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**New Technologies in a Traditional Sector:
The Benetton Case**

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BRIS Working Paper #19

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Introduction

In recent years both the Italian and international press have noted the striking performance of the Benetton group. In this paper we shall analyze Benetton's growth record and suggest some interpretive hypotheses about the factors behind this remarkable growth. Specifically, we discuss the contribution of the firm's innovative retailing system and decentralized production strategy, and then assess in detail the contribution of technological innovations to Benetton's competitive success.

1. A Brief History of Benetton's development

1.1 Overview: growth of a firm

Benetton, originally named "Maglificio di Ponzano Veneto dei fratelli Benetton" (Gruppo di lavoro IRES, 1984), is Italy's largest fashion firm. Formed in 1965 as a general partnership, the company became a limited partnership in 1970, developed into a joint stock company in 1978, and in 1981 Benetton assumed its present organizational structure. At that time, Nuova Benetton (later called Benetton SpA) was charged with coordinating the industrial and trade activities of the firm's three main product divisions (knitwear, cotton, and jeans).

The entire company is controlled by an Italian financial holding, INVEP, either directly or through foreign affiliates such as Benetton International Holding in Luxemburg (Fondazione Corazzin, 1984). The capital stock of the company has increased from 40 million Lire in 1970 to 70 billion Lire in December 1985, when the

INVEP SpA changed its name to Benetton Group SpA and increased its share capital.

Over the last few years, Benetton has grown through the expansion of its commercial and financial networks (see Table 1) and through the purchase of other famous Italian clothing firms, including Fiorucci (49% of shares), and Calzaturificio di Varese, the leading footwear firm (90%).

1.2 Commercial expansion: the franchise system

Benetton was the first firm in Italy and possibly in the world to introduce a franchising system in the textile and clothing industry. This system, whereby Benetton sells not only their products, but their "product with shops" [Rullani, Zanfei, 1984], now extends throughout the globe. This retailing innovation has been a significant factor behind Benetton's strength vis-a-vis their competitors in the fashion industry.

After the first shop was opened in 1968 in Belluno, the chain of Benetton shops grew rapidly, first in Veneto, the region where Benetton is based, and later throughout Italy [Financial Times, 1983]. During the last five years the Benetton chain of shops in Italy reached a saturation point of one shop for every 50-55,000 inhabitants. While several commercial partners helped to finance this impressive growth, Benetton always maintained direct control of its outlet markets.

The chain of Benetton shops was extended internationally beginning in 1970. The firm's initial strategy was gradually to penetrate those foreign markets whose culture, tastes, and retailing system most closely resembled that of Italy. Because of its market

TABLE 1

Companies included in consolidation of INVEP

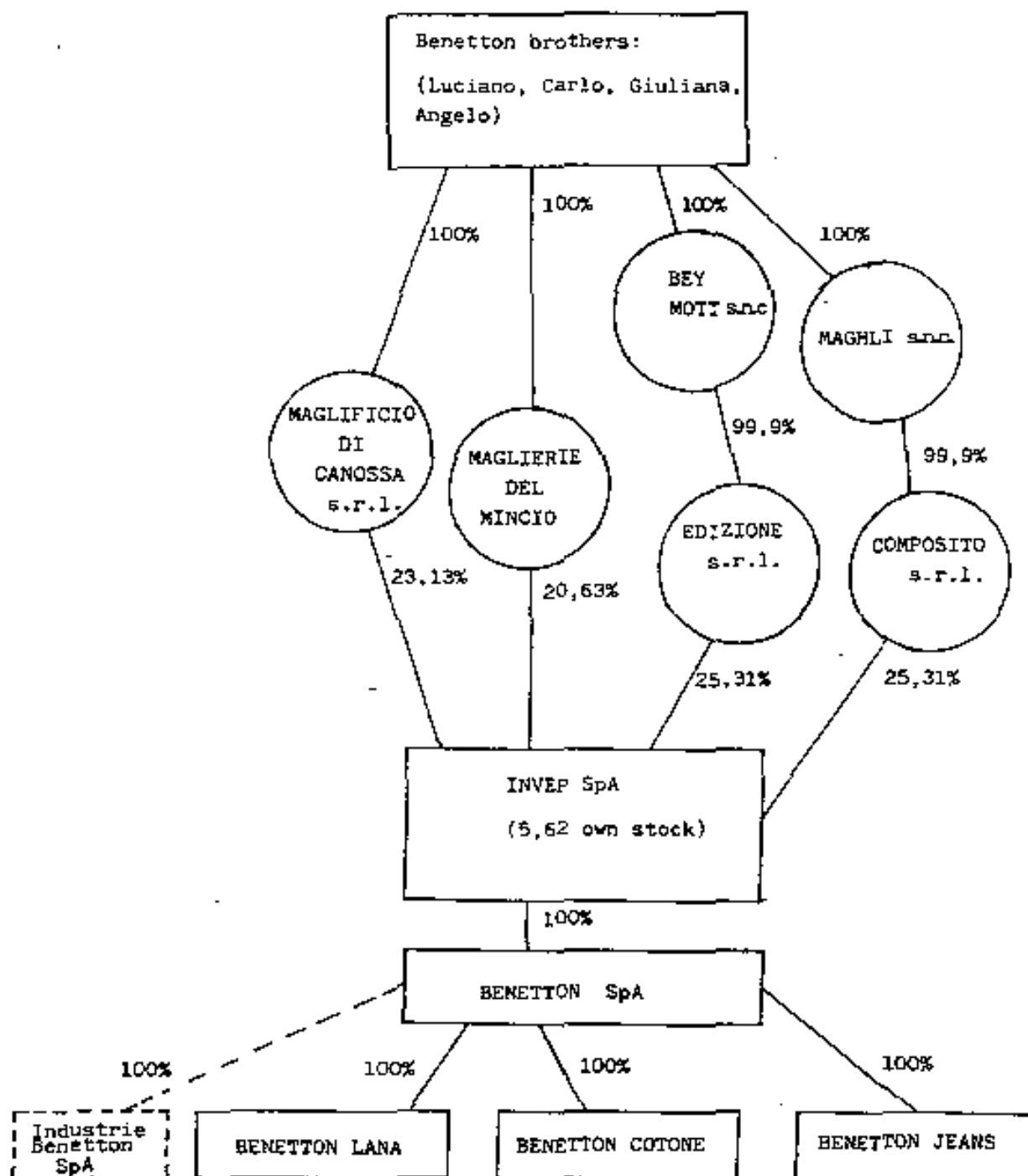
as of December 31, 1983.

NAME	LOCATION	CURRENCY	CAPITAL STOCK	PERCENTAGE SHARE HOLDING
<u>Parent Company</u>				
INVEP SpA	Ponzano V.to (TV)	It.Lire	8,000,000,000	
<u>Italian subsidiaries</u>				
Benetton SpA	" "	"	31,000,000,000	99,99
Benetton Lana SpA	" "	"	24,700,000,000	100,0
Benetton Jeans SpA	Cusignea di Giavera del Monteilo (TV)	"	15,600,000,000	100,0
Benetton Cotone SpA	Fontane di Villorba (TV)	"	3,200,000,000	100,0
Industrie Benetton SpA	Ponzano Veneto (TV)	"	200,000,000	99,0
In Factor SpA	Milan	"	2,000,000,000	70,0
Fiorucci SpA	S.Donato Milanese (TV)	"	2,500,000,000	49,0
Fiorwil s.r.l.	Milan	"	20,000,000	48,02
Edma s.r.l.	Bari	"	30,000,000	48,51
Azzurro s.r.l.	Brescia	"	90,000,000	
<u>Foreign Subsidiaries</u>				
Benetton International Holding S.A.	Luxembourg	S.Fr.	23,000,000	100,0
Benetton SARL	Paris	Fr.Fr.	11,536,000	65,33
Benetton Informatique	" "	"		65,00
France SARL	Gentilly	"	20,000	97,00
Hoben SARLE	Paris	"	1,000,000	
Nota Bene France SA	Toulon	"	100,000	100,0
Arcobaleno SA	Paris	"	2,224,400	53,94
Benham G.m b.H.	Amburg	D.M.	750,000	96,67
Stuttben G. m b.H.	Stuttgart	D.M	900,000	100,0
Brenover G. m b.H.	Bremen	"	700,000	98,57
Ber-Ben Textil handles G. m b.H	Berlin	"	500,000	100,00
Benetton SA	Bruxelles	B.Pr	35,000,000	100,00
Tabando Ltd.	Hawick	Leg	500,000	100,00
Benetton Sportswear Ltd.	London	"	60,000	100,00
Benetton SA	Barceilona	Ptas	25,050,000	100,00
Benetton Japan K.K.	Tokio	Yen	25,000,000	100,00
Fiorucci International Holding SA	Luxembourg	S.Fr.	1,000,000	49,00
Fiorucci Inc.	New York	U.S. \$	200,000	49,00
Benetton Service Corpo- ration	New York	U.S. \$	50,000	100,00
Benetton West Inc.	S.Francisco	U.S. \$	120,000	75,00

Source: Benetton Group Annual Report, 1983

Figure 1

Financial structure



similarities with Italy, the first foreign shop was established in France [Racchah, 1983]. In 1974 French sales were 500 million Lire. Three years later, in 1977, the Benetton exports to France exceeded 7 billion Lire.

Since 1978 Benetton has increasingly shifted more attention to expanding its foreign markets. In 1983 (see Table 2) the French market represented 17.6% of total production and the number of Benetton shops had grown to 387. After conquering the French fashion market, Benetton turned to other European markets, in particular, Germany, the Benelux countries, and the United Kingdom. Later export efforts have concentrated mostly on the U.S., Canadian and Japanese markets. By the end of 1985 the total number of Benetton shops in the U.S. was close to 400 (see Table 2), and the total number of Benetton shops abroad was nearly 2000. Benetton actively continues to seek potential new markets. According to forecasts, the U.S. will be its most important foreign market.

Benetton's crucial years of fast growth were between 1978 and 1981, during which time total sales increased from 55 to 322 billion Lire. The increase in export was clearly the leading component in the growth of sales.

1.3 A "decentralized" production strategy ^

Benetton's international strategy has thus far concentrated more on developing a commercial network than on foreign direct investment. Almost all of the production activities of the group are concentrated in Italy, most of them just in one province: Treviso. There are only three small factories abroad (in France, Scotland, and Spain) and one

TABLE 2

Benetton Group Performance

	1980	1978	1980	1981	1982	1983	1984	1985
Sales	33	55	190	322	400	475	623	850*
% Export	5.3	26.6	33.0	40.0	44.0	54.0	55.0	nd.
Employees	912	1019	1287	1677	1538	1565	1590	nd.
% white collar workers	nd.	nd.	20.6	20.2	26.0	28.4	nd.	nd.
% Export on totale sales								
- France			16.1	21.3	16.6	17.6	15.5	
- Germany			8.6	11.1	10.0	14.2	14.2	
- UK			-	-	3.6	5.2	5.2	
- Benelux and Switzerland			3.1	3.0	5.6	6.1	5.4	
- Svezia			0.2	0.5	0.8	0.6	0.5	
- Spain and Portugal			-	-	-	-	3.0	
- US			0.8	0.5	0.1	2.4	7.7	
On total sales								
Exp. Knitwear				43.0	52.0	61.0	63.0	
Exp. Cotton prod.				30.0	38.0	53.0	53.0	
Exp. Jeans				31.0	37.0	46.0	46.0	
Domestic B.shops					1165	1227		
Foreign B.shops					752	1069		
- France					283	367		
- Germany					168	233		
- UK					44	63		
- US					36	66		
- Benelux					25	44		
- Japan					nd.	38		

* Forecasting

Source: Benetton SpA, Ufficio Marketing, 1985

planned new factory in the USA (at Rocky Mount, North Carolina, which will begin production of cotton garments in 1986.)

From the beginning, Benetton chose to create a "subcontracting system." In this way, a consistent part of the total value added, which is estimated to be at least 70%, is made by about 200 small artisan firms located near the Benetton plants.

This strategy of "decentralization" of various productive phases to subcontractors is not unique to Benetton firms, but rather characterizes the reorganization of many Italian companies in the 1970s. This system of production has implications for Benetton employment: during the high growth years between 1978 and 1981 when sales soared, employment increased very little.

This pattern of production casts doubt on the general applicability of the thesis that labor-intensive "mature" industries will be progressively displaced to LDCs.

2. Technological innovation

2.1 The formation of a "technology trajectory"

While Benetton is commonly acknowledged to be an innovative firm, the specific features of its innovative process have been an inadequately conceptualized. In the section which follows we shall focus on the determinants and the effects of the introduction of innovations, and on their relationship to Benetton's corporate organization. According to the traditional distinctions in innovation literature [Freeman, 1982], innovation can be oriented to:

- (a) product changes;
- (b) process changes;
- (c) organizational changes.

Table 3 illustrates the main innovations introduced since 1965 (the year in which the Benetton company was established.) The expansion of Benetton is characterized by the systematic coordination and complementarity of the innovation efforts in each of the above three dimensions. In analyzing the major innovations introduced by Benetton (in Table 3), we can distinguish four major phases according to the shifting focus of innovative and adaptative efforts.

In terms of the first phase, from the beginning (1965) to 1970, we observe three dominant features: (a) the introduction of in-house incremental innovations in machinery, through minor but effective changes of ordinary second-hand machines bought in the market and adapted by the firm itself, (b) the building up of the retailing system discussed earlier, which made available a major specific resource to the general growth of the firm, and (c) special attention towards a product differentiation strategy, with the

TABLE 3

Major innovations introduced by Benetton

Innovation	Year	Description	Cost	Main Characteristic	Source	Reason for Introduction	Effects of Innovation
Modification of Knitting Machinery	1965	Modification of machines for manufacturing women's seamed stocking	low	Process/product innovation	In house (modification of existing machinery)	Availability of cheap second-hand machinery due to depreciation	Reducing investment costs
Machinery for striking wool	1965	Machinery with wooden arms that soak wool in water	low	Process/product innovation	In - house production of machinery	Effort to use less expensive material (recycled wool or hard and rough wool)	Reducing input costs
Use of light colours (e.g. "pastello") in casual fashion goods	1965		low	Product innovation	In - house		Product differentiation
Franchising system for the chain of shops	1968	Invention of the Benetton chain of shops		Organisational innovation in retailing	In - house	Direct knowledge of the consumer's preferences. Use of shop for advertising and marketing. Reducing the uncertainty about the market. Assuring outlets to the production and easier planning and coordination of the productive process	Improve competitive position. Establish brand loyalty and exclusive niches in the market

TABLE 3 (cont.)

Internal organization and layout of shops.	1968	Invention of the "Benetton shop" Reduction of space and labour. Rationalization of the lay-out	low	Organisational and process innovation in retailing	In-house (realised with external expertise)	Reducing costs for the retailers	Ceteris paribus, lower prices Uniform "Benetton image"
Dying product in final phase	1972	Dying centre (with washing machines)	n.a.	Process/organisational innovation	In-house (adaptation of existent machinery and improvement)	Allowing production of knitwear following the market requirements for specific colours. Sharp reduction in warehousing.	Marginal increase in productive costs, but with major improvements in the competitive position
Knitwear stretching	1972	Knitwear stretching through rotation in order to bring back the item to its original size after dying	low	Process innovation	In-house adaptation of machinery	Solution of "Technological bottleneck" caused by after-production dyeing	" "
Automation of knitting	1979/84	Total substitution of the old looms with automatic looms	high	Process innovation	Bought (with in-house improvements)	Reducing labour costs (- 57%) 6 looms for each workers instead of 2	Higher productivity, of equipment of labour and higher quality of product

TABLE 3 (cont.)

Introducing CAD system	1980	automatic size grading	high	Process innovation	Bought (CAMSCO)	Labour productivity growth (one operation that previously lasted 24 h, now can be done in 15 minute) Material-savings from 8% to 15-16% Utilising 85% of the fabric	Reducing unit costs Improving product - quality (diversification)
Information Network	1980/85	Hardware based on four main frame computers:	high	Process innovation	Bought (3 units of Siemens-Pu)itsu 7805, and one OLI vetu) 5330)	Easier management control on the system, improved speed and quality of management information. Reducing the time for shops order and re-order	Improved dramatic the competitive position
Office automation	1980/1984	Personal Computers	low	Process innovation	Bought (IBM)	Improves the productivity of clerical workers	Reducing organisational costs
Automatization of the spreading out of the fabric prior to cutting	1982	Extension of the work tables (from 25 to 35 meters) and lifting up of fabric by air	n.o.	Process innovation	Bought	Reducing required physical effort of the workers, improving productivity	Reducing costs

TABLE 3 (cont.)

Automation of dyeing	1982	Automatic dyeing machines	high	Process innovation	Bought	Reducing dying time (- 20%) from 2,30 to 2 h. Improved quality control	Reducing time lag of adaptation to demand
Automation of cutting phase (Jeans and cotton)	1980/ 1985	M.C. machine-ry Attempt to introducing laser cutting (partial failure)	high high	Process innovation	Bought		Reducing costs and standardization
Automated warehouse	1984	New fully automated establishment concentrating all the storage activity	High 36 bil- lion lire	Process innovation	Bought from Comau or custom order	Reducing delivery time Improving control of orders	Improving the competitive position

introduction of light colors ("pastello") in casual and sport fashion.

Benetton has exhibited unusual entrepreneurial talent for utilizing already existing resources and knowledge. An example is the adaptation of second-hand machines, originally used to manufacture women's seamed stockings (at the time out of fashion) to produce knitwear. These machines, which at the time provided 90% of Benetton's knitting capacity, were purchased for approximately \$1,000 per machine, converted for an additional \$4,000 each. The same machines were valued at roughly \$470,000 each in 1982 [Harvard Business Review, 1985].

Another example is the adaptation of a very old and known system of striking and dyeing wool in the final manufacturing phase. This process was adopted by Benetton after a trip by Luciano Benetton to Scotland, where this process is usually used in artisan shops. Benetton transformed it into an industrial process, which allowed it to better follow the variability of demand.

The development of the technological trajectory [Dosi, 1982] appears to be a very complex process. In the case of Benetton, a significant role is played by:

- (a) the tacit knowledge about the productive process;
- (b) the capacity to link the innovations to a systematic "vision" linking production and distribution (that is, an integrated entrepreneurial strategy);
- (c) the cumulative advantage coming from an innovative lead.

Many researchers have explored the diverse patterns of technological change (see in particular Pavitt, 1984). Clothing firms are considered "supplier dominated" with only a weak tendency towards innovative activity.

According to Pavitt (1984), in such industries, (a) technological change comes (exogenously) from suppliers' equipment and materials, (b) the technological trajectories are defined in terms of cutting costs.

However, in the case of Benetton we can observe two specific phenomena. First, there is a domain of "non-technological" innovations directly linked to design, trademarks, advertising and so on. Second, one observes process-related innovative activities, which are complementary to purchases of equipment from outside.

This last aspect appears linked to a specific knowledge about the productive process, and is based on the engineering capabilities of the entrepreneur. Even now Giuliana Benetton daily goes to the factory, controlling and making minor modification in the looms.

It is important to observe that this technical know-how existed before the constitution of the firm (and in fact, it can be considered a necessary, if not sufficient, condition for the creation of the firm, as well as for its success). Historically, Treviso is an important area for textiles in Italy: the young Benetton brothers worked in the textile industry as blue collar workers (they came from a poor family and were forced to leave school because of economic circumstances). Their knowledge of the productive cycle came directly from the shopfloor.

In the intermediate period -- in the 1970s -- the growth of Benetton was

not characterized by the introduction of any major innovations. Rather, the firm was searching for an autonomous and original process of learning by doing.

In a third phase (approximately 1977 to 1982) the distinguishing element is the introduction of process innovations aimed at a higher level of automation in some production processes (cutting, knitting and dyeing). This phase is characterized by the acquisition of external new technology supplied by the machinery producers. The rate of growth in the domestic and foreign markets requires (and allows for) an increase in the scale of adoption of new and expensive automated machinery. More than in the first period, the introduction of innovations was pushed by outside technological opportunities and based on the use of microelectronics in the industrial machinery.

Certainly, this technological "leap" appears to be a consequence of (or at least allowed by) the expansion of the firm. However, at the origin of the Benetton technological trajectory there are incremental improvements of machinery and "innovative" procedures and behaviors.

The more recent phase is characterized by a wider use of new Information Technologies [Freeman, Soete, 1985], involving the building up of an information network to connect productive and commercial activities, the first application of CAD, and a new automated warehouse.

2.2 The information technology

This section looks at the attitude of Benetton toward Information Technologies. The evolution of the firm's information network has been characterized by two major phases: first, the initial building up of a private network, able to cover almost all the European continent; second, a shift in 1984 starting with a

"pilot project" in the U.S. and using an existing external network [Coppola, Croce, 1985].

The private information network initially set up by Benetton was designed to three fundamental functions, namely: (a) collecting orders from Benetton's sales agents, (b) storing detailed order information by shops (color - size - model), and (c) financial accounting. This system was developed in the early 1980s.

The time lag in order collection was markedly reduced, allowing for an optimization of the productive cycle and a better utilization of capital equipment.

Notably, "real time" planning of production based directly on shops orders had the effect of reducing the typical seasonal peaks characterizing this industry. Moreover a great reduction in the warehouse average to just a few days became possible, with all products leaving the factories already labeled and ready for delivery.

The specific use of such a private and exclusive information network was supported by a unique organization of production. Unlike other firms in the fashion sector Benetton only produces goods in response to direct orders. This has an enormous influence on total costs, and on the capacity of the firm to follow market trends.

In 1985 Benetton experimented with another interesting application of microelectronics. All information about each item (model, color, size) is recorded on a computerized cash register in each of about 200 shops located in four strategic markets: every day this information arrives at the headquarters and is recorded in the main computer. This enables real time projections of market trends.

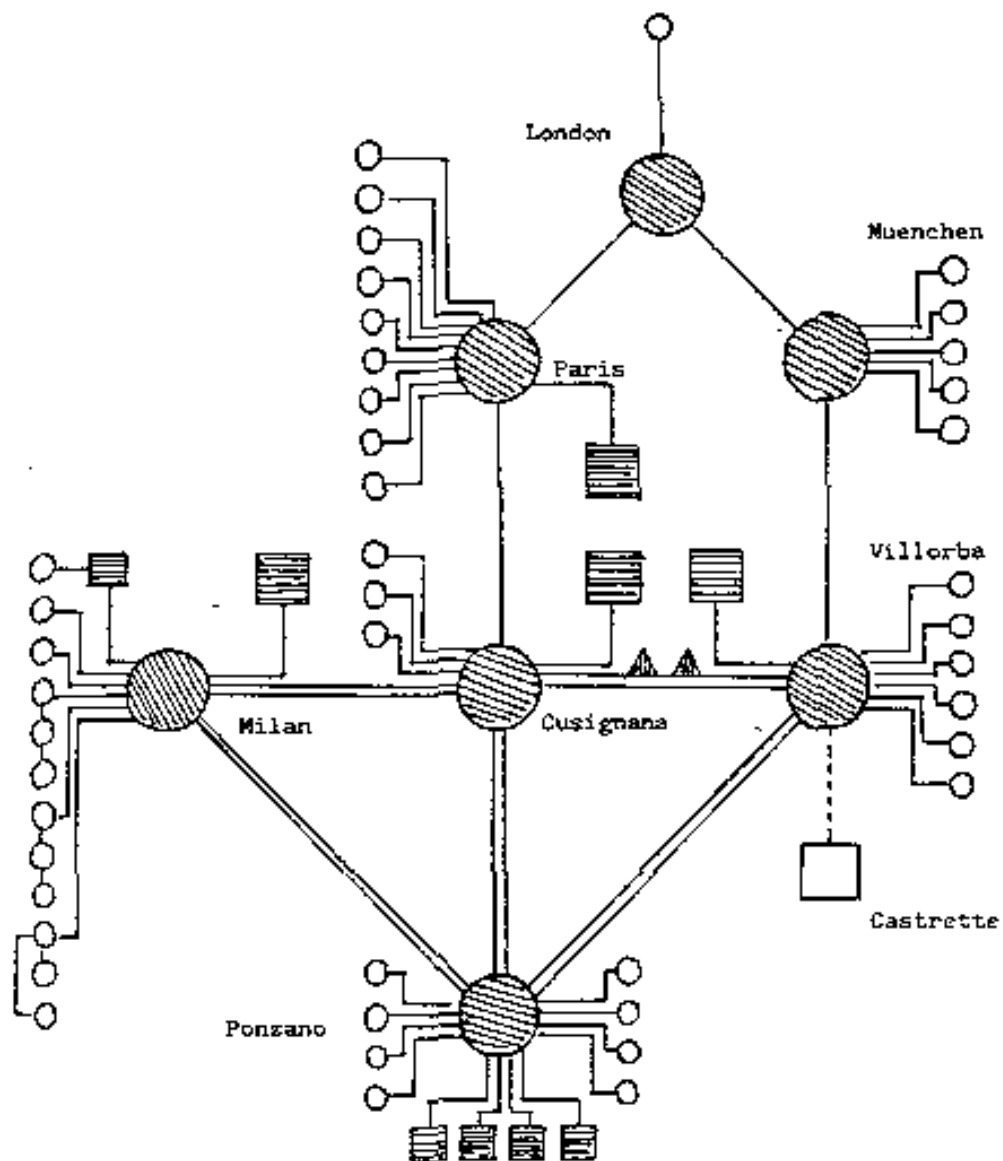
Figure 2 depicts the information system at the end of this first phase (in 1984). The shift to the second phase which is now underway with pilot studies and experiments, was due to several reasons. First, the size of the private network had to be able to deal with the two seasonal peaks (before Christmas and in Spring): this implied large underutilization of the system for a major part of the year. A second problem for the private network originated from networks which private systems had to utilize for long distance link-ups.

During 1984 a new phase began: the private network was sharply modified and Benetton decided to link it to another private network (the Mark III General Electric's Information System), and to use a linkage with a bank network for the financial data system. Both systems were tested in the U.S. in 1985. On the commercial network each agent had an IBM XT personal computer connected to the Mark III service. The network structure works through the utilization of three centers that function like a "mail box": they collect and file the orders until Benetton decides to take them up.

All operations can be simultaneous. This commercial network combines internal elements of business organization with external communications services.

The parallel financial information network also makes use of external network services. A pilot project is now underway in the U.S. with 200 clients: each one can make payments to any bank, and the Federal Saving network concentrates them in the City Bank which is linked up with Benetton through its own network.

Figure 2
Benetton
Information System



Source:

Benetton Group
Annual Report
(1983)



Network node



E.D.P. center



Cluster controller



Remote job entry

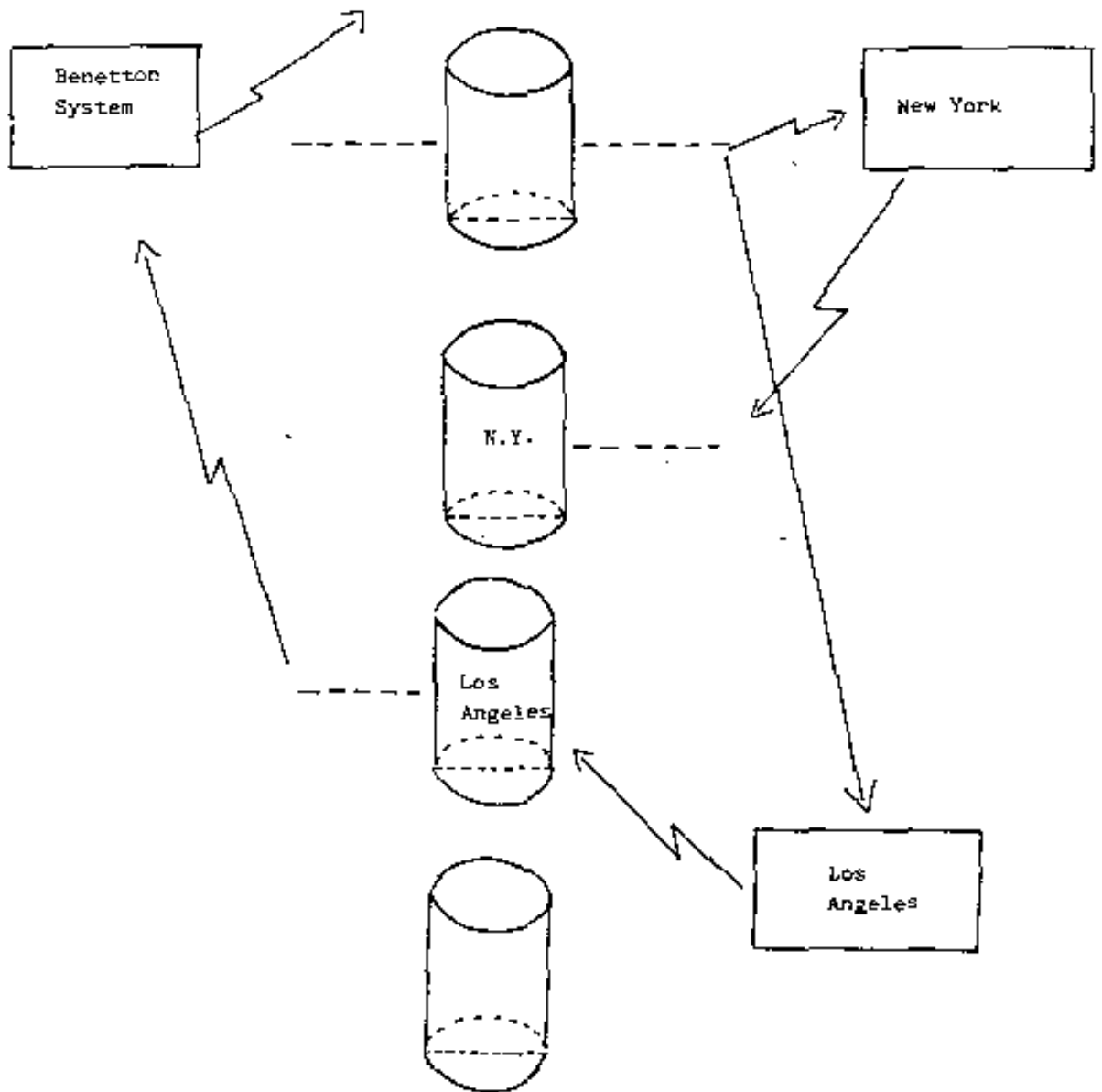


Process control computer

--- Line in course of completion

Figure 3

The Benetton USA information network (1985)



2.3 The firm's movement toward automation

2.3.1 The automation of warehousing

For Benetton one of the most significant technological innovations is the robotization of new warehouses. The dramatic growth experienced over the last few years and the further plans for expansion have led towards a general reorganization of all internal functions. A completely automated warehouse servicing all Italian Benetton factories was set up in 1984. This constitutes the first major entry of Benetton into industrial automation with a project developed jointly with COMAU based on COMAU hardware and Digital Equipment data processing. This is the second project of this spare parts warehouse of FIAT in Turin.

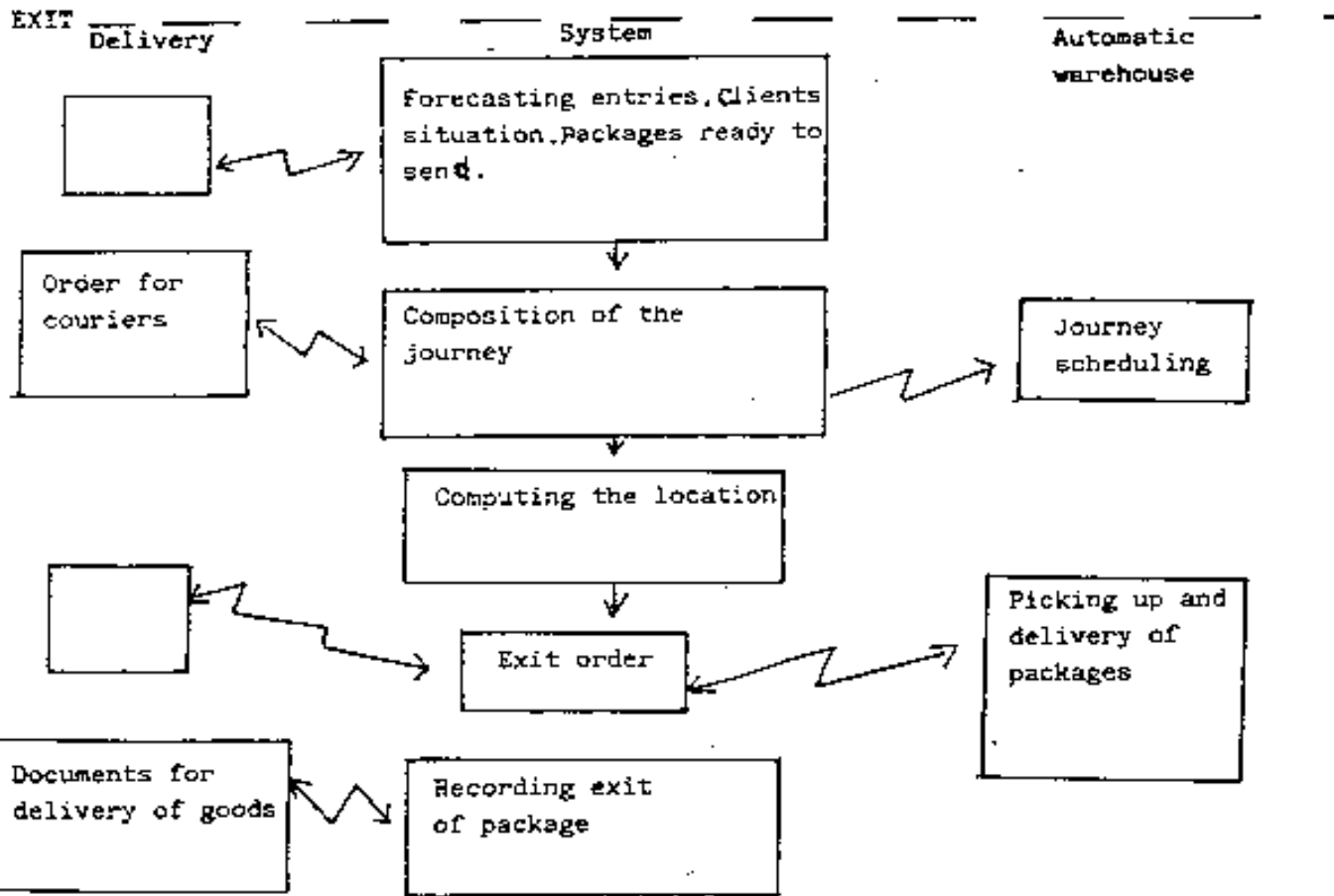
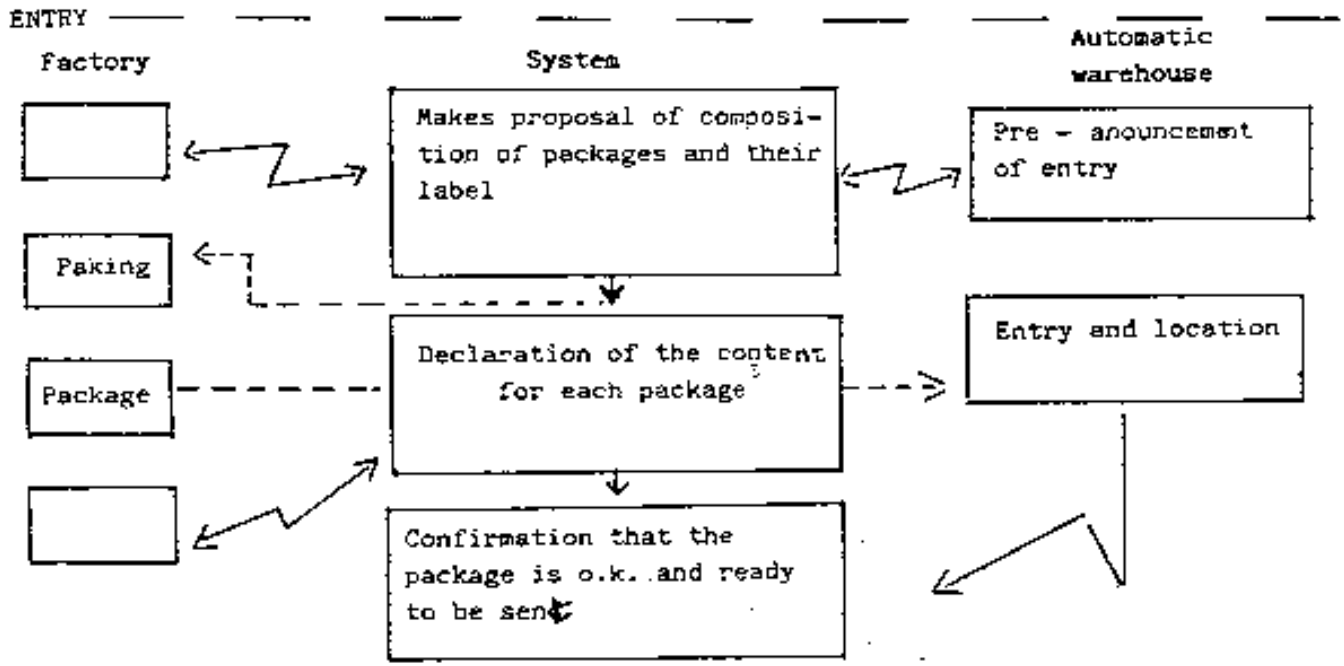
There are many interesting innovative features. The work-unit is not the "pallet" (of the same items) but the single package of items. This variation involves a radical change of the movement of inventories warehousing, and delivery systems. Given the importance of the retailing system in ensuring stability to growth, a crucial role is played by delivery: just consider that in 1984 Benetton produced nearly 35 million items.

The organization of the new system eliminates the manual picking of items as well the manual storage in specific product mass. The use of internal space is organized around the delivery system, each item being located on the basis of a minimization of movements for the entry and exit of the good.

The duty of the workforce is limited to maintenance of the plant. Each trolley for item handling is provided with a demodulator and a processor that decodes the signals. This system

Figure 4

Warehousing Logic - system



only requires a workforce of 16 people (8 maintenance workers, 1 warehouseman, 6 computer operators, and 1 area director). If the warehouse were organized in the old way, we estimate a need of 80-100 workers.

2.3.2 The automation of design functions

A further technological advance is represented by the introduction of a CAD (computer-aided design) system. It is utilized primarily for the development of the size grading phase. When the prototype is ready, it is possible to automatically obtain the whole size range for a particular design on the platter. At the same time the computer is able to calculate the best utilization of the fabric. The gains in productivity are of two types. First, the use of this technology allows a reduction in the number of designers. Second, the use of this technology allows better utilization of materials. According to the manager of Benetton's information system, the design of the template requires only 15 minutes [Il Sole 24 Ore. 1/24/84]. Done by hand the operation requires 24 hours.

Benetton's strategies in this area have been delayed, however, by the shutdown of CAMSCO in the U.S. As a consequence the placing of templates, and automated cutting of the material has yet to be automated.

2.4 On the "traditional indicators of innovative activity"

In the traditional sectors (such as textile and clothing) the ordinary indicators of inventive and innovative activity (R&D, patent statistics) have proved to be poor indicators of innovation and innovation diffusion, especially at the level of the firm. In all

TABLE 4

Diversification strategy of Benetton

	1965	1972	1978	1984
Number items	n. a.	n. a.	6,000,000	35,000,000
Number (internal) blue collar workers	n. a.		718	1232
Model number	6	n. a.	n. d.	1200
Colour number	2	n. a.	n. d.	280
Average number of colours in each shop.	2	n. a.	n. d.	70
Number main product areas	1	3	3	3

Source: Benetton SpA - Marketing.

countries, these sectors generally appear to be characterized by a low ratio of R&D to output, and an insignificant number of patents.

However, in many cases the innovation activity is indirect (organized by the supplier firms of the equipment); implicit (localized in other areas of the firm: project production departments, and not in formal R&D laboratories); or intangible (entrenched within the organizational strategy).

Therefore, it can hardly be measured at one single statistical level. Table 5 shows the "R&D profile" of Benetton. The R&D definition is rather approximate: these activities have more to do with engineering, with chemistry (for the color experimentation) and design functions and even more so with the information system. In terms of percentages over sales, advertising (2.8) is much more important than the innovative functions (0.5) estimated (see table 5).

TABLE 5

R e D activity (1984)

R e D expenditures	3 billion Lire
% sales	0.5%
Totale personel	50
- engeneering	10
(adaptabiliy of the machinery)	
- designers	10
software experts	30
Advertising (1983)	20 billion Lire

Source: Benetton S.p.A. - Marketing

3. The effects of the innovations on firm strategy

3.1 The firm as a system

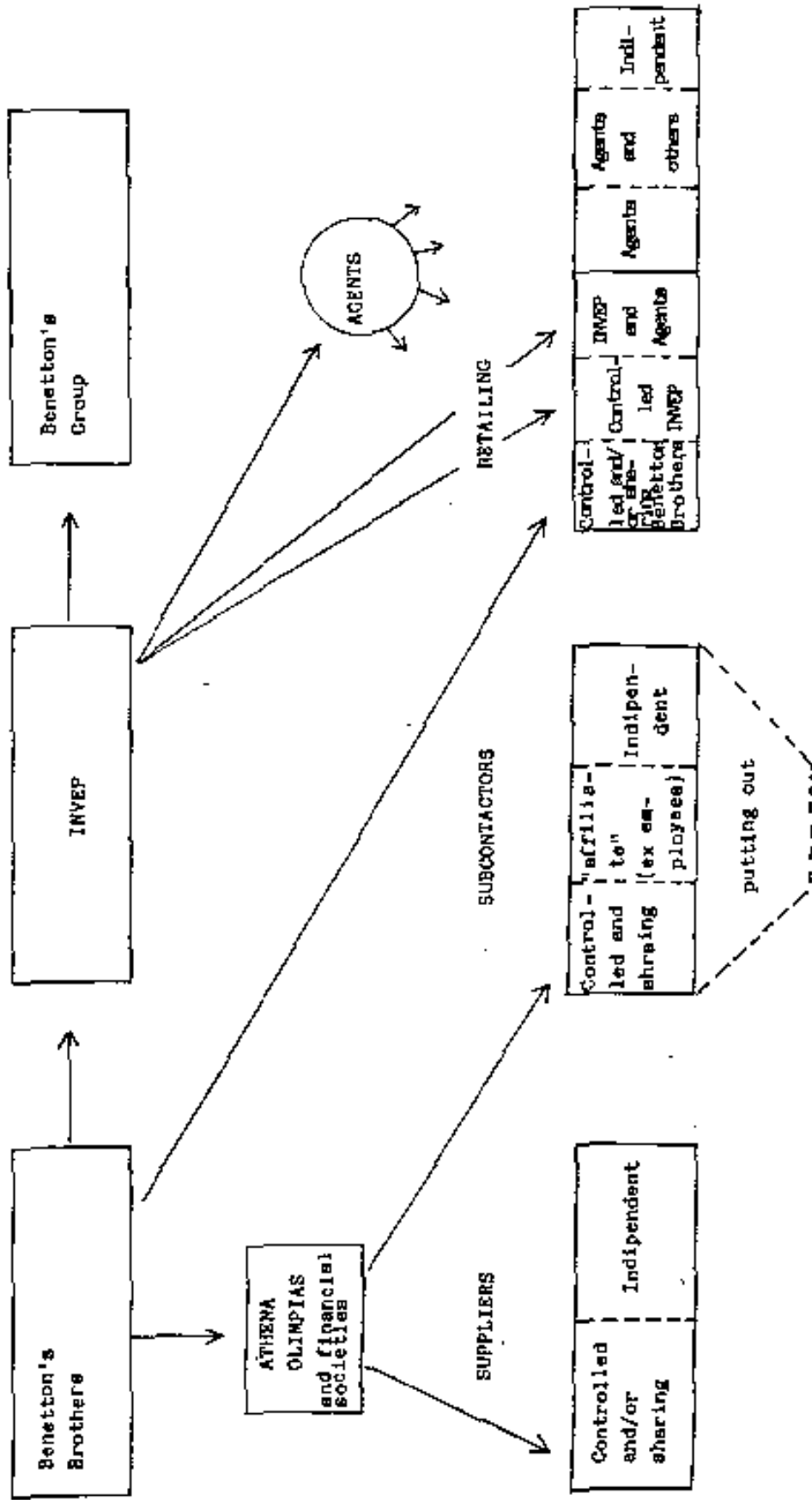
3.1.1 The Benetton system: the structure

To understand the extent of what we call the "Benetton system" a simple analysis of the financial/productive arrangement is not sufficient. This system incorporates not only does not the Benetton firm, but also several other actors gravitating around the firm (suppliers, subcontractors, retailers). The Benetton brothers, through Benetton Group SpA, exert financial control over the entire Benetton Group, and through other financial societies they enter directly into the area of suppliers and subcontractors. The retailing system is divided into six parts with a very large variety of forms of control. In Figure 5 one can see the pattern of the relationships between the different actors and activities.

Let us consider the hierarchical structure which extends its scope and control outside the firm's boundaries. In a different form, Benetton appears to have been able to construct market and non-market relations with external partners. Notably, part of these links are based on "quasi-family" links with some retailers/commercial partners and subcontractors.

One may also appreciate what contrasts the Benetton system with the vertically integrated firm: market relations enter within the system, and regulate some of the interaction between actors. One observes elements of quasi "disintegration" which extend the use of market discipline in all directions: input supply, production, retailing. This structure of the system combines the "efficiency" of

FIGURE 5 Organizational structure of Benetton and relation with the market



Source: "Rapporto di ricerca", Fondazione Corazzin, 1984
Il sistema Benetton

market discipline with "security/loyalty" effects of hierarchical integration.

Finally the Benetton structure is also linked together by direct control of some firms in each area of activity by the members of the Benetton family.

The division of labor is related to the crucial initial phase of designing, size grading, cutting and, at the end of the productive cycle dyeing (30% of knitwear is dyed at the end of the productive cycle), quality control, packaging, labelling, warehousing and delivering. Figure 6 shows the complex product flow through the system.

3.1.2 The Benetton system: the actors

3.1.2.1 The suppliers

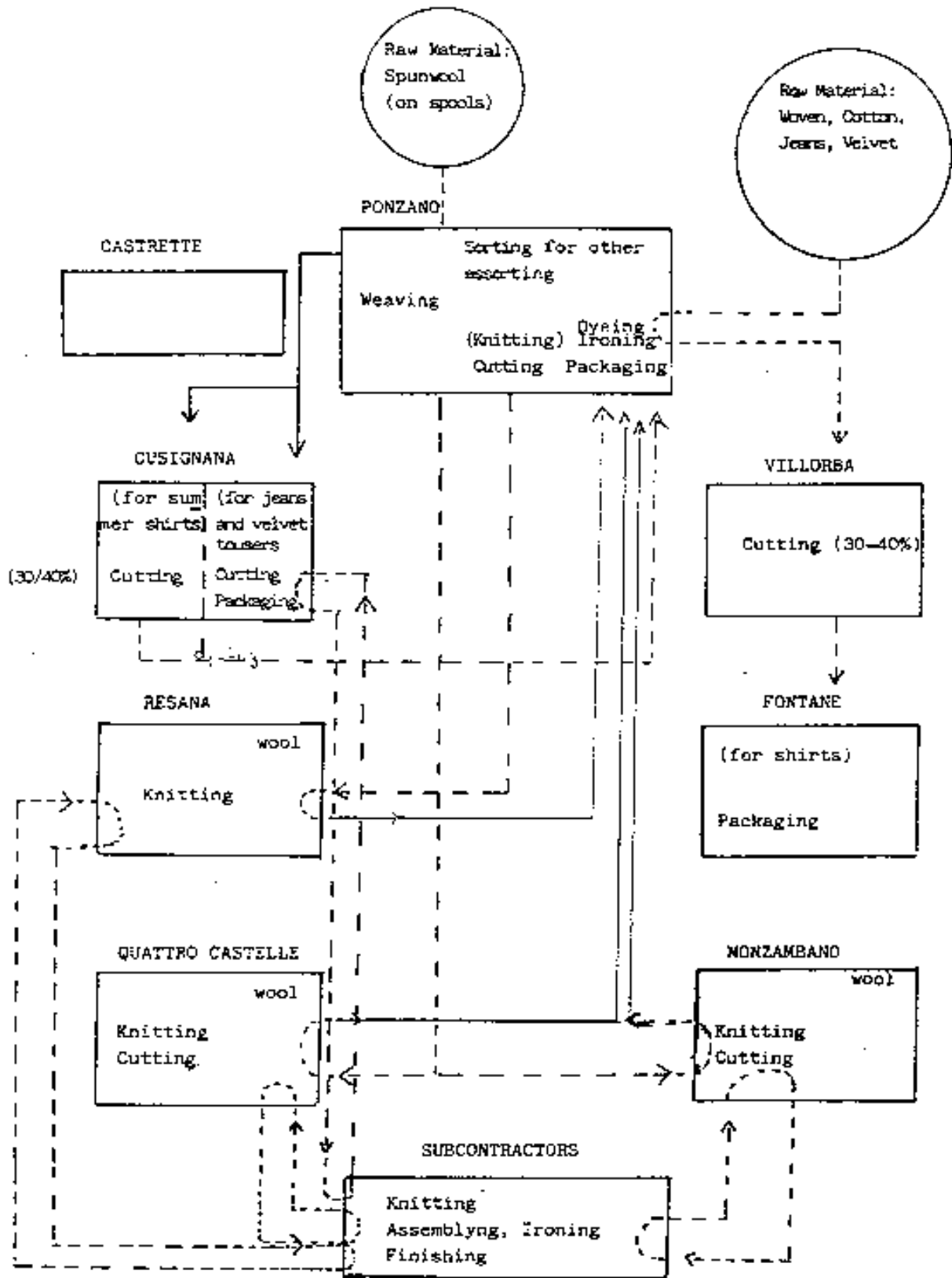
The area of "suppliers" includes about 10 important firms. In Table 6 one can observe the different importance of the raw material utilized. The principal one is wool. It is important to note that in this important input market, Benetton has established a "privileged" relationship with the publicly owned Lanerossi, a firm of the ENI group that produces cardyarn.

The gradual concentration of purchasing wool from just one firm results in Benetton control of 70% of Lanerossi sales. The effects of such monopolistic power are in terms of price, quality and reliability of product.

In cotton-fabric the most important supplier, covering 50% of Benetton demand, is Cotofificio di Ploesti, controlled by Benetton through 30% shareholding.

FIGURE 6

Diagram Showing the Flow of Work Through Benetton's Factories and Subcontractors.



Source: Harvard Business School, ISTUD, 1984

TABLE 6

Sales 1983

	Number of items	%	Value	%
Wool	11;3002;000	42,4	212,380,000	45,9
Cotton	7;790;000	29,2	90,975,000	19,7
Jeans	7;573;000	28,4	158,675,000	34,4
TOTAL	26;665;000	100,0	462,030,000	100,0

Source: Benetton SpA - Marketing

3.1.2.2 The subcontractors

The subcontractors are involved in the labor intensive phases of production: assembly, finishing, ironing. Figure 7 describes as an example the manufacturing process for knitwear. There are about 200 firms with an estimated total employment of 15-20,000 workers. Subcontractors and groupers perform around 40% of the company's knitting of wool, 60% of the work of assembling garments and 20% of the finishing operations. Note that a common element of these production phases is the lack of scale economies.

The subcontracting firms can be divided into 4 main categories: (a) those under financial control of the Benetton family (through various financial companies); (b) the "affiliated" firms; (c) the independent firms; (d) the homeworkers. "Affiliated" firms are those belonging either to former employees or to actual Benetton managers or clerks. Benetton has directly promoted the creation of such firms with the guarantee of orders in the start-up phase.

This subcontracting system has two main advantages for Benetton: (a) the use of external managerial resources, and (b) a significant reduction of the labor cost (one can estimate that in terms of unit labor cost the savings is about 40%). Subcontractors agree to work exclusively for Benetton because of the stability of demand and the guarantee of a 10% profit margin on their sales (see Table 7). The typical subcontracting firm is small (20-40 employees), but there are also firms with about 80-100 employees.

The Benetton firm is very advanced in estimating industrial costs: for every phase that is decentralized a detailed cost analysis is made. Benetton provides the product standardization and

FIGURE 7

Manufacturing process configuration
for knitwear (1984).

SUBCONTRACTORS	BENETTON
Knitting	Knitting <u>designing</u> *
	Cutting <u>grading</u>
	<u>marking</u>
Softening	
✓ Tocking	
Serving	
Assembly	Assembly
Finishing	Finishing
	<u>Dying</u>
	<u>Labeling</u>
	<u>Quality control</u>
	<u>Warehousing</u>
	<u>Delivery</u>

* The stressed phased are developed exclusively in the Benetton establishments.

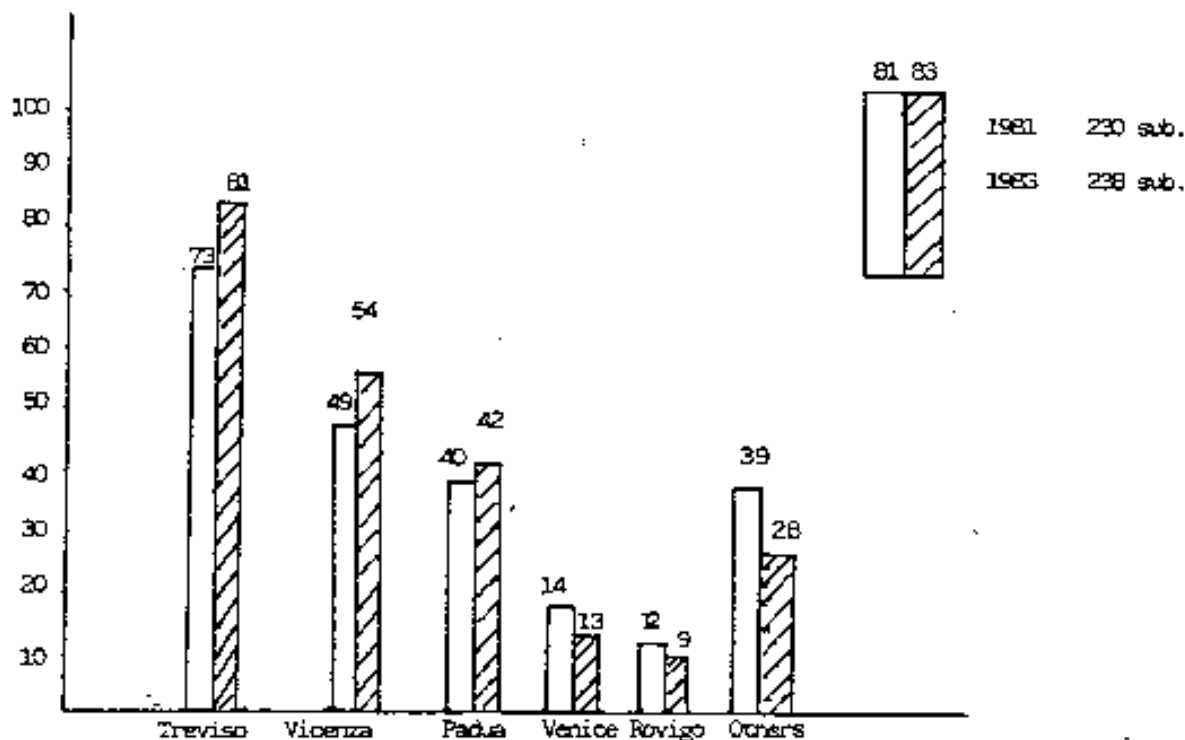
TABLE 7

An analysis of costs and profits for a typical
Benetton shop, and comparisons with competitors.

	Typical Benetton Shop	Shop of European competition	American Specialized chain store
Annual sales in \$	150,000	150,000	400,000
Selling space (in sq. ft.)	400	1,200	2,000
Storage space	-	300	150
Initial margins, as % of sales prices	44%	50%	52%
Realized margins, as % of sales prices	39%	45%	44%
Medium price for unit in \$	30	40	55
Employee hours for week	90	200	230
Selling hours for week	45	45	76
Average store inventory, at cost \$	30,000	50,000	95,000
Expense categories as % of sales:			
- cost of good sold	61%	55%	56%
- labour	14%	29%	22%
- rent	5%	7%	5%
- other	8%	6%	8%
- (profit) net	12%	3%	9%

Source: Harvard Business School, ISTD, 1984.

FIGURE 8



Typical balance of subcontractors firm.

Depreciation and general costs	10% - 15%
Financial overheads	10%
Gross profit margin	10% - 12%
Labour costs	70% - 63%

Source: Rapporto di Ricerca, il sistema Benetton, Fondazione Corazzini, 1984.

process optimization procedures, so that satellite firms can increase their productivity. Labor productivity in subcontracting firms is estimated to be 10% higher than that which could be achieved through in-house manufacturing (this is due essentially to higher working pace and higher worker control that is exerted there).

3.1.2.3 The sales agents

Benetton had achieved its retail distribution through an unusual arrangement with "sales agents" in Italy and other European countries. An individual sales agent may supervise and hold an interest in a number of stores. Late in 1982, Benetton conducted its business with 35 such agents. Sales agents were paid by Benetton on the basis of a commission of about 4% of the factory sales of goods sold through their retail outlets, in addition to their share of the profits of the store in which they held ownership shares.

The functions of these sales agents are "crucial" in the Benetton "informative system." They present the Benetton collection to shop operators in their own regions, collect orders for the initial stock and re-orderings during the season, thus playing vital control functions in the whole system.

3.1.2.4 The retailers

As we have already mentioned both the Benetton shop and the retailing system can be considered a fundamental organizational innovation. The retailing system has been modified over time and has exhibited different patterns of ownership.

In a first period the interest of the Benetton family was directly focused on the retailing area. Later on they divested their

capital from this business area in Italy. In the other countries the share of shops owned by the family or by INVEP has risen. One may estimate that out of total 2300 shops in 1984, about 500 are owned by the Benetton family, in different forms, and mainly in different countries. The other 1800 shops are probably controlled by no more than 100 persons, as far as majority shareholding is concerned.

The Benetton shop is standardized. This allowed an "optimized" lay-out for the display of goods and the selling system. The organizational and labor costs, as one can see in Table 7, are much lower than in other typical clothing shops. It is very difficult, however, to know the exact number of persons employed in Benetton's shops.

Another advantage, again in terms of space, is the absence of warehousing: indeed the items are exposed in the set of shelves. The absence of warehousing is linked to the use of the information technology and to the flexibility of the whole productive cycle. The commercial strategy of Benetton is to obtain a leadership in costs, and thus on prices: both in Italy and abroad, Benetton imposes the price of each item to the retailers. (This does not imply a reduction of the profit rate compared to other retailers, because the shop organization turns out to be less expensive.)

One can see in Table 7 that Benetton receives a higher share of the final price than competitors (61% compared to 55-56%), while at the same time the retailers get a higher net profit margin, too.

3.1.2.5. The labor force

The principal features of the Benetton system is a sharp division in the labor market between the "internal" labor force, around 1,600, and the external one, around 15-20,000 workers in the subcontracting factories.

The putting-out system includes also a certain amount of home workers, although it is impossible to assess precisely their number. It is important to note that these forms of "black labor" are not directly organized by Benetton, but by the subcontractor firms.

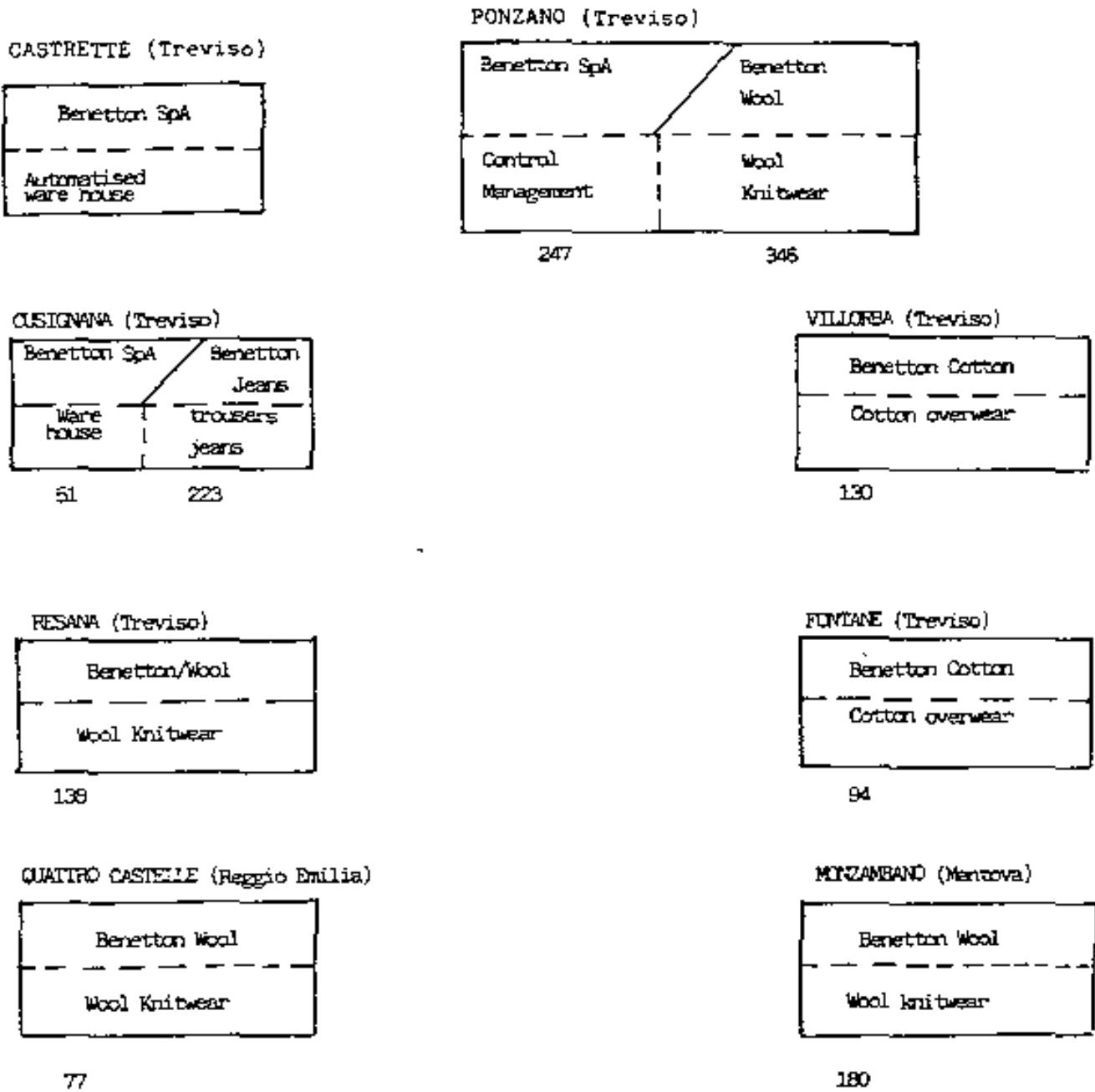
As one can see from Figure 9 the total internal labor force is divided into 8 productive units: the number of employees per plant is rather small. the industrial relation system of Benetton (see Tables 8 and 9) is rather simple and is characterized by:

- (a) an average rate of trade unionization (40.7%);
- (b) a strike rate lower than in other firms of the same industry;
- (c) a comparatively low union bargaining activity at firm level.

3.2 The domination of the market by the firm

3.2.1 The intensification of competitive forces

In Italy and in some other countries one of the specificities of the fashion industry is the dominance of small firms due to low entry barriers, and lack of scale economies. Another feature is the segmentation of national markets due to differences in taste and culture. The Benetton strategy has been aimed at reducing the impact of these factors upon the rate of growth of Benetton market shares. This was achieved through higher price competitiveness and the development of new companies (Stefanel, Tacchell Group, and so on:



Source: Benetton SpA, Marketing

TABLE 8

Unionisation

Trade Union Workers (total)	: 514	535
- White collars	16	12
Rate of "unionisation"	42.1%	40.7%

Source: Trade Unions (Fulva nazionale)

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TABLE 9

Lost hours through strikes per employee:
a comparison with some italian textile firms.

	1981	1982
Benetton	8.8	29.3
Manifatture Lane G.Marzotto e Figli SpA	11.5	41.8
Cotonificio Cantoni	61.7	38.0
Lanerossi	22.5	26.2

Source: R e S, 1983

see Tables 10 and 11) within a strategy of product diversification/differentiation. Tables 12 and 13 show the economic performance of the Benetton group within the textile sector. In comparison with other firms there is no particular Benetton leadership on the external labor costs. However, profit margins, investment in fixed capital and sales per employee are dramatically higher. In other words, Benetton has an "absolute advantage" [Dosi, Pavitt and Soete, 1986] in labor and possible capital productivity.

In Figure 10 we can observe during the 1970s the growth of market shares.

3.2.2 Getting closer to demand

A source of strength of Benetton since the 1970s has been the capability to adapt quickly to new and changing market segmentations. It discovered an unsatisfied "potential demand" -- the "casual" fashion for young people. As we have seen, Benetton was able to anticipate the direction of such market segments by intervening and reacting speedily to changing demand. Benetton's products (see Table 14) are concentrated precisely in areas of fastest growth in demand. All the strategy segments of the firm (information system, retailing system, etc.) are oriented towards something similar to a "just in time" system of response to consumer demand.

Figure 11 shows the importance within the organizational structure of Benetton of the "Informative System." Thanks to such an information system (see Figure 12) Benetton is able to reach the market 6-8 weeks before its competitors and thanks to flexibility of the system is able to respond within a very short time to the re-orders of the shops. In this way, it nearly "interacts" with the consumers.

TABLE 10

First italian three firms (sales) knitwear

	1979		1980		1981		1982	
Benetton	2.0	1.1*	3.4	1.9	5.4	4.9	5.1	4.9
Stefanel	0.3	-	0.3	-	n.d.	-	1.2	0.4
M C T	0.4	0.2	0.5	0.2	1.0	0.2	1.4	0.5

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JEANS

TABLE 11

	1982	
Benetton	6.0	7.2
Tacchella	6.0	6.4
Fratini	3.6	3.2
Gecofin	2.7	3.1

Source: Databank S.p.A.

* on total italian export

TABLE 12

Economic Indicators: a comparison with some Italian textile firms
(000)

	Net sales per employee		Value of fixed capital per employee		Net profit per employee	
	1981	1982	1981	1982	1981	1982
Benetton (INVEP)	253,000 (1)	262,776	10,428	15,576	12,041	10,653
Manufacture Lane G. Marzotto e Figli SpA	41,855	49,126	2,061	1,817	1,003	779
Cotonificio cantoni	42,458	50,976	2,577	2,125	1,002 (2)	489
Gruppo Tessile Miraglia	98,800	109,900	26	2,600	640 (2)	863
Lanerossi	51,200	57,600	2,938	1,966	- 6,660 (3)	-9,775 (3)

1. In the case of Benetton SpA we consider on 18 monthly period

2. Only parent - firm

3. Net loss per employee

Source: R e S, 1983

TABLE 13

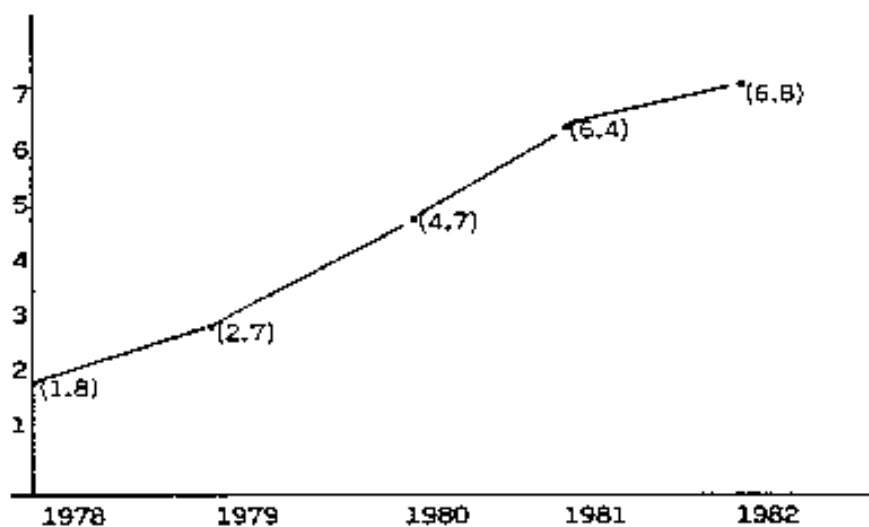
Labour costs per employee: a comparison with
some italian textile firms.

	1981	1982
Benetton	14,900,000	17,500,000
Manifatture Lane G.Marzotto e Figli SpA	14,700,000	16,600,000
Cotonificio Cantoni	15,800,000	19,300,000
Gruppo Tessile Miroglio	18,100,000	21,400,000
Lanerossi	18,700,000	21,300,000

Source: R e S, 1983

Figure 10

Benetton market share in selected segments
of Italian fashion industry (knitwear and jeans)



(1)

	1978	1979	1980	1981	1982	78 - 82 (average increase per year)	
Benetton	54,7	98,8	195,4	322,0	400,3		
export	14,8	26,8	64,4	128,0	160,1	+ 64,5	+ 81,3
Italian Industry	2976,9	3635,5	4168,1	5025,9	5898,4		
export	1332,7	1619,6	1860,6	2267,2	2691,6	+ 18,6	+ 19,2

Source: Databank S.p.A.

TABLE 14

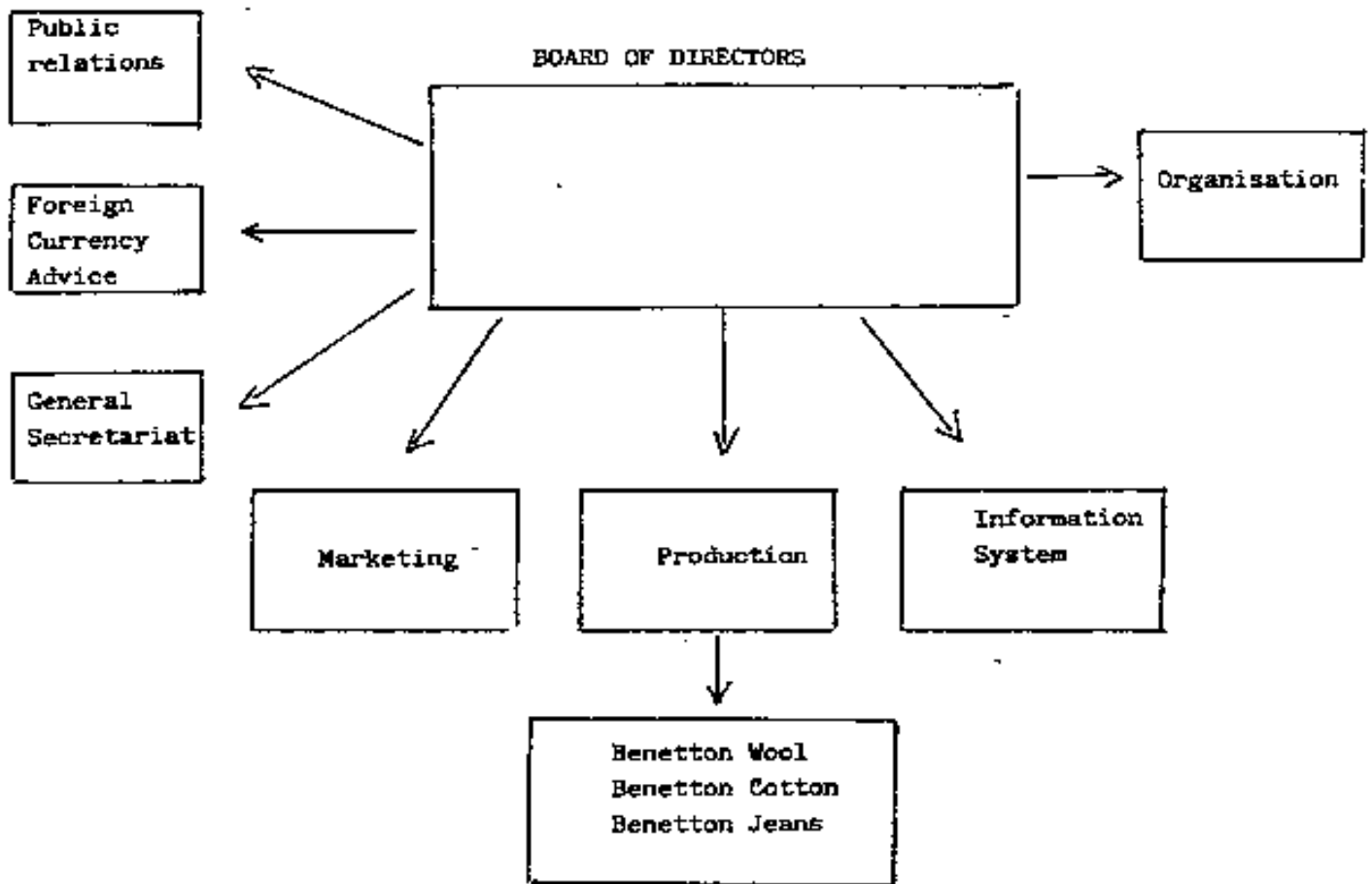
Outlets for female and masculine wear1970/1976

	1970		1976	
	M.	F.	M.	F.
Raincoats	3.9	2.5	4.7	5.5
Suits	44.2	29.4	35.4	23.7
Coats	16.7	38.1	12.2	21.0
Trousers	22.5	8.3	21.3	4.7
Jeans and casual	2.8	1.7	19.8	11.7
Shirt	-	7.3	-	21.2
Tailleurs	-	11.1	-	9.8

Source: A I I A

Figure 11

Organisational structure of Benetton SpA 1983



Source: Rapporto di Ricerca "Il sistema Benetton", Fondazione Corazzin, 1984.

Figure 12

Production planning spring/summer 1986

May/June 1985	Initial production plan
June 1985	The items are presented to the company's agents
July	Order collection ----> first production on the most heavy orders
September	Negotiation with agents to concentrate orders
October/November	Scheduling production
January 1986	Delivering to the stores

4. Conclusions

There are six significant features of the Benetton production system which are worth recalling. First, the growth of the firm hasn't happened through expansion but through the development of a network of controlled firms. Thus, the Benetton Group became a "flexible" system. This flexibility does not necessarily involve small overall size but involves a network system with a propulsive "center" and an "adaptable" periphery.

Second, the Benetton case shows that manufacturing based on electronics technologies does not imply a trend toward smaller firm size (as suggested for example by Piore and Sabel, 1984). On the contrary, the Benetton case shows clearly the growth of new forms of oligopoly.

Third, the firm appears to become a "mobile" system of both economic transactions and organizational linkage: certainly the activity of the firm is not limited to simply "buying or doing". Moreover, it can rapidly modify its organizational borders through a "re-centralization" or a "de-centralization" of the productive process.

Fourth, a double level of entrepreneurship is generated following a hierarchical pattern of division of labor between the "center" and the "periphery" of the system. The specific assets of the dominant firm are the strategic functions of total control and coordination of the whole cycle, of planning, marketing and those manufacturing phases that require the most complex technological know-how. Conversely, the least skilled functions are carried out by

a "new generation" of subsidiaries which are concentrated just on productive tasks.

The Benetton strategy tends to maintain a complete control on the entire system of these firms. Each of these subsidiaries are responsible for just a particular phase in the production process and never responsible for the complete production of any item.

Conversely, Benetton's strategy tends to induce a propulsive interaction with the local environment and plays a very active role in the internal organization of production in these subsidiary firms: advice is shared on the management of the firm, on the lay out of the machinery, and on the most efficient methods of production. But both the technical knowledge and the market access of subcontracting firms are very limited.

Fifth, this process of division of the labor among firms appears to have important implications for the more general industrial dynamics. The growth of a new generation of small firms feeds on the growth of the entire system. The latter is organized, loosely speaking, like a pyramid: the top is highly concentrated, but the more the system grows, the more the bottom -- made of small firms -- grows.

Furthermore, the tendency towards the small average firm size cannot be totally considered a "spontaneous" aspect of the evolution of the industrial environment: it is the result of a complex re-organization (associated with the exploitation of the economies of scope) of the productive cycle led by some innovative firms.

Sixth, the possibility of developing such a complex network is strongly connected with the external environment of the firm. We are

referring lato sensu to the institutional context and the historical conditions. These "externalities" appear to be based on three fundamental factors:

- (a) the diffusion of skills among workers (which in turn is both a local consequence of the historical existence of textile and the artisan clothing companies and the effect of recent diffusion of technical knowledge of textile machinery) linked to recent development of the Italian industry;
- (b) the specific labor market structure of Veneto and the lack of industrial conflict there (which implies also a social acceptability of labor conditions linked to work in small firms: heavy labor conditions, putting-out systems of production and so on);
- (c) the existence in the social structure of what sociologists call a "propensity to social mobility". The swarm of "new generation" small firms is driven by that micro entrepreneurship found among the manual workers.

In general (and not only in the case-study analyzed) the 1970s showed a fortuitous coincidence of the production requirements of flexibility and decentralization on the one hand, and the market mobilization of large groups of skilled workers highly motivated by upward social mobility.

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