sales market management is carried out with various activities and players depending on the structure of the garment maker's distribution channel.

There are two prevailing forms: direct (without intermediaries between garment maker and store) or indirect (with intermediaries, which may be branches, importers or agents).

The actual identity of the store varies: single-brand (owned or under franchising agreement) or multi-brand. The short distribution channel's point of sale is a single-brand store or a commercial chain. The shorter the distribution channel (and the more the operators are integrated) the easier it is to telematically connect the manufacturer and store. As we will see later, the project and initiatives under way are, indeed, heading in this direction.

As regards the exchange of information, the process presents various types of flow:

- between garment maker (or retailer) and consumer, before the decision to purchase, to promote the brand name and image through advertising;
- between the garment maker and the distributor and between the latter and the store for the negotiation phase: presentation of the collection, products index, price list, catalogues;
- between garment maker and distributor and again with the sales outlet for the administrative management of the exchange relationship: orders at the start of the campaign (total volume and delivery plan: times, places, volumes), order confirmation, transport document, invoice;
- between garment makers and sales outlet for specific initiatives such as the possibility to frequently reorder goods. The application of the re-assortment to
a high proportion of the purchases made by the retailer leads to a decrease in the orders made in the traditional phase of the sales campaign and a consequent increase in those placed in the open sales season. To achieve this, in addition to the garment maker and retailer sharing information, an accessible and fast production system that allows quick delivery times is essential. The frequent re-assortment, of course, allows the reduction in the stock, unsold items and damaged stock: the underlying flows of information are: access to the garment makers’ warehouse availability, ready-to-wear orders (i.e. items already present in the garment maker’s warehouse), rapid re-assortment orders (i.e. items to be produced with fabrics in the warehouse), orders for made-to-measure items (items to be produced in 10-15 days using stock fabric and hems to be produced internally);

- sharing of the sell-out data between garment maker and sales outlet. The sharing can be detailed (each garment maker knows its own sell-out) or general data.
- between garment maker and sales outlet for sales-assistance services (technical characteristics of the articles, promotion, new products, quality of the services to the end consumer, new- and refresher staff training) and between sales outlet and garment maker for information on the consumers’ preferences.

As we will see when examining the case studies, the flow of information where solutions based on Internet technologies are being increasingly adopted is that related to the co-ordination of sales, orders and production.

3. **Purchasing and quality control**: after the order-collection phase, the cycle of purchasing fabric (and raw materials in general) is begun in order to then launch production.

The purchase of fabrics by the garment makers generally takes place after they have received the distributor’s order to produce the items. However, since the time between the start of the sales campaign and the delivery of the articles to the distribution is shorter than the lead time necessary to produce the fabrics and the finished articles, a part of the purchases is made in the dark; the subsequent orders corresponding to the orders received during the sales campaign phase are then added to these. Since they have to distribute over time a production load that they could not achieve starting only upon receipt of the order, these fabric makers begin to produce fabrics before the orders from the garment makers actually arrive. The production that begins in the dark is generally the part that is less at risk of remaining unsold: these are, therefore, of continually-demanded fabrics, basic articles and, however, fabrics piece dyed and not yarn dyed. The rolls of fabric are thus woven, darned and ironed and once the colours in demand from the market are known, dyeing can begin. The Italian garment makers also buy fabrics that are produced outside Italy; the difference in the fabric production costs between Italy and low-cost countries makes the import of fabrics produced abroad cost effective. In general, these fabrics are of two types: either finished fabrics destined for
garment makers in the basic articles - with a low variety of colours and range -, or fabrics to be ennobled that are destined for converters or fabric makers, who carry out the final working phases (finishing, dyeing and printing), notably improving the fabric's quality, and then sell it with their own commercial brand name.

The ennobling is characterised by a group of operations (desizing, impregnation, steaming, washing, dyeing and printing) that are crucial for the definition of the aesthetic features of the end product. This phase is a strength of the Italian textiles industry: it is semi-hand performed and requires specialized personnel.

The information flows characterizing the process are:

- between importers and converters or between importers and as we will see when examining the fabric makers, depending on the type of product sold, for the negotiation phase: product characteristics, price list;
- between garment makers and fabric makers or their agents for the management of the order cycle and the technical documentation (packing list);
- between garment makers and fabric makers for co-design initiatives;
- between fabric makers and garment makers for checking the progress of the fabric production;
- between fabric makers and garment makers so that the latter are aware of the availability of fabrics in the fabric maker's warehouse.

Currently these exchanges of information are mainly carried out using traditional instruments such as the telephone and fax. Now, however, simple, innovative - or even more sophisticated - instruments are being introduced, for example, e-mail.

The following flows of information can be distinguished in the quality control process:

- between fabric makers and garment makers/control centre to transmit the fixed characteristics of the fabric pieces. The document that contains these characteristics is the so-called packing list which, for each individual piece, states: the article, version, colour, nuance, measurement in metres stated by the fabric maker and selection (quantity of fabric selected due to defectiveness);
- between the control centre and the garment maker to transmit the success of the quality control contained in the defectiveness report, where, for each piece, the fabric’s variable characteristics (to distinguish them from the fixed ones) are stated: measurement in metres checked by the controller, the quantity and quality of the defects (of the weft, warp, area, etc.) and their position. If requested by the garment maker, the report also states the clothing code that associates the piece to the article to be produced;
between garment makers, control centre and subcontractor (single-phase producers) for the preparation of the launch batches: on the garment maker's instructions, the centre prepares the launch batches and sends them to the subcontractor along with the defectiveness report, the optimal placing layouts for cutting and the instructions for launching production.

4. The **creation of the product** mostly takes place through subcontractor and façon producers. The essential phases that accompany the production cycle are the cutting, making-up and ironing. There are then other additional activities (embroidery, labelling, specific processings) that again largely depend on the type of product, the fabrics and the market segment in which the principal company operates. Although quite a large number of workshops cover the whole production cycle, there are also many workshops that carry out individual phases.

This is a system of companies that is very widespread in Italy. It is generally characterised by a small or very small size, located mainly in the South (Campania, Apulia), the Marches and Abruzzo, or in Veneto. The basic factor of competitiveness is the price, and given that we are dealing with labour-intensive processes, the international productions are becoming increasingly competitive. This explains the growing phenomenon of production internationalisation of many Made in Italy companies, especially in Eastern Europe, the Maghrib area and the Far East.

The production cycle can therefore be divided into the following flows:

- between garment makers and subcontractors to promote, start up and close the negotiation activity;
- for the definition of the order and the contractual conditions;
- for the administrative management of the exchange ratio;
- for the operating management of the exchange ratio: sending the optimal placing layouts, management of the materials on manufacturing account and works progress.

Given the modest size of the single-phase workshops and the low technological level in general, communications take place mainly by means of traditional instruments. However, clothing companies (especially those with the larger workshops) are connecting the single-phase producers so as to favour a more rapid exchange and a greater control of the flows of information.

5. **Quality control of finished products, warehouse and dispatch:** this is the final phase of the production process. The articles produced at the workshops return to the finished-products warehouse where they are checked (at times the control also takes place in the workshop), packed, stored (often in automated warehouses) and dispatched to the final customers.
**Competitive factors in the textiles/clothing industry**

In the same way as in the rest of the fashion industry as a whole, the textiles-clothing sector - especially in the products with a high style and design content - are driven by a series of competitiveness factors that have undergone a radical change in latter years.

First and foremost, the market's control logics have changed.

In the past, the designers/manufacturers played a completely predominant role in the value chain: they controlled the market, easily imposing products and prices, and limiting themselves to activating *push* strategies to promote the products within the stores. It was strategically crucial to be a recognised designer name and to promote it effectively.

Today, competitiveness depends very closely on the consumer side and the requirements of distribution. First, end consumers' purchasing habits have changed considerably: if the Eighties were characterised by a high propensity to consume - even luxury goods - , connected to a lifestyle that was particularly consumeristic, since the Nineties the end customer has been spending with greater discrimination, is interested in product quality, is sensitive to good service.

To be competitive, the critical factors are a guarantee of high quality and the ability to respond rapidly to the consumer's requirements. It thus becomes essential to know one's customers, serve them well and keep them satisfied. It is now the customer and not the designers/manufacturers who dictates the rules of the game.

This means that in the value chain of the textiles-clothing sector, the management logics begin from the end customer and go back up along all the links in the chain.

Firstly, the customer dictates the "times to market" of the production chain: the sales campaigns are continuous, the production times are becoming increasingly limited and the quality standards requested (of the product, service and market) are increasingly higher. This means a more effective and efficient management of all the processes described above in order to make the production-distribution cycle fluid, integrated and faster. All the initiatives aimed at making the flows of materials and information more fluid and "transparent" should be seen in this way.

As already mentioned, the integration processes should also be read in this direction, downstream from the manufacturers who are increasingly controlling the distribution chain.

The investments necessary for competing in this market (especially as regards communication and distribution) require increasingly larger companies in order to obtain synergies that are suitable at all levels of the management process (production, communication, distribution, purchasing) and, consequently, greater profits.

When considered all together, these elements are giving rise to company merger or acquisition processes and to production diversification among the companies owning strong trademarks.
For some of these competitiveness aspects, the Internet technologies are able to ensure useful responses and the case studies proposed indicate the already-noted actual application areas.
Initiatives to support the textiles, clothing and footwear sectors

To support the textiles, clothing and footwear sectors (TCF) at a **domestic level**, after the industrial policies\(^2\) outlined by the Ministry of Industry and Trade, where the permanent control on the sector was set up with Ministerial Decree in 1998\(^3\), for the years 2001, 2002 and 2003 the Financial Law has made provision for facilities for the development of electronic commerce and innovation.

The **2001 Financial Law** (Law no. 388 of 23/12/2000), which partially acknowledges the “Regulations for the development of electronic commerce and the distribution of computing knowledge” bill:
adopts specific measures for granting capital contributions within the limits of the *de minimis* aids for the textiles, clothing and footwear manufacture sectors.

The selection of the fundable ventures is provided for through public tenders, in which the following are indicated:

- the type subjects of the interventions, with priority given to association- and consortium-type organisations among small- and medium-sized companies, aiming to favour initiatives taken up by them in cooperation,
- the expenses allowable and
- the amount of the facilities.

The expenses allowable shall also include the expenses for training activities and the Internet portals.

The capital contributions cannot be added to the tax credit made provision for by Article 21 of legislative decree no. 114 of 31 March 1998 for developing electronic commerce activities.

Within the scope of the activities of the permanent controls, market monitoring and promotion actions may also be planned, within the limit of 0.25 million Euro for each of the same years.

\(^2\) The priority interventions identified are:
- Setting-up of the permanent control on the TCF sector
- The construction of a Quick Response System through the telecommunications networks between the companies of the industry chain from production through to distribution.
- The consolidation of initiatives for helping the sector towards internationalisation
- The support of training
- The reduction in personnel costs
- Implementation of the support provisions to the districts mentioned in the "Legge Bersani" (Bersani Law)
- A more effective support for the financial management of the small companies.
- A temporary support for consumptions.

\(^3\) The permanent Control on the TCF sector was set up for monitoring the industrial policies, for the analysis of the economic situation of production, identifying the constraints to the companies' operation - in particular the small- and medium-sized companies - and to opportunistly promote the initiatives for overcoming these obstacles and the development of the TCF sector in general.
For the management of the above-mentioned interventions and on the basis of appropriate agreements, the Ministry of Industry and Trade can avail itself of public bodies or other parties identified with the procedures referred to in Article 3, subsection 2, of legislative decree no. 123 of 31 March 1998, of which the expenses are chargeable to the allocations referred to in the agreements.

The sum of 55 million Euro is conferred to the fund referred to in Article 14 of Law no. 46 of 17 February 1982, for each of the years 2002 and 2003, of which 40 million Euro is allocated for granting tax credits and 15 million Euro for capital contributions.

This law comes into force on 1 January 2001.

At the level of trade associations which, from 2000, have been standardized into two bodies: the "Sistema Moda Italia" (Italian Fashion System) and the "Associazione Tessile Italiana" (Italian Textiles Association)\(^4\), the initiative promoted by the Sistema Moda Italia is found: the project “to create tomorrow’s fashion”. This project is funded by the EC Leonardo da Vinci programme and, for the first phase of the project, has lead to the realization of the “Studying is in fashion” Database.

This database contains information on Italian training opportunities for the textiles and clothing sector. The initiatives in this direction are many and in constant evolution. The database is ordered by funding bodies and courses and allows one to search for information according to various parameters (geographical area, professional area, academic qualifications, etc.) and aims to define a post-diploma training model for the sector's professional technical figures. It is a consultation instrument for those (companies, students, schools) looking for specific information on courses and schools and for whoever is interested in obtaining more detailed information on the training opportunities in the sector.

Sistema Moda Italia also:

\(^4\) Sistema Moda Italia includes:
- The Wool industry
- The Fashion Industry
- Knitwear and Hosiery
- Clothing
- The Silk Industry
- Other textiles

The Italian Textiles Association includes:
- Cotton industry and
- Embroidering

Sistema Moda Italia and the Italian Textiles Association have replaced Federtessile (Textiles Federation), which was disbanded in July 2000, with the related capacities of sole representation of the entire system in:
- Confindustria (three members in the Board)
- Territorial Associations (representation of the sector industries)
- Ministry of Labour (drawing up of the employment contracts)
- Ministry of Industry and Foreign Trade (System representation in promotional and industrial policy issues)
supports the works of the associative and inter-associative technical committees at both national and international level

The service makes provision for assisting the work of the various Working Groups that operate at a national and international level on technical themes for protecting the sector's entrepreneurial interests.

On the national scale, an inter-association commission made up of clothes manufacturing companies and silk fabric manufacturers is currently organising a model draft specification for upstream-downstream supply.

At an international level, Working Groups are taking ad hoc steps on such themes as the standardization of sizes among the various countries, the standardization of care instructions labelling between the European and American continents, and the breaking-down of technical barriers to foreign trade. As regards sizes standardization, the European works are supported by a special Commission within the association.

The domiciliation of the ‘T.A. 2000 per l’industria della moda’ (T.C. 2000 for the fashion industry) consortium also follows directly on from this. This consortium was set up with the association's sponsorship for carrying out the Quick Response research topic that was assigned to it by the Ministry for University and Scientific and Technological Research within the scope of the National Research and Training Programme for the textiles/clothing sector.

At a regional level, instead, is the initiative by "CITER", a textiles information centre based in Emilia Romagna that provides a “virtual trade fair of the Italian fashion system”.

CITER's initiative, which is carried out with the Apulia CISI, instead, sets out to create virtual exhibition spaces in three-dimensional environments for the small- and medium-sized companies of the T/C sector in Objective 1 and 2 areas.

The scope of this initiative is the SERTEC Plan, which aims at promoting the development of technical services for the production system of the Objective 1 and 2 Regions, of which ENEA (Body for New Technologies, Energy and the Environment) is the co-ordinator.

The project aims:

- To develop an INFORMATION INFRASTRUCTURE that makes fashion products and services available through the telematics network (exhibition, information, technology-, regulations-, sector- and support services)
- To develop instruments for virtual modelling and browsing in 2D AND 3D ENVIRONMENTS
- To implement an EXPERIMENTATION phase with COMPANIES in Ob. 1 and 2 areas
- To spread and promote the trade fairs among the sector's main operators

ENEA, again within the scope of the fashion system Observatory, has contributed to identifying QR - Quick Response - as an instrument for increasing the sector's competitiveness.

QR is a global e-business strategy for continuously adapting and adjusting a competitive market's needs for change. The strategy aids the understanding of the consumers' demand, encourages partnerships, makes effective use of resources and shortens the e-business cycle through the production chain, by activating cooperation processes.
between the industry-chain companies and the use of new technologies, in particular ICT.

ENEA again, assigned by the Ministry of Industry and Trade, has developed a study within the scope of the textiles, clothing and footwear sector to pave the way for starting up the QR initiative and within the scope of the “I go fast” initiative (Innovation in the Operative Management among Companies in the TCF sector).

The results of the study have been:

- Analysis of the TCF industry chain's attitude and the operating advantages that can be reaped with QR
- Identification of Facilitators, for activities of awareness promotion, involvement and pre-selection of the relevant companies
- Road Maps of the main technologies that can be used in QR
- Proposal for the operative management of the initiative:
  - Tender
  - Proposal valuation criteria and procedures
  - Trading activities
  - Duration of the agreements
  - Value of the loan (“de minimis”)

Some scenarios relating to the possibility of introducing a sector standardization during the course of the initiative

On-line intermediaries

During the last months, several e-commerce initiatives emerged, based on the intermediation of autonomous entities, not directly linked to any of the enterprises of the value-chain. A portal like the one of Sistema Moda Italia (the Italian Association of the textile and clothing filiere) which hosts functionalities typical of a digital marketplace, or the independent digital marketplace of ItalianModa.com are attempts to bring the potential benefits of the ecommerce also to a sector in which product characteristics require a direct contact or sight control for quality control. This is possible first in some specific areas, such as overstock, standardised products, products with a very well known brand which represents a quality guarantee, etc.)

Textileitaly (www.textileitaly.com), was generated within a new service company created by the Italian Textile Association (Associazione Tessile Italiana) with the aim of providing connectivity, content, community, ecommerce services, and value added services such as distance learning, show room, virtual fair, personnel seeking, advertising management, information and finance service, business intelligence to the Italian textile sector.

The Sistema Moda Italia portal (www.sistemamodaitalia.it), similarly, provides services of community management, information, B2B ecommerce (demand and supply of work/workers, of transformation, of production requests)

Tessilmoda (www.tessilmoda.com) is a portal for textile/clothing promoted by the Artisan and SME Association of the Modena/Carpi district of this sector, still under construction. Once completed, it should provide services like database on subcontracting, virtual shopwindows, demand/supply of work, overstock and machinery sale, and sector-specific information services.
An additional initiative, not linked with Associations of interest, is **ItalianModa.com**, a company founded by managers and experts of the sector who decided to build on their experience and skills an intermediation and consultancy activity on a digital marketplace, with value added services such as web-based marketing. In order to enrich its offer, the company is defining strategic agreements with portals and marketplaces specialised in the fashion sector in other countries, in order to build a textile global network aimed at supporting the search for the best partner in each market.

Other portals

In all the cases listed above, operations are still very limited, as well as the number of firms already present and actually using the web for commercial transactions beyond already consolidated relationships. A set of reasons is at the basis of this embryonic status: the predominance of small- and medium-sized enterprises, managed by entrepreneurs who are culturally still far from the ICT world; the difficulty of evaluating and demonstrating the benefits and short terms gains of investments in this field; the more consolidated e-business systems are tailored on the needs of large organisations and quite expensive; textile/clothing products have relevant physical characteristics difficult to codify, and so a completely automated management of the transactions is very complex; the flourishing of digital markets and new on-line initiatives which makes it difficult to select the the more adequate initiative for the needs of each firm; the presence of forms of intermediation “actual” rather than virtual/on-line which are deeply rooted in the value-chain and hard to be substituted by an on-line intermediary.
Nylstar Case Study

Nylstar is a joint venture between SNIA and Rhodia, two industrial groups with activities also in the chemicals industry, established in 1994 for the production and marketing of polyamidic yarn (nylon) for textiles applications. The company, with registered office in Cesano Maderno (MI), has three production plants in Italy (Cesano Maderno, Varedo – MI, Pisticci Scalo – MT), and controls six companies in Europe (Spain, France, Germany, Poland and Slovakia) and one in the United States with the same number of production facilities. Nylstar also owns Rhotex, a company that deals with the texturizing of the yarn.

Nylstar’s turnover in 1999 was approximately Euro 600 million, divided in the following way: 40% in Italy, 47% in the rest of Western Europe and 13% in the rest of the world. With 40% of the market, Nylstar is leader in the supply of polyamide yarns for the textiles industry in Europe, with the Meryl and Elite trademarks (texturized yarn).

According to the applications, approximately 120,000 tons of yarn produced can be divided into hosiery (21% of the turnover), circular knitting (35%) and warp knit fabric (28%) and weavings (16%).

The Nylstar group employs approximately 5,000 people, 1,000 of which in Italy.

Background

Positioning Nylstar in the textiles/clothing value chain

Nylstar is positioned immediately downstream from the producers of raw materials and upstream from the producers of hosiery, fabrics and knitwear. In the spinning segment there are workers who are specialised in natural fibres (cotton, wool, silk, linen) and synthetic fibres (acrylic, polyamide). The raw materials, and therefore the type of upstream operators, are extremely different. In particular, producers of synthetic fibres purchase the raw material from large chemical industries.

According to the strategic choice of the two shareholders, the reference market is limited to the textiles/clothing sector. This is because due to their extreme variety of properties, possibilities of treatment and application, synthetic fibres require the manufacturer and whoever markets the product to have an in-depth knowledge of the market outlets so as to guide the development of new products on the basis of market requirements and to offer the customers advice on the use of synthetic fibres.

Similar joint ventures have been established to control different application markets.

Suppliers

The basic raw material is caprolactam, a carbon polymer that is processed to produce a continuous yarn with a considerable range of diverse properties depending on the processing method. In any event, the quality of the finished products is strongly influenced by the quality of the caprolactam, which is why the company depends on a limited number of suppliers who, in addition, are chemical industries of an international
standing and for whom the orders from Nylstar would not allow a market power to be exercised. However, the purchases of raw materials are made within the framework agreements signed directly by the two shareholders for all the companies under their control. Nylstar, therefore, has the advantage of being part of a very large purchasing pool of these materials, thus allowing it to obtain relatively favourable conditions. The spinning machines are another fundamental supply, in which given the considerable Nylstar investment and the continuous innovation and consequent request for new machines, the company has a certain market power. There are approximately 30 suppliers strictly connected to the production activity (along with caprolactam, hydrogen salt, machines, maintenance, spare parts, energy, oils, packaging, etc.), while Nylstar has relationships with over 4,000 suppliers, also of only an occasional nature. In general, intermediaries are not present in the supply relationships, if one does not account for the intermediation of the two shareholders in the drawing up of the framework agreements for the supply of caprolactam.

Customers

The downstream workings of the spinning and before the genuine application (in the hosiery, knitwear or weavings) are warping and texturizing. Nylstar's biggest customers are in the hosiery field, where the value chain is shorter with respect to the other applications because the only intermediate working between the spinning and production of the finished product is the texturizing of the yarn. Yarn texturizing is the process that makes the nylon elastic and is often carried out by a company in the Nylstar group (Rhotex). There are large manufacturers in the hosiery industry that purchase the yarn and produce the hosiery internally or purchase the yarn and then pass it on to smaller companies which carry out the working. At times these large customers also do the texturizing internally before using it for the manufacture of hosiery. The fabric makers are other customers of Nylstar, which are part of the clothing industry chain. These companies are generally smaller than the hosiery companies, even if there are interesting exceptions. The orders from the fabric makers mostly depend on the demand that comes from the garment makers on the basis of the market's dynamics. These dynamics, however, are relatively insignificant for spinning due to the distance between this segment and the end market in the value chain. Downstream from the fabric makers are the garment makers, who often have more of a role of designing the articles and co-ordinating than production as such. This is because the processes (printing, dyeing, cutting, drawing, assembly, sewing, washing) are outsourced to subcontractors which can range from individual firms to rather large production units. As for the number of phases, the knitwear industry chain is closer to the hosiery one, since there is no weaving phase: the yarn is used directly by whoever produces the finished product (or who has it produced on its behalf by sub-contractors). Unlike the hosiery production chain, however, the operators are smaller. Downstream of the chain, close to the market outlet, are the players that “make” the market. These decide from one year to the next fabrics, colours and articles to propose as "leaders" and also, accordingly, which fibres will be used the most. Nylstar is trying
to acquire greater presence at this stage (among designers, but also clothing manufacturers with particularly significant positions on the market) because, from its extremely upstream position, it does not have enough visibility on the market. There is a relatively insignificant presence of intermediaries immediately downstream from Nylstar: apart from the intermediary role indirectly carried out by the large hosiery or fabric manufacturers that out-source processes by purchasing the yarn and then passing it onto their sub-contractors, there are local intermediaries in areas where, as in the case of Prato, there are a large number of small companies which use yarn and which - due to the size of the orders - would find it too expensive to buy it and have it delivered directly by Nylstar. In this case the intermediary (yarns wholesaler) carries out the important service of bringing the supply to a specific territory and allowing small purchased batches to be managed in a way that is economically viable.

Given the need for specific expertise to treat technological yarns, general intermediaries are not, however, common.

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| Drawing – assembly – sewing - washing |

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**Business profile of the firm**

The company concentrates on the production and development of polyamide yarns\(^5\) for textiles applications.

The company invests heavily in the innovation for widening the use of polyamide yarns, in particular in “technical” textiles applications (sportswear, light fabrics with a high thermal insulation properties).

Given the considerable variety of possible uses and “yields” of the polyamide fibres for textiles applications, the start-up of a supply relationship is a complex process that requires various meetings between the parties, the exchange of trial samples, and the comparison of the yarn's properties and the characteristics of the fabric to be produced.

The activity of Nylstar's salespeople is also, in part, one of technical consultancy because it is essential to have an in-depth knowledge of the yarn's properties for the subsequent possible processings for the fabrics. Once the customer has been acquired and the type of supply established, the individual orders then become routine transactions.

Nylstar also develops yarns with innovative characteristics to meet the specific requirements of certain customers (for example, sportsystem, where yarns for fabrics that are particularly light, and at the same time warm, are developed) and in this case there is broadly an activity of co-design of the yarn-fabric ensemble between Nylstar and the fabric maker or garment maker who will then have to use the fabric.

The closeness of the customer - excluding the logistics costs to be met for the supply definition meetings - has a significant importance. So much so, indeed, that Nylstar has decided to manage the entire sales activity for Europe through a single company that serves the entire market by purchasing the yarn from the various production units spread over Europe, and is considering the possibility of serving the Far East market by means of an electronic market.

This organization, with a clear division of business tasks and responsibilities between units devoted to the marketing and units devoted to the production, is the result of a recent reorganisation of the group that aimed at limiting the typical complexity of many multinationals that have highly-scattered decisional centres on similar themes, with equally high co-ordination costs.

The three Business Unit managers answer to the Managing Director (managers of Nylstar CD which control the EU market, Nylstar Inc. over the American market and of the business unit responsible for Eastern Europe) and the managers of production, logistics, administration and finance, and human resources.

A company (Nylstar CD) purchases the entire product from the production units in Europe and resells it on the European market constituting a single commercial interface. The NAFTA market is served by Nylstar Inc., which manufactures and sells. The Eastern Europe market is served by the two branches in Poland and Slovakia (which

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\(^5\) A product produced from caprolactam (a carbon polymer), it is extremely sensitive to the quality of the raw material; it can be texturized (made elastic) and interwoven (warped) with other fibres (the texturizing is done externally by Rhotex, a company group, while the warping is carried out either by the customers, by Nylstar, or by external warpers on behalf of Nylstar; the warping accounts for 30% of Nylstar's turnover).
manufacture and sell). The business units have a network of agents that deal with the marketing of the product over individual geographical areas. The three B.U. managers have responsibility for the commercial aspects. Production must guarantee that what the market requests is available at the times agreed, with the intermediation of logistics that manage the overall production capacity, finding the balance between market and production.

Yarn production is carried out completely in Nylstar production units, while the subsequent processings upstream of the weavings are performed either by a group company (Rhotex) (texturizing), or by Nylstar, external warpers, or directly by the customers (warping). Packaging is also taken care of by Nylstar, while dispatch is managed by large international forwarding agents (they have an agreement with Danzas for the non-EU area). The deliveries within Europe have order lead-times of one or two days, while for other continents the lead times are longer and it becomes important for the customer to have an update on the delivery's progress, a service that is guaranteed again by Danzas.

**Technology profile of the firm**

The company has adopted an ERP SAP R/3 system, which manages all of the group's activities in an integrated manner. Following the reorganisation mentioned above, the adoption of a company structure - and consequently an IT system that provides for a single interface that deals with all the customers - was a very important step in ensuring that the introduction of electronic commerce did not require tedious activities of revising the computing systems to make them more in line with an effective use of electronic commerce itself. Indeed, by its very nature, electronic commerce entails a global reference market instead of territorially-limited customer “basins” under the control of different companies.

Before the start-up of the projects on e-commerce (1999) and e-procurement (2000) the company managed the negotiations and transactions with customers and suppliers by way of traditional instruments such as telephone and fax, possibly just with e-mail for the orders taking, while the web site was used solely for information purposes (catalogues and technical information on the various yarns) and as a shop window.

With the aim of improving relations with already-acquired customers (not therefore, in this first phase, as a new commercial channel with which to attract new customers) and on the basis of the assumption that in the future e-business will be a key to remaining competitive on the market, a project was launched in 1999 to implement an application for collecting and managing orders received from the customers via the Internet.

By using a username and password, the software allows customers to access a confidential page from which they can insert purchase orders, check the progress of orders and download information on their relationship with Nylstar (picking list, invoices, open accounting items) so that they can insert this into their own IT systems and be able to track the delivery in real time. (While this last feature is particularly important for the countries outside Europe, where the delivery times are longer, since delivery times for the European market are only about two days, this information loses its importance).
Payment and invoicing, however, are managed in the same way as those relating to “manual” orders. The orders automatically feed SAP from the web site (while the off-line orders are entered manually). From this point onwards they are managed in the same way, through issuance of invoice and payment according to the channels already established during implementation of the management program.

The possibility of entering complaints on the web site relating to the quality of batches received has recently been added.

The web application for electronic commerce with customers is completely integrated with the *erp* (enterprise resource planning) company system. There is therefore no transfer of information from Nylstar's management databases to the servers that manage the electronic commerce: the customers can directly see those company management pages restricted to the information they are allowed access to.

The site allows orders to be sent to Nylstar CD or Nylstar Inc.: the latter, as mentioned above, is responsible for the American market.

Once the pilot phase ended at the start of 2000, in September of the same year 35% of Nylstar's overall turnover came from on-line orders, with the aim of reaching 50-60% in 2001.

In 2000 the e-procurement project was launched, based on the SAP BBP application for managing the suppliers' catalogues, which is currently undergoing a trial period with three suppliers.

The purchase process is managed in the following way: on the basis of the supplier's catalogue (which can be hosted on either the company's or supplier's network) a purchase request is issued directly by the user that needs it. Next, the request is marked with the supplier code chosen by the user and electronically approved by the manager who deals with the user who has issued the request. It then becomes an order that is managed by the purchasing department. At this stage not further negotiation interventions are necessary since price management has been done upstream, on the catalogue as a whole with the various suppliers. The order can be sent to the supplier in three ways: a) printed and sent by telefax; b) sent by fax directly through the system without printing (they have developed an application whereby from SAP, both in the case of purchase order and sales order confirmation, one can automatically send a fax to the customer from Nylstar avoiding printed paper. The signature is solved with a wording “signed”); c) sent through EDI on the web, a possibility for which a “receptive” supplier has not yet been found. Nylstar is not particularly interested in pushing for the use of this method because the saving on paper has already been made in method b).

**Interview responses**

**Motivations: expectations of the firm regarding the effects of e-commerce**

The decision to invest in e-business is a result of a precise vision by the top management:

- in a few years time, electronic commerce will become the main way of managing economic relations.
On this basis, the choice did not require detailed analysis of costs and immediate benefits. Some more immediate reasons, however, can be highlighted:

- to improve relations with customers already acquired, to ensure that they remain loyal;
- to make more efficient the internal procedures for managing orders upon arrival and for issuing outgoing orders;
- to enrich the supply with a service component, a significant element given the special characteristics of the yarns;
- to free up resources of the purchasing department and commercial structure, so that they can be dedicated to tasks of greater value.

By way of the on-line channel, on a more distant horizon, the possibility is being considered of accessing markets that are currently difficult to preside over. From the supply point of view, in the medium term we expect favourable impacts from a greater competition between the various suppliers, to begin from a selection on the basis of their willingness to use electronic instruments.

**Obstacles and advantages in exploiting the potential of e-commerce**

The interviews have highlighted a caution related to the aspects that cannot be directly controlled by the company. In particular these refer to the action of the governments: the approach seems to be that of doing as best as possible given the environmental situation.

*Factors relating to telecommunications infrastructure*

The only effect noticed that can be ascribed to the communication infrastructure concerns the poor quality of the networks in some developing countries (an example regarding Turkey is given). These initially induced customers to perceive that the e-commerce application was not working as it should whereas in reality the problem was with the network's poor reliability.

*Regulatory factors*

The implementation of e-commerce has not been particularly influenced by regulation matters; in any event, the legislative structures are currently considered as being sufficient to support electronic commerce.

*Internal factors*

Driving factors:

- strong interest in e-business shown by the top management. This has, moreover, made justifying the investment easy;
- company structure and ERP system already prepared for working together with a single interface towards the customer;
- sufficiently skilled technical personnel.
The only critical point highlighted was the need to review the working method of the people involved in the activities - the commercial structures, purchasing departments and users -, who require orders to be placed for materials.

*External factors relating to relations with other enterprises*
Since it was often the first company to propose to its customers operation via the Internet, the main difficulty come up against was the need to explain the operating instructions in detail to the people that would have had to use the application. For this purpose a demonstration CD ROM was also prepared and delivered to all the customers.

**Driving factors:**
- being a leading company in its sector has certainly given a certain strength to the proposal to use electronic commerce;
- the capacity of Nylstar's agents to carry out a role of a more advisory nature, as opposed to strictly a selling role, has helped with the diffusion of electronic commerce.

*Strategic factors relating to competitiveness*
Since Nylstar currently only uses electronic commerce with companies it already has relations with, it is not possible to assess its impact on the cost of reaching new customers. The company is nevertheless considering the possibility of using this very tool (through a digital marketplace already consolidated or through its web site) to penetrate the markets in the Far East.

The greater availability of information and the convenience of electronic means have certainly met with success with reference to the need to initially learn how to use it to enter orders via the Internet, judging the success of the initiative in terms of turnover. The customers' fear of undergoing lock-in effects has, for the moment, hindered progress towards a greater integration of the company IT systems that would make the order management process even more efficient.

*Government policy in general*
In its investment, the company has not availed itself of tax benefits to support electronic commerce.

The only effect of a certain weight that can be ascribed in part to the role of the State, as responsible for the education system, is the lack of personnel equipped with the necessary expertise to manage the themes of electronic commerce.

*Effects of e-commerce*

*Transaction preparation*
In the activities connected to transaction preparation, Nylstar's use of electronic commerce concentrates mainly on information services. On its website, the company makes available all the technical information necessary for the choice and workings of its yarns. Whoever enters purchase orders via the Internet is, furthermore, provided with different information relating to the trend of the orders open with Nylstar. Another
innovative aspect with regard to transaction preparation is the possibility of on-line access to some suppliers' catalogues, which is the basis of the e-procurement application.

Linked to the availability of information for customers on Nylstar's web site are a series of effects that have occurred - or are expected to occur - at the level of product, process and relational innovations:

**product innovations**
- the customer's improved identification of the specific characteristics of the various Nylstar polyamide yarns and therefore the greater possibility of their application (E1 – diversification)
- the customer's better perception of the special characteristics of the Nylstar products with respect to competitors' products and Nylstar's distinguishing features with respect to competitor companies. Indeed, Nylstar is the first company of its kind to offer information on the progress of the orders via the Internet (E2 – differentiation; an effect combined with the possibility of managing orders on-line and then following their progress)
- an enrichment of the product by adding a “service” component linked to the information services related to the progress of the order entered via the Internet (E3 – bundling; an effect combined with the delivery-tracking service)

**process innovations**
- increase in the information at the agents' disposal that supports their sales duties and, over time, aids their passage from sellers to consultants in the use of the Nylstar yarn (E5 – distribution)

**relational innovations**
- a possible effect of the availability of additional product information is the increase in customer demand thanks to the fact that the customers are more aware of possible uses (F6 – market expansion)
- another expected effect of the various information services is to attract new customers; this leads from the assumption that these services - together with the possibility of sending orders via the Internet - amount to an actual enrichment of the supply (F7 - market expansion; effect combined with entering orders via the Internet and delivery tracking)
- improving relationships with the customers already acquired thanks to increased outward transparency and the availability of an additional communication channel that is personalized on the basis of the related positions open with the company (E9 – trust; effect combined with the possibility of ordering via the Internet and sending, again via the Internet, complaints on the batches delivered)

Two kinds of effects are expected from the on-line access to suppliers' catalogues (in combination with the automatic formulation of purchase orders):

**process innovations**
a greater efficiency in the internal process of purchase order formulation starting from the needs of a standard user (E4 – co-ordination and integration; effect combined with formulating orders from catalogues);

**relational innovations**
a segmentation of the suppliers according to their willingness to adhere to the e-
procurement initiatives (F8 – market segmentation; effect combined with formulating
orders from catalogues).

**Transaction completion**

As regards transaction completion, the Nylstar experience concerns the possibility for
the customers to place orders through the web site directly in the company system and
the possibility of delivery tracking for orders delivered outside the European Union.
The e-procurement application also comes within the scope of this. Starting from
sharing their catalogues through the Internet and the upstream definition of the prices
for the supplies themselves, it allows Nylstar to automatically formulate purchase orders
according to its employees’ requests.
The following effects are associated with the possibility of entering orders via the
Internet:

**Product innovations**

differentiation of Nylstar with respect to the competition for having activated the on-line
channel (E2 – differentiation; combined with information services and delivery
tracking)

**Relational innovations**

- Attracting new customers through the Internet commercial channel (F7 – market
  expansion; combined with information services and delivery tracking)
- Improving the relations with the customers already acquired (E9 – trust; combined
  with information services and collection of complaints on line)
- Consolidation of relations with customers and strategic suppliers if they are willing
to be integrated among the IT systems. This allows the elimination, also on the side
of the counterpart, of “human” interventions that are unnecessary for inputting or
receiving the orders via the Internet (F10 – loyalty)

Associated with the possibility of delivery tracking, in addition to the effects already
mentioned (E2, F7) in combination with the insertion of orders via the Internet, is the
enrichment of the product by way of the accessory services (E3 – product innovation:
bundling; combined with information services)

Again in combination with Internet access to suppliers’ catalogues, the following are
associated with the generation of purchase orders on the basis of these catalogues:

**Process innovation**

optimisation of the order definition process according to the needs of the employee (E4
– co-ordination and integration)

**Relational Innovation**

Segmentation of the suppliers on the basis of their willingness to use the e-procurement
application (F8 – market segmentation)
### Electronic Commerce Innovations

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The Aeffe SpA case study

Brief description of the electronic commerce applications used by the company

The company Aeffe SpA operates in the context of the so-called old economy, in particular in the manufacture of clothing with a high style and design content.

On the one hand the electronic commerce applications that characterise it represent opportunities for optimizing and increasing the management of traditional business, and, on the other, for starting up new initiatives and experimenting with new distribution channels.

Company and reference market profile.

The company is one of the most well-established Italian companies in the clothing sector of a medium-high band, or with a high style content. Aeffe, whose ownership structure sees the strong control of the Ferretti family, produces the lines of Alberta Ferretti and Moschino (of which it also owns the brand name) and is concessionaire of the Ozbek and Jean Paul Gautier labels.

The company has its head office in San Giovanni in Marignano, in the province of Rimini.

Along the textiles clothing chain, Aeffe can be summarised as being among those companies that own trademarks or are concessionaires of trademarks. In this regard, the company also manages clothing manufacture activity, production of the articles, through to distribution. By virtue of the integration process downstream among the sector companies, Aeffe also has some owned stores, although these are very few with respect to the total number of customers served.

The company's consolidated turnover in 1999 was 150 million Euro. Aeffe SpA alone reached a turnover of 110 million Euro in that year, 70% of which was made on non-Italian markets, in particular in the United States.

The company size as expressed by its turnover certainly places Aeffe among the leading companies in this sector in Italy.

The group's turnover in 2000 was estimated at about 200 million Euro, a considerable increase with respect to the previous year. An aggressive acquisition policy also contributed to this increase and has led Aeffe to diversifying its production business in other contexts of the fashion sector (i.e. accessories and footwear).
This market is broadly stable in terms of customers, suppliers and intermediaries. In this phase it is subject to merger and acquisition operations: the investments necessary for managing the upper end of the market (stores, communication campaigns, collections, etc.) require certainly a larger size than in the past.

The company also controls some sales branches in the main European countries and in the USA.

While the definition of style and the communication campaigns are managed in cooperation with the fashion houses, all the other company processes (production and presentation of collections, sale and distribution) are managed completely by Aeffe.

**The company's business structure**

The company, therefore, sees to the production of the samples, the presentation of the collections, the management of the sale and the purchasing process. It also plans and coordinates the external workshops' production activity and distributes and manages the after-sales activities.

The main relations with customers and suppliers take place within this group of processes.

There are about 1,700 customers/stores, approximately 70% of which are located outside Italy.

The sales to customers take place through agents: there are 30 who manage the Italian market (including the Aeffe's *show rooms*) and 6-8 agents for outside Italy who operate with the same way as the Italian agents.

The supply system has two main components:

- The system of fabrics and accessories suppliers;
- The system of the external production workshops.

There are approximately 150-180 fabric and accessories suppliers per year or collection, of which approximately 20/25% are located outside Italy. The size of these suppliers also varies considerably: there are many large fabric makers (often even bigger than Aeffe), but often they are small manufacturers or ones with small purchase orders.

Another characteristic of the pool of suppliers is a high annual turnover: producing for collections where the content of style and design is high and there is the frequent research for innovation through materials requires a frequent selection of specialised fabric manufacturers according to materials/product.

Of course, as regards the continually-produced fabrics (for which, moreover, most of the purchases are made in the dark) the suppliers pool is certainly more stable.

The second main supply component is the external production workshops. Aeffe runs approximately 300 workshops in which approximately 1,400 employees work.
Most of these are very small (98-99% come under the band of <10 employees) and specialised according to work phase. The essential cycle of production is, in fact, the phases of cutting, making-up, ironing, to which further specific activities can be added (type of embroidery, printing, etc.).

Most of the workshops are located in Italy and a sizeable number in the Marches, a region bordering the province of Rimini. Only a few production facilities are located outside Italy, in Eastern Europe.

The geographical closeness of the workshops is another factor that the company considers to be important because it allows production to be controlled better in terms of quality and in respect of the delivery times.

### The use of e-commerce technology

Below we will illustrate the Internet methods that the company uses for managing and expanding its business. We must underline that we will consider all those applications which do not always strictly constitute electronic commerce and which, however, by being based on the Internet and Internet technologies, have changed the company's way of doing business.

The main uses of network technologies based on the Internet occur

- in managing the agents;
- in managing the workshops.

Firstly, all the orders that come from the agents are managed on-line. In the past the orders were also managed through solutions based on the classic EDI, but this activity involved only a part of the agents and not necessarily the most important ones. Today, all the agents send orders by using solutions based on IP protocols able to interface with the company's AS400 system.

This takes place, in practice, by connecting to the web site and accessing a dedicated area, by providing agent with a username and password.

The passage to this type of management is due to the fact that a more widespread technology is being used, which is easier to use and costs less.

Together with this method of order management and through the dedicated area in its own web site, the company manages a series of information services for the agents. These services represent an important element of support to the sales:

- information on the *warehouse status*: the agent is able to examine the situation of the finished-products warehouse at any given time so as to organise the re-assortment or replacement operations. The re-assortment of the articles takes place during the stores' sales and, within certain limits, the replacement service allows the replacement of unsold items. The company is currently planning for the stores themselves to access the warehouse situation so as to make them manage the re-assortment and replacement operation directly without having to go through the agent.
Agent report: especially during the sales campaigns the agent is continuously updated on his sales situation, the achievement stages of the goals, etc. He also has access to the sales situation of the company's overall collection: thus he has a way of examining which products sell best and which - due to the poor sales performance - will never go into production; in this way he manages to rapidly orientate himself as to the products to promote and on those that it is best to avoid promoting during the sales campaign.

Production progress: in this way the agent is aware of the progress of his orders, and is able to provide clear information to his customers.

An on-line connection with 30 workshops is in the process of experimentation in the management of the phase workshops (10% of the total). The workshops have been chosen from among the manufacturers of the various phases so that an entire production cycle is covered.

The workshops have been connected for the uninterrupted monitoring of the order's progress and for the first invoicing activity. The aim is also that of transferring on line the management of the technical sheet and the basics specification, i.e. the transmission to the workshop of the processing's functional requirements.

If, as we are expecting, this experiment is successful, the project will be rolled out to the remaining workshops.

No solution based on Internet technology is used for purchasing the fabrics. Among the basic reasons for this choice is the high turnover of the fabric makers per collection that prevents the stability of relations. There was a connection - via classic EDI - attempted in the past with the two main fabric manufacturers for monitoring the quality of the pieces. The project failed, however, but more for reasons of commercial confidentiality by the fabric makers than for technical reasons.

All the non-strategic purchases (stationery, PCs etc.) are however managed through electronic commerce.

The use of the company site for corporate purposes is, however, evident: company communication, presentation of main collections, etc.

A pure electronic-commerce initiative for the company takes place in the area of accessories and, for the moment, not directly.

Aeffe is one of the accessories suppliers of the marketplace Luxlook.com. This portal, which is owned, moreover, by some luxury companies (Bulgari, Lvmh, etc.), sells luxury trademark accessories (Moschino, Versace, Bulgari, Valentino, etc.) mainly in the USA.

In this phase, Aeffe acts as a pure supplier for luxlook.com and does not manage the sales activity as such, nor does it know the end purchasers' profiles. In this regard the portal simply represents a new distribution channel. However, the success of the initiative, which began approximately 3 years ago, is clear if it is true that the Luxlook
customer represents 5% of Aeffe SpA's accessories turnover and guarantees higher margins with respect to the other distribution channels.

This is a very interesting signal in the fashion world: while the purchases of clothing products with a high style content made via the Internet are still experiencing a difficult take off (and there are many reasons for this: from the high unit value, to the importance of physical presence when purchasing, etc.), the accessories world today appears to be well into a real success story.

In this sense the company believes that these initiatives to be interesting antennae on the new market, which Aeffe will be able to move into directly at a later time.

**Effects of e-commerce**

**Transaction preparation.**

Aeffe's transaction preparation area concerns, above all, the presentation of the catalogues and the information services: on its website the company presents the collections during sales campaigns and also, as already illustrated above, manages a series of information services for agents and customers (agent reports, progress of the sales campaign, warehouse situation, production progress). Secondly, the connection with the external workshops for the management of the production's progress also comes under the area of transaction preparation. There is also the presentation of some accessories catalogues by means of the luxlook.com site, which nevertheless represents an albeit indirect use of the electronic commerce tool.

The following effects can be associated with the applications that concern the relationship with the agent and some stores:

**Product innovations:**

- Enrichment of the information on the agents' selling methods and opportunities offered to the customers/stores to find out the warehouse availability directly so as to activate the replacement service (E1);

**Process innovations**

- The on-line information services for the agents and the connection with the external workshops have a direct impact on the co-ordination and integration of the whole company's production cycle (E5);

- In particular, the connection with the external workshops aims at the more effective management of production- (E4) and logistic-cycle (E3) planning;

**Relational Innovations**

- With the information services on order progress, warehouse management, etc., it is intended to improve the relationship with customers/agents (E8); furthermore, with the on-line replacement service it is also intended to add a loyalty and awareness tool of the customers/stores (E9).
In the sphere of transaction preparation, a series of already-tangible results for the company can be associated to the accessories world sold through Luxlook. Of course, despite dealing with a complete electronic commerce cycle, the things relating to the transactions carried out - or to production support - do not yet produce any effect on Aeffe because the integrated management is assigned to Luxlook's proprietary company.

Product innovations
- The possibility of creating innovative offer packages as an alternative to sale through traditional channels (E2);

Process innovations:
- an additional channel but not an alternative to the traditional one (E6);

Relational innovations:
- an opportunity to expand the market without gobbling up the traditional market (E7);

Transaction completion
Aeffe's on-line applications within the scope of transaction completion instead concern order management and the first invoicing of the external workshops.

The effects are visible mainly in:

Process innovations
- the on-line management of all the orders has a positive impact on company integration and co-ordination (E5); accordingly it strengthens and streamlines the logistics cycle (E3) and the launch of the production activities (E4);
- the first invoicing on line by the external workshops also has an impact on the co-ordination and integration of the activities, of which the effects are can be seen in the reduced work of some administrative resources (E5)
## Electronic Commerce Innovations

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AEFFE Spa
Genny Moda spa case study

Brief description of the electronic commerce applications used by the company
The company Genny moda SpA operates in the same market sector as Aeffe SpA, i.e. production of clothing of a medium-high band, with a high content of style and design. Although more limited than in the previous case, the applications relating to the use of e-business are also in this case destined mainly to a more efficient use of the logistics chain and to the integration of the company activity with customers and suppliers.

Company and reference market profile.
The company, which has its head office in Ancona, is owned by the Girombelli family. It produces the Genny trademarks and is concessionaire of the Byblos SpA brand name. In 2000 there were 310 employees in the business – reduced to 200 in the current year, due to the sale of one part of the company - for a Group turnover of approximately 50 million Euro. Only 4 out of the total number of employees work abroad.

The company has eight branches in Italy (one of which is a recently-acquired knitwear company) and 3 branches outside Italy, which are of a solely commercial nature.

60% of the turnover was made in Italy and 20 million Euro was attained outside Italy.

The company business structure
In a similar way as for Aeffe, some of the business characteristics can be reported in the following way:

- it is a product with a high content of fashion, style and design; product innovation is connected mainly to the design and materials.
- production is launched on the basis of the order;
- distribution and communication play a central role in the business and the management of the logistics chain (quick response) is crucial;
- the company designs, manufactures and sells clothing (mainly women's) in the medium-to-high price band. There are two main collections (Spring/Summer and Autumn/Winter) but there are other releases throughout the year. The product making-up phase (which involves a higher labour intensity) is outsourced (approximately 40 workshops) while the design, cutting and dispatch phases remain in-house. Only the samples are made up within the company.

Genny Moda has nearly 100 suppliers overall and approximately 100 customers (excluding the foreign branches).
There are 2 intermediaries for purchases, while there are 10 sales agents.

Of the suppliers (external workshops and suppliers of fabrics and accessories), approximately 60% are very small companies (under 10 employees) and approximately 40% are medium-to-small companies (5-250 employees).

15% of customers (agents) are very small companies, 80% medium-sized and only 5 are large companies (250-500 employees).

In the company's view, the market is strongly conditioned by the behaviour of competitors and customers’ expectations; the influence of the suppliers, however, is considered to be very weak.

The use of e-commerce technology

As in the previous case, this mainly refers to the company's agents network.

The main use of the Internet is for order inputting. Out of a total of 20 agents, in the past only 4 or 5 were telematically connected through the group Intesa software that functioned like a type of e-mail: the company placed the price lists in the Intesa-IBM box; the agents typed in the orders by placing them in the box.

This application was used in the past only by the more-structured agents and those that were telematically better equipped. Out of these agents, some of the larger ones often exerted their contractual power to decide whether to comply with the procedures imposed by the company.

Today the connection with all the agents (10) is continuous, also thanks to the use of the Internet, which, due to low costs and greater distribution, allows the approval of all the operators to be achieved.

With regard to the suppliers, the applications based on Internet technologies are rather meagre:

- the quality control of the fabrics represents a very limited sphere of intervention. Third party companies typically control the purchased fabrics for any possible defects in the pieces. In this way, the flow of the pieces never has to pass through the company: the fabric maker sends the ordered pieces to the company that carries out the quality control; once past this phase the pieces are dispatched to the external workshops to be cut and made up. Only the finished articles return to the company in order to be dispatched to the customers.

  To acquire the information relating to the piece controlled, the data are transferred by the control company to Genny Moda by way of file transfer; in this way the defectiveness data of the fabrics are realigned.

- There had been an attempt in the past to use Minitel technology to connect the external workshops. The project failed, however, due to insufficient applicability in the workshops, which were deemed to be too small and widespread over the territory. Today, given the smaller number of external workshops (approximately...
50) and the non-exclusive nature of the relationship, it is difficult to envisage investments in services of this type. The amount of business generated would not warrant the investment - not so much financial but more in time and human resources.

Effects of e-business
The company is currently completely restyling its site. The expectations - which, however, have not been made sufficiently explicit by the company itself -, certainly include using it for promotional and institutional purposes, and enriching it with a series of customer-information services.
However, for the current main area of intervention of the use of electronic commerce (the management of orders), the impacts can be identified in the process innovations or within the scope of logistics (E1), in the more rapid and standardized information that allows the planning of the production (E2), and in the co-ordination and integration between the company and main external parties (E3).
In addition to a rapid co-ordination between the company and supplier, the on-line management of the control for fabric defects instead allows the possibility to influence the value of the invoicing to the fabric makers.

<table>
<thead>
<tr>
<th>GENNY MODA Spa</th>
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</thead>
<tbody>
<tr>
<td><strong>Electronic Commerce Innovations</strong></td>
</tr>
<tr>
<td><strong>Transaction Preparation</strong></td>
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<tr>
<td>Advertising</td>
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<tr>
<td>Product innovation</td>
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<td>Process innovation</td>
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<tr>
<td>Relational innovation</td>
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Other experiences and trends

The context
Textile and apparel industry represents one of the more relevant production specialisations of the Italian manufacturing system. Italy represents the largest European producer and the third exporter in the world. During the nineties, the sector did not show a relevant growth, but the share of export on sales grew from 35% to 53%.

95% of the 26,000 companies active in this industry have less than 50 employees (68% has less than 10 employees) and 99% have less than 250 employees. Most companies are working within an industrial district – a filière located in a limited geographical area, characterised by groups of highly specialised companies all contributing to the production process, linked to each other with a cooperation/competition relationship. The main ones in the textile and apparel industry are 14 industrial districts, with 260,000 employees and sales for 20,000 Euro in 1999. The small size of the firms and the geographical proximity of most actors of each filière has up to recently limited the interest of firms for ICT heavy and pervasive applications.

The ICT evolution
Increase of accessibility for small and medium sized firms (SMEs) to Information and Communications Technologies (ICT) solutions, thanks to:
- decrease of tariffs for using the network
- internet is used as data transfer network (Intranet/Extranet)
- diffusion of user-friendly applications
There are still many constraints to the use of Extranet and e-commerce is at its first steps.

For SMEs, it is difficult to compete on scale economies, in terms of:
• Visibility on international markets (brand)
• Supply (supply chain, bargaining power, …)
• Logistics (outsourcing, fragmented resources)
It is also hard to manage the Time to market, especially in those sectors influences by fashion.
A third aspect concerns human resources, skills and delocation management.

In the Italian industrial system, 98% of companies have less than 250 employees.

<table>
<thead>
<tr>
<th>No. of firms by class of employees</th>
<th>Industry</th>
<th>from 6 to 49</th>
<th>from 50 to 249</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Textile/Apparel</td>
<td>24261</td>
<td>1590</td>
</tr>
<tr>
<td></td>
<td>Tanning/Leather</td>
<td>9524</td>
<td>506</td>
</tr>
</tbody>
</table>

The export on sales rate for the textile/apparel industrial districts goes from 40 to 60%. Out of the 900,000 employees of the sector, more than 700,000 are employed by companies operating within an industrial district organisational structure, characterised by competition with companies specialised in the same production phase, and by strong cooperation upward and downward along the value chain with companies specialised in
complementary production phases. All relationships are facilitated by a high geographical proximity.

The analysis of the content of the activity to be fulfilled and of the problem to be solved allows to understand if the relation is highly structured or not, and which communication protocol, message standard and interface is the more adequate one to support the relation.

a. To a highly structured relation correspond: predefined data, activity of query, data updating, to be dealt with basic applications, CD-rom, video, information kiosks
b. To a poorly structured relation correspond data to be defined, integrated data, activity of research, identification, selection of relevant data, personalisation and process of data, to be dealt with excel sheet, web applications with “agent” technology
c. To a highly shared aim correspond communication for message exchange, in which the content of the message is the critical part, the semantics, problems to be solved following a “script” for interaction, to be dealt with simple tools like telephone, fax, e-mail
d. To a poorly shared aim correspond communications aimed at setting a relationship, for which pragmatism matters more than semantics, problems for which the solution has to be built during the interaction, to be dealt with tools which allow also non-verbal messages, video-telephony, voice-mail, videoconference.

### Typology of Relation between Firms and Information Flows

<table>
<thead>
<tr>
<th>Degree of sharing of the aim/target of the enterprises</th>
<th>Degree of structure of the relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High</strong></td>
<td><strong>High</strong></td>
</tr>
<tr>
<td><strong>Low</strong></td>
<td><strong>Low</strong></td>
</tr>
<tr>
<td><strong>Operational activity</strong></td>
<td><strong>Operational activity</strong></td>
</tr>
<tr>
<td>e.g.: EDI with suppliers</td>
<td>e.g.: EDI with suppliers</td>
</tr>
<tr>
<td><strong>Decisionmaking, coordination</strong></td>
<td><strong>Decisionmaking, coordination</strong></td>
</tr>
<tr>
<td>e.g.: commercial/trading with foreign markets</td>
<td>e.g.: commercial/trading with foreign markets</td>
</tr>
<tr>
<td><strong>Co-decision</strong></td>
<td><strong>Co-decision</strong></td>
</tr>
<tr>
<td><strong>Integration</strong></td>
<td><strong>Integration</strong></td>
</tr>
<tr>
<td><strong>Collaboration</strong></td>
<td><strong>Collaboration</strong></td>
</tr>
<tr>
<td>Design, engineering</td>
<td>Design, engineering</td>
</tr>
<tr>
<td>e.g.: car design, household appliance design</td>
<td>e.g.: car design, household appliance design</td>
</tr>
<tr>
<td><strong>Negotiation</strong></td>
<td><strong>Negotiation</strong></td>
</tr>
<tr>
<td>Support to final customer interface and supplier interface</td>
<td>Support to final customer interface and supplier interface</td>
</tr>
<tr>
<td>e.g.: insurance contracts, raw material procurement, e-commerce</td>
<td>e.g.: insurance contracts, raw material procurement, e-commerce</td>
</tr>
</tbody>
</table>
In the textile and apparel industry – as well as in the most relevant industries of the Italian production system - we are assisting at a flourishing of projects and announced initiatives and proponents as well, most of which are interested in the enlarging of their business: besides brand firms, there are banks, service centres, sectoral and territorial industrial associations.

- a virtual fair for B2B proposed by a regional service centre,
- a sectoral marketplace,
- a B2B marketplace focused on international distribution chain,
- a portal and a network for SMEs,
- solutions integrating and rationalising the subcontractor – customer firm relationships,

these are some of the projects which require closer analysis in order to investigate on how e-commerce is changing the terms of competition within the textile and apparel industry.

Five processes are identified, all of them focused on the cloth maker:

**Design and development** – activity devoted to create the apparel pattern collection (design, prototype, sample, cut rules, placement scheme). It requires a close cooperation with textile producers

**Order collection and sales market management** – The T/A filière works on the basis of the distributor order. The four types of order are: sales campaign, restocking, ready to
wear, flash. Distributors send their orders to apparel producers once they have received them from their agents who visit the points of sale with the pattern of items.

**Procurement** – (Fabric and accessory purchase) It is critical for cost and quality control, especially for top items and strong brand. Interaction and cooperation with suppliers is crucial for flexible manufacturing, both for quick and cheap restocking, and for changing the range of items.

**Quality control** – It was initially a typical activity of the cloth maker – to be done before the production cycle – which tends to be externalised to specialised centres.

**Production cycle** – Production is largely assigned to subcontracting companies, in Italy for high quality items, and abroad in low wage countries (Romania, Morocco, India, China, Far East) for medium to low quality products.

The information flows which characterise the design and development process are the following ones:

a. between textile agents and cloth maker, before the purchase decision, for promotion and public relations, and between textile producers and cloth maker for promoting brand and image
b. between textile producers and cloth maker for fabric and apparel item co-design. This activity is largely based on semi-artisan phases: e.g. it may require the analysis of 12 thousands types of fabric for selecting at the end 500 from 70 different textile producers
c. between textile producers/agents and cloth maker for the negotiation phase: presentation of the sample of fabric, technical forms, price-list
d. between textile producers/agents and cloth maker for the administrative management of the process (order of test sample, order of sample fabric roll, order of sale campaign)
e. between textile producers/agents and cloth maker for the operational support to design. It requires close cooperation as precondition for a successful negotiation.

<table>
<thead>
<tr>
<th>Information flows</th>
<th>Relationships</th>
<th>ICT applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. style creation</td>
<td>cooperation co-decision</td>
<td>multimedia, virtual reality</td>
</tr>
<tr>
<td>b. co-design</td>
<td>cooperation</td>
<td>digital catalogues, access to database</td>
</tr>
<tr>
<td>c. collection presentation</td>
<td>negotiation</td>
<td>advanced EDI</td>
</tr>
<tr>
<td>d. account management</td>
<td>integration</td>
<td>videoconference, access to database</td>
</tr>
<tr>
<td>e. production support</td>
<td>cooperation</td>
<td></td>
</tr>
</tbody>
</table>

The order and sale market management process involve a set of different actors on the basis of the distribution chain structure of the cloth maker. Two are the prevailing forms: direct (no intermediary between the apparel producer and the sale point, which can be either owned or franchising one-trade-mark or multi-brand) and indirect (with intermediaries such as subsidiaries, import companies or agents).

**Quick response need for either a short chain or a highly integrated set of actors.**

The information flows which characterise the Order and Sale Market Management process are the following ones:

a. between cloth maker (or reseller) and customer, before the purchase, for promoting the brand and image through advertising
b. between cloth maker and distributor and between distributor and sale point for the negotiation phase: collection presentation, product registry, price-list, catalogues

c. between cloth maker and distributor and between distributor and sale point for the account management of the exchange: start up campaign orders (total volume and delivery plan in terms of timing, place, volume), order confirmation, transport documentation, invoice

d. between cloth maker and sale point for quick response for restocking, which allows a stock and unsold good reduction, but it requires visibility of the cloth maker stock in hand, "ready to wear" orders (order of items which are already in the warehouse), quick restocking order (order of items which have to be produced with fabric already in the warehouse), order of made to measure items (to be produced with fabric already in the warehouse)

e. share of sell out data between the cloth maker and the sale point. It can be a partial share (each cloth maker gets its own sell out data) or a general one (each cloth maker sees the sell out data of all producers). In the first case these data are similar to the restocking orders, while in the second they provide the real time market trend. Distributors, additionally, using the customer cards, are able to analyse the customer purchase behaviour

f. between cloth maker and sale point for sale service (technical aspects of the items, promotions, new products, end customer quality service, personnel updating and training) and between sale point and cloth maker for customer preference information.

<table>
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<tr>
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<th>ICT applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. brand and image promotion</td>
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<tr>
<td>b. collection presentation</td>
<td>negotiation</td>
<td>digital catalogues, access to db</td>
</tr>
<tr>
<td>c. d. sales coordination, order, production</td>
<td>integration</td>
<td>advanced EDI</td>
</tr>
<tr>
<td>e. market trends</td>
<td>integration</td>
<td>shared access to database</td>
</tr>
<tr>
<td>f. end customer interface</td>
<td>cooperation</td>
<td>videoconference, on line training, access to db</td>
</tr>
</tbody>
</table>

The more critical information flows are c. and d.: sales coordination, order, production. Quick response is interesting for department stores and can be required by them, as it improves the cash flow, allows decrease in unsold goods and in stock. Apparel producers, in order to be able to respond to this challenge, have to introduce flexible production, quick delivery, process reengineering. The competition pressure brings the apparel producers with a strong brand to create their own direct access to the market, with one-brand sale points either owned or in franchising.
Interviewed companies

- **Textile producer**
  - Marzotto (Vicenza)
  - Industria tessile Berto (Padova)
  - Lanificio Loro Piana (Vercelli)

- **Agents (textile)**
  - Daniele Gasparin & Giampietro Gasparoni (Vicenza)

- **Quality control centre**
  - Vecotex (Vicenza)

- **Cloth maker**
  - Forall Confezioni (Vicenza)
  - Corneliani (Mantova)
  - Diesel (Vicenza)
  - Antinea (G. Armani) (Vicenza)
  - Staff International (Vicenza)
  - Fashion Box (Treviso)
  - Belfe (Vicenza)

- **Distribution**
  - Coin (Venezia)
  - sellpoints Forall, Diesel (Venezia)

Flow c, d: Sales Coordination, Order, Production: ongoing initiatives

<table>
<thead>
<tr>
<th>SALE POINTS</th>
<th>Dept stores, chains</th>
<th>Multi-brand shops</th>
<th>One-brand shops</th>
</tr>
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<tbody>
<tr>
<td>APPAREL</td>
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<tr>
<td>Continuous products</td>
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<td></td>
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<tr>
<td>- jeans</td>
<td>Diesel</td>
<td>Fashion Box</td>
<td></td>
</tr>
<tr>
<td>- classic</td>
<td>Marzotto, COIN</td>
<td>Marzotto, Coin</td>
<td></td>
</tr>
<tr>
<td>- linen</td>
<td>Corneliani, Forall</td>
<td></td>
<td></td>
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<tr>
<td>PRIORITY PROD.</td>
<td></td>
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<tr>
<td>Flexible production</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>- quick restocking and “ready to wear”</td>
<td>Staff Int.</td>
<td>Corneliani, Forall, Fashion Box, Belfe</td>
<td></td>
</tr>
<tr>
<td>- made to measure items</td>
<td></td>
<td></td>
<td>Corneliani, Forall</td>
</tr>
<tr>
<td>High volumes</td>
<td></td>
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</tbody>
</table>
A few different cases in terms of product and distribution channel:

**Belfe** (sportswear, 90 million Euro sales, 1/3 abroad, 230 employees) has 12 one-brand shops which access via Internet to the central information system to check the warehouse availability, send the order and – if confirmed – receive the goods within two days. For quick restocking, for goods with already stoked fabric production and delivery is guaranteed within 10-15 days.

**Diesel** (Diesel brand jeans, 300 million Euro sales, 1000 employees) has 80 distributors worldwide. Most of them share the information system with the headquarters. The others send the order via email and access the mailbox of a central server to get information on the collection registry. When the headquarters receive the order, it sends confirmation and delivery note to either the agent or the sale point.

**Forall Confezioni** (high range tailor male clothing, 120 million Euro sales, 1200 employees) manages restocking with its own 40 one-brand shops worldwide: for the made to measure, once a day the received orders are processed, the inner part of the jacket is ordered and the item is produced and delivered in 10 days. Plan to extend the ERP to the order entry function.

**Fashion Box** (Replay brand jeans) Its main subsidiaries abroad have a frame relay link for account data transfer on SAP software. SAP ERP will be extended to some IP-based communication applications such as warehouse availability. The 150 one-brand shops worldwide are migrating to an Intranet devoted to collection registry, price-list, delivery note, warehouse availability and – in the opposite direction, sell out.

**Corneliani** (100 million EURO sales, high range tailor male clothing) has a sales chain made of 4 sellers, 40 agents and a subsidiary in the USA. It was one of the first companies to introduce the quick restocking which now accounts for 20% of all orders. It collects orders via Internet with an IMB software (host on demand), and guarantees 3 week restocking and made to measure items.

**COIN** (dept. store, 1500 million EURO sales) is linked on IP network with 10% of its 2000 suppliers which exchange information with the service provider on items registry, image catalogue, orders and restocking orders, delivery note). The aim is the automatic restocking of item.

Fabric purchase by cloth maker takes usually place after order collection from distributors. In fact, as the time length between the begin of the sales campaign and the item delivery to distributors is shorter than the lead time for fabric and item production, both the cloth maker has to order and the fabric maker has to start production in the dark. Textile producers will start producing continuous fabric, basic items, and piece dyeing in order to keep some flexibility.

Italian cloth makers buy fabric from abroad: either finished fabric for standard articles, or fabric to be treated by converters. Converters carry out a set of finishing phases (desizing, impregnation, decatizing, washing, dyeing, printing) which greatly enhance the fabric quality, and then they sell the fabric with their own trade mark. The Italian industry is well positioned in the treatment activity: it is a semi-artisan activity based on highly skilled workers.

The information flows which characterise the Supply process are the following ones:

a. between importer and converter, or between importer and textile producer, for the negotiation phase: product features, price list
b. between cloth maker and textile producer or its agents for the order cycle and packing list management

c. between cloth maker and textile producer for quick response initiatives

d. between textile producer and cloth maker for fabric production progress of work

e. between textile producer and cloth maker on the fabric availability in the textile warehouse

Most flows are now based on traditional means. The initial order is adjusted with two or three orders in full. It is then followed by weekly requirements of fabric, already divided by jobbing and subcontractor, which then go directly to the subcontractor plant.

The quality control on fabric has become a critical phase during the nineties, as cloth makers have chosen quality as a competitive factor against low wage country producers. This implies both a strict selection of suppliers and a quality control on fabric before the beginning of production. The quality control activity is largely externalised to control centres which are required to fulfil a growing set of other services: transport (collection of the pieces from the fabric producer and delivery to the cloth maker warehouse), stock (keep the pieces in their own warehouse up to the begin of production), technical data management (input and sending in the cloth maker information system of all data concerning the fixed features and the quality test of fabric) and also – on the basis of the input of the cloth maker – the batch (fabric quantity for type of pattern) and the shipment to the subcontractor which will produce the articles.

The information flows which characterise the Quality Control process are the following ones:

- between textile producer and cloth maker/quality control centre for the transfer of the fixed features of the fabric. The document is called packing list and for each piece it describes: item, variation, colour, nouance, length stated by the textile producer and refine (quantity of fabric which was refined against faults)

- between quality control centre and cloth maker for the transfer of the test results collected in the defect report which include all variable features of the fabric: length found during the test, quantity and quality of faults (in the weft, in the warp, extent, etc.) and location

- between cloth maker, quality control centre and textile producer for preparing the batch to be sent to production: the centre prepares the batch for subcontractors and it sends them with the defect report, the cut positioning scheme and the instructions for begin production.
Most part of the production cycle of the cloth maker – in some cases 100% - is outsourced to subcontractors, especially for jeans and sportswear. Large subcontractors have access via telephone network or via Internet to the central information system to update the progress of work, cut positioning schemes and component management. A large part of the production phases is assigned to foreign subcontractors located in low wage areas (Hong Kong, Korea, India, China, Morocco, Romania) while local subcontractors are chosen for finishing phases such as testing, dyeing, drawing.

The next step is the automation of the order-invoice cycle.

The information flows which characterise the Production Cycle process are the following ones:

- a. between cloth maker and subcontractor or promotion and start up of the negotiation phase
- b. for defining the jobbing and the contract details
- c. for the account management of the transaction
- d. for the operations of the transaction and cooperation: transfer of cut positioning schemes, management of components and supplying in deposit, progress of work.

<table>
<thead>
<tr>
<th>Information flows</th>
<th>Relationships</th>
<th>ICT applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. promotion and run of negotiation</td>
<td>co-decision</td>
<td></td>
</tr>
<tr>
<td>b. jobbing definition</td>
<td>negotiation</td>
<td>digital auction</td>
</tr>
<tr>
<td>c. account management (order, invoice)</td>
<td>integration</td>
<td>advanced EDI</td>
</tr>
<tr>
<td>d. Operations (positioning scheme,</td>
<td>integration</td>
<td>file transfer,</td>
</tr>
<tr>
<td>subcontracting material deposit,</td>
<td></td>
<td>shared access to</td>
</tr>
<tr>
<td>progress of work)</td>
<td></td>
<td>database</td>
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</table>
With the increase of opportunities for firms of communicating, negotiating, organising through the web brought about by the Internet dynamics, some trends can be envisaged and require an analysis of the changes in processes and actors, in physical flows and in information flows within the textile and apparel industry.

1. On the supply side, leading apparel manufacturers are pointing to the improvement of their visibility/control on the ongoing production of the fabric they ordered to their textile suppliers
2. Most companies tend to relocate non-critical production phases to low labour cost countries. They get a useful support from the Internet for the management of the resulting geographically extended production process.
3. EDI applications and their evolutions increase the integration between leading companies and their subcontractors to the point that the buyer is preparing and sending the draft invoice to the seller
4. The distribution chain and the relations with the market are nowadays experimental fields. Direct and indirect sale channels complementarity or potential conflict with the on line channel, virtual communities within customers, plans by companies with a strong brand to reinforce and exploit it on the Internet, all these questions and application fields are explored and still are open

Priority ICT application areas pointed out by interviewed companies in “made in Italy” industries

Textile/apparel
- visibility/control on outsourced production phases

Shoes
- order entry, unsold goods management

Sport shoes
- co-design, visibility of outsourced production phases,
- observatory of new materials

Metal products
- specialised production phases and subcontractors database,
- purchase aggregation