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# Assisted technology transfer to SMEs: lessons from an exemplary case<sup>☆</sup>

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## Abstract

Assisted technology transfer (ATT) actions towards small and medium-sized enterprises (SMEs) have been growing in recent years, as governments of industrialized countries have acknowledged the importance of SMEs in industrial economic systems. In spite of their success, SMEs show several weaknesses in technological development. This introduces opportunities for public intervention aimed at sustaining technological development in SMEs, especially through technology transfer processes. Although the need for this kind of action is widely accepted, how to implement ATT is still unclear, as regards both the choice of potential beneficiaries and the actual implementation of the transfer process. This paper presents a project of ATT sponsored by the Science Park of Liguria and addressed to 30 small firms in the sectors of plant engineering and industrial automation. After reviewing the rationale for ATT actions and highlighting some crucial questions related to its implementation, it gives an extensive picture of the approach adopted. Finally, it attempts to rationalize the case, in order to highlight problems and offer possible solutions. © 2000 Elsevier Science Ltd. All rights reserved.

*Keywords:* Technology transfer; SMEs; Science parks

## 1. Introduction

The role of small and medium-sized enterprises (SMEs) in the Italian economic system, and their contribution to industrial development, are widely recognized. Starting from the 1970s, SMEs have represented a leading force of the national economy, stimulating productive development, employment and exports. This important role is stressed by a wide number of national and international studies that have identified the particular features of Italian SMEs (among others, see Archibugi et al., 1996; Marchini, 1995; Dosi and Moggi, 1992; Storey, 1990). Two of these are their flexibility and innovation capabilities, based on the creativity and intuition of entrepreneurs, as well as on their ability to combine existing technical knowledge in order to develop new products or, more often, to adapt existing products to the specific needs of particular market niches (Cozzi, 1994). On the other hand, several studies have pointed out that

the innovation capabilities of Italian SMEs, with particular reference to those firms operating in mature and fragmented sectors, are accompanied by structural weaknesses in technological development:

1. *poor ability of entrepreneurs to manage technology as a strategic weapon* (deliberate actions to improve the technological base of the firm are seldom taken). Technological innovation is not the final result of a formal process driven by the firm, but takes place in order to satisfy requirements of demanding customers, to react to competitive pressures or to comply with relevant laws. Furthermore, entrepreneurs often show limited propensity to risk and therefore to investment in new technologies;
2. *limited human resources available for internal implementation or for management of adoption of new external technologies* (Raffa and Zollo 1992, 1998). Additionally, the lack of in-house technical specialists can inhibit SMEs' ability to access external technology and engage in science and technology networks (Rothwell, 1994). Actually, SMEs are not able to express an active demand for new technologies: first, owing to their lack of scientific and technological knowledge, they have difficulties in interacting

<sup>☆</sup> Although the paper is the outcome of a collective work, Sections 1, 5, 6 and 7 can be attributed to N. Buratti, while Sections 2, 3 and 4 can be attributed to L. Penco.

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with producers of capital goods or materials used in the productive process; second, most of them are not acquainted with new product and process technologies developed by R&D departments in large firms or by public institutes of basic research, which could be successfully applied into process or product technological innovation (Gambardella, 1993);

3. *weak financial standing*. Undercapitalization not only makes SMEs reluctant to invest in R&D but, more often, slows down projects of technological development through acquisition of external technologies (Archibugi et al., 1996). It is very true that limited internal financial resources may be compensated by instruments of industrial policy (contributions of capital, subsidized financing, concession of guarantees and fiscal incentives), but SMEs rarely seize these opportunities owing to the costly and complex bureaucratic procedures involved.

All of these features may hinder the process of development and management of technological innovation, which requires long-term vision, willingness to take risks, ability to manage complex processes, and sometimes high financial availability.

How can the difficulties of technological development of SMEs be overcome?

Assisted technology transfer (ATT) is a solution to this problem. The importance of technology transfer to SMEs has been stressed over time by governments of many industrialized countries, and several technology transfer centers have been founded (Rothwell and Zegveld, 1982; Bower, 1992). The main issue is: What kind of approach needs to be developed in order to assess technological requirements of SMEs and to implement successful technology transfers?

## 2. Technology transfer as an innovation instrument for SMEs

In its most general meaning, “technology transfer” is seen as every process that aims at transferring technological know-how from (Kim, 1990):

- *donor* — e.g., a university, a research center or R&D departments of firms;

to one or more:

- *recipients* — firms which may either directly use or co-develop the technology.

In the traditional and limited view, technology transfer is a *one-way process* — from donor to recipient — in

which a benefiting firm obtains new technology from the donor through the stipulation of contracts, patents, license agreements, etc., and the *technology is seen as hardware or a physical product*. Although in this form technology moves in one direction only, the parties involved must participate in communication transfers as they seek to establish a mutual understanding about the correct use of the technology which is new for the recipient (Rogers, 1995). Therefore, *the process of technology transfer should be seen as a knowledge communication process*. This is particularly true if we consider that the economic value of technology as a strategic asset increasingly stems from the combination of general and specific knowledge.

This implies that technology transfer should be seen as a two-way communication process, aimed at highlighting: (1) the needs of potential users; (2) how to apply the new technology to create value for the recipient; and (3) what kind of customization (from marginal to co-development) of general technology is required in order to develop specific applications. As technology transfer takes place between different individuals, *the transmission of technological know-how from a donor to a recipient may be distorted*, as the efficiency of the transfer depends on in-depth understanding of the real needs of the recipient and minimization of language and cultural differences, which may hinder the flow of information from donors to recipients (Gibson and Williams, 1990). The management of the knowledge communication process may be very difficult for a small firm, and particularly for those firms not acquainted with the use of technology as a strategic asset.

Given the complexity of the process, institutions — i.e., science parks, business innovation centers, public agencies — acting as an interface between donors and recipients are essential to effective analyzing, planning and implementation of the process itself. These institutions should be able to:

1. make firms aware of their technological needs and of the existence and potential benefits of new technologies (Gertler, 1996);
2. monitor the local, national and international technology markets, with the aim of identifying solutions to the technological needs of SMEs. This task is critical given that SMEs have limited resources available for independent gathering of information (Rothwell, 1994);
3. guide the communication process between donors and recipients to facilitate information exchanges and knowledge generation; and
4. coach firms to minimize difficulties when implementing the adopted technologies.

### 3. The approach developed within the framework of the exemplary case

The Scientific–Technological Park of Liguria (STPL)<sup>1</sup> was founded in 1997, with the primary role of promoting innovation in Ligurian SMEs and assisting them in the process. The first step of this action was a survey carried out — with the collaboration of the Ligurian World Trade Center — on the local technology developed by research centers and university departments in the region. The aim was to identify the regional situation of technology available for transfer to local SMEs. This phase led to the compilation of an index of 350 technologies, which were included in the Catalogue of Technology.<sup>2</sup> The Catalogue, which briefly describes each technology, was used as a fundamental tool during the program.

STPL then cooperated with consulting companies, professional firms and the University Departments of Economics and Social Sciences to study and manage the process of transfer to SMEs operating in 11 sectors in the region of Liguria,<sup>3</sup> located in area Objective 2<sup>4</sup> (European Commission, DGXVI) in the districts of Genoa, Savona and La Spezia.

STPL entrusted our team<sup>5</sup> with the task of identifying firms, belonging to the sectors of plant engineering and industrial automation, with the right prerequisites. We considered plant engineering SMEs — all those which design and/or produce, and/or install machinery or components in a plant, or which totally build the plant (Genco and Maraschini, 1997).

Our work<sup>6</sup> was organized in three phases:

1. *analysis of technological needs;*
2. *proposal of new technologies to be transferred;* and
3. *start-up of the implementation process.*

The *analytical phase* includes analysis of the demand for technology. The work team<sup>7</sup> analyzed and evaluated the potential beneficiaries of the transfer process through direct interviews with the entrepreneurs, in order to:

1. assess the “static” competitive position of each company, identify its strengths and weaknesses, and its technological level in terms of assets and know-how (*analysis and self analysis: the status quo*);
2. help the mid-term “dynamic” ambitions of each company to emerge (*diagnosis and self diagnosis: ambitions and/or needs*); and
3. assess the gaps between existing resources and capabilities and those necessary to implement strategic ambitions, with special focus on the technological gap (*identification of needs: the gap between ambitions/needs and status quo*).

In the *proposal phase*, the work team identified and suggested the technology which could be the subject of the transfer. It then searched for the donor offering that technology, and for possible technological partners with whom the project could be developed.

Finally, the *conclusive phase* started when the SMEs were put in touch with the partners identified. If an agreement on the use of the technology (or on joint development, if the technology required adapting) was reached, the work team took care of preliminary tasks related to the actual transfer process (i.e., market surveys and business plans, identification of sources of financing).

### 4. Analyzing technical needs of plant engineering firms: from sector to clusters

This sector belongs to a mature industry, with a slow or diminished growth rate of demand and an increasing number of players, and therefore has low profitability potential. In this sector, the key success factor is the ability to offer products/services at the lowest price, which may be obtained either by low labor costs, by geographical proximity to customers, or a combination of the two.

To bring out the technological needs of the firms analyzed, it was necessary to enter the companies and assess their competitive and technological level through contacts with the entrepreneurs. It is important to recognize

<sup>1</sup> The Scientific–Technical Park of the Ligurian Region (STPL) is a *newly formed* consortium, made up by the University, the Regional Administration and the Chamber of Commerce, for the implementation of actions of *Promotion and Development of Innovation* (Action 4.1 and Action 4.2 of DOCUP Objective 2 of the Ligurian Regional Administration, REG. EEC 2081/93, period 1997/99).

<sup>2</sup> The Catalogue of Technology was produced both on paper and CD ROM. An Internet site was also set up for on-line reference ().

<sup>3</sup> The sectors of activity are: environment, biotechnology, ecology, biomedical, electronic, mechanical, chemical, glass, plant engineering, military and pleasure vessel boatyards.

<sup>4</sup> According to the definition of the Directorate-General for Regional Policy (DG XVI), the areas Objective 2 are declining industrial areas.

<sup>5</sup> This work forms part of the Project “Feasibility study for the evaluation of the transfer conditions of innovating technologies to SMEs of the plant, located in the Objective 2 areas for the provinces of Savona”, carried out for the Scientific and Technical Park of Liguria by the work group made up from the companies BIC Liguria, DITEA, Metis and RINA Industry.

<sup>6</sup> Its formulation is based on some success factors of action implemented by a few transfer agencies. They were contacted and visited by our team: Enea Innovation Department (Bologna), Tecnopolis Csata Nova Ortus (Bari), Interface (Liege), Steinbeis Foundation (Baden Wuttemberg), Danish Technology Institute, Cambridge Science Park, Promotech.

<sup>7</sup> The work team is formed by two experts, one on matters of company economics, the other on technical matters.

that, in SMEs, strategies are strictly the consequence of the entrepreneurs' goals. It is their "vision" of the future of the companies which establishes the SMEs' course, so it is they who should have in-depth understanding of the companies' weaknesses and strengths, as well as of opportunities and threats of the competitive environment (Marchini, 1995).

Establishing a personal relationship with entrepreneurs was essential to overcome the mistrust that they often show towards actions promoted by the Public Administration or by other public bodies. This goal was reached by explaining that the firm was being offered a service, and that the work team did not intend to sell anything nor certainly "waste time".

Interviews carried out showed that plant engineering SMEs had begun their activity as suppliers of large firms to whom the development of SMEs was very closely linked. The rise and growth of these large firms determined flourishing of supplier SMEs. Later, the decrease of activities of the great customers led to the decline of local plant engineering activities.

Investigation findings pointed out that the SMEs studied:

- are characterized by a *poor activity of technology monitoring*, as they rarely collect information about the technology market in a systematic way, for example through participation to conferences and meetings and through regular reading of scientific or specialized literature;
- have *limited perception of the importance of technology in the company strategy* — indeed, technology is seen as data and not as a competitive weapon. Furthermore, innovation is considered to be an adaptive process aimed at reaching the technical level of the competitors or at satisfying regulations (i.e., safety or quality standards) and/or takes the form of purchase of innovative machinery;
- show, on average, *little participation in programs of innovation development* with external subjects, especially because of mistrust towards the Public Administration. Indeed, none of the firms contacted had ever been involved in a program of technological collaboration, although all of them were aware of regional, national and EU programs; and
- dedicate *few resources to innovation* — this aspect was assessed by the rate of investment in innovation, compared with total investments over the previous three years.

The SMEs were subdivided into three clusters on the basis of their activities and their core competencies:

1. construction and/or installation and/or maintenance of plants (hereafter called "pure plants");
2. construction of components or industrial automation systems; and

3. services to plants (maintenance, cleaning/washing) (Table 1).

The study pointed out different features for each cluster:

1 *The "pure plant" cluster* appears to be in a difficult situation. Its original competitive advantage, essentially generated by geographical proximity with a few large manufacturers, has been spreading outside the initial geographic area, and now the competencies at the base of its competitive advantage are diffused both in the rest of Italy and abroad (including developing countries). Another threat is represented by growing price-based competition, in particular from companies located in South or North-East Italy, which employ low-cost labor coming from East European countries. Finally, electronics and information technology have become new sources of plant value. In general, firms belonging to this cluster show weak competitive position, and are facing an unattractive market with growing competition. As regards innovations, SMEs belonging to this cluster could be defined as "dominated" (Rizzoni, 1994), because they operate as specialized suppliers or sub-contractors of large firms, typically local. Their way of innovating is directly linked to the requirements of great customers.

2 *The cluster of producers of components and automation systems* includes a few firms operating in a fast-changing environment. The drive towards industrial automation affects a vast number of productive manufacturing sectors, and companies producing industrial automation systems may exploit this opportunity also by developing new markets and by generating an increasing growth rate of demand, thereby freeing the activity from links with local industries. From a competitive point of view, this cluster appears to be characterized by a high level of attractiveness, determined by a favorable interaction between the different competitive forces identified according to the Porter model. The level of technological innovation of this cluster is, on average, higher than that of the previous cluster, although innovation is an adaptive, rather than anticipative process. These SMEs could be defined as "imitative" (Rizzoni, 1994), given that — due to their lack of in-house research — the source of their innovation depends on imitation of leading large firms.

3 *The cluster of service suppliers* is composed of firms that have benefited from the process of outsourcing, activated in the 1980s by industrial manufacturing companies, and that have been oriented towards an increasing externalization of non-core activities, i.e., activities which do not represent sources of competitive advantage. This cluster is characterized by a growing market, due to an increased demand for services with low added value by industrial customers. This trend has created a large market for the SMEs of this cluster,



Table 1  
The firms analyzed

Cluster	No. of SMEs	Quota (%)	Turnover (billion Lira)	No. of employees	Turnover/no. of employees (million Lira)
“Pure plants”	16	59.26	80	663	120
Components or industrial automation system	7	25.93	56	233	241
Services to plant	4	14.81	12	72	161
Total	27	100.00	148	968	152

which is not necessarily located in the local area, and to which they have offered highly specialized services. The level of technological innovation of the cluster is generally medium–low.

*The concise assessment of companies, both from a competitive–strategic point of view and from a technological point of view, was accompanied by application of a matrix model, which graphically represents the competitive and the technological positioning of the company.*

The result, being essentially graphic, presents the undeniable advantages of a concise and clear representation of the positioning of firms belonging to each cluster (Fig. 1).

**5. From analysis to proposals: how to overcome the skepticism of entrepreneurs**

According to the previous analysis, solutions consistent with the needs and features of firms of each group were identified:

1 *SMEs of the pure plant cluster — the weakest ones — should initiate a process of turnaround.* The decline of the competitive environment is a clear sign of the need to take action, in order to avoid further problems which may even compromise economic figures and financial liquidity. Obviously, this is easily said and dif-

icult to implement. As several studies have already pointed out (Robbins and Pierce, 1992; Marchini, 1995), turnaround processes imply a clear assessment of the causes of crisis and of its potential impact. Depending on how severe the crisis is, different solutions may be implemented: either a general search for greater efficiency, or even cutting non-profitable activities. Once the firms have regained their stability, then strategies of turnaround can be implemented, which may be based either on the maintenance of regained efficiency or on entrepreneurial strategies (via development of new products and/or repositioning of existing products). But what are the real opportunities for small firms to implement such a complex process? And what is the availability of financial and managerial resources and capabilities to drive a process of diversification? With these questions in mind, our team proposed solutions mainly oriented towards recovery of efficiency and enhancement of product performance, but also, when asked by the entrepreneur, suggested technological solutions for diversification.

2 *For SMEs of the component and automation cluster, technology transfer must be functional to improving existing products.* However, it is also necessary for these firms to develop commercial and marketing capabilities, which are essential elements of a more “active” strategic behavior. It is apparent that firms of this cluster must face aggressive competition. Therefore, they must create

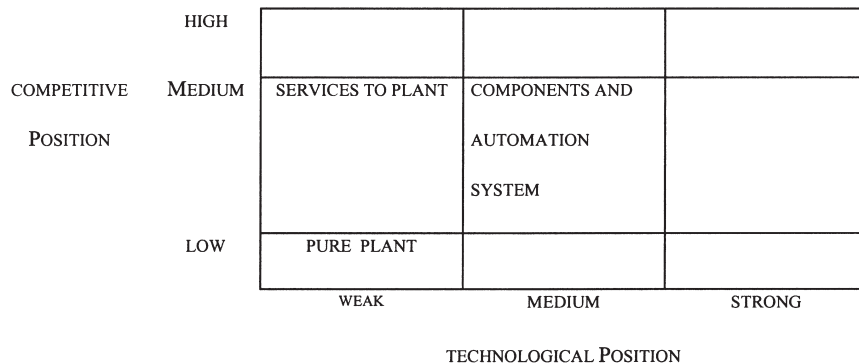


Fig. 1. Concise assessment matrix: competitiveness/technological level of the company.

and/or maintain a competitive advantage, either by improving their capability to customize products, or by reaching adequate levels of product standardization and cost reduction through development of a sufficient market share.

3 Finally, for SMEs of the service cluster, characterized by labor-intensive activities, the problem is the cost of labor, which is high compared with that in competing companies located in South or North-East Italy. To maintain a sufficient level of competitiveness, costs must be constantly and carefully monitored, human resources must be used efficiently and general expenses must be kept under control, without reducing focus on the quality of services provided. Technology transfer is not, perhaps, an appropriate solution to enhance the competitiveness of these firms. They are, in fact, essentially concerned with quality and performance of the equipment used in supplying services.

When we compared the objectives and the perspectives for strategic evolution of the companies (ambitions and requirements) and their current situation — both from competitive and technological points of view — the technological gaps became apparent. Our analysis led to the identification of SMEs which were adequate recipients of the technology transfer. The aim was to shrink the set of beneficiaries through careful evaluation of strategic ambitions and of financial and managerial capabilities to use the technology as a source of competitive advantage.

Among the selection criteria used, particular importance was given to the financial solidity of the company: the companies were asked to submit their three most recent approved balance sheets or, alternatively, to provide data relative to profit, turnover and volume of sales.

The firms selected were contacted again, in order to show them possible solutions to their needs. These solutions were sought first of all in the Catalogue of local technologies. The implementation of processes of technology transfer in a local area may, in fact, help to set up virtuous circles — through long-lasting and consolidated collaborations between research centers and firms located in the same area — which bring about an increase in the competitiveness of the firms localized in that area. If the solution was not found in the Catalogue, the expert in technology promotion — on the basis of his/her understanding of the national and international technological situation — proposed technological partnerships with potential donors, operating at the national and international level. However, it was important to propose to the entrepreneur a range of clearly defined solutions, with description of the technology and a preliminary estimate of costs and benefits associated with its use. This could satisfy the need for clear-cut applications to be developed in a short time.

The *conclusive phase* of the transfer model included:

1. meetings between representatives from the SMEs (typically the entrepreneurs) and representatives from the technology suppliers;
2. if the above led to an agreement, the development of specific transfer projects and relative business plans followed;<sup>8</sup> and
3. allocation of the public funds to the selected transfer projects. It is important to point out that STPL financed the feasibility study only, not the actual implementation of the innovation project.

The action was concluded with the definition of six projects of transfer of technological innovation, which involved 13 companies. Four of these projects were selected from the pure plant cluster, while the other two were taken from the component maker cluster. The donors were research centers belonging to large enterprises (three cases), local departments of universities (two cases) and one British university. Two of the six projects obtained financing from EU Structural Funds (Table 2).

## 6. Drawbacks of implementation: great potential, small results

Given that — as mentioned earlier — the action sponsored by STPL only reached the feasibility study, our discussion is limited to the potential benefits for recipients stemming from the adoption of new product and process technologies, and to the description of problems arising during that stage. Projects related to the “engineering filère” and promoted by the STPL Committee of Evaluation were two: one belonging to the cluster of pure plant, the other to the cluster of components and automation system (Fig. 2).

### 6.1. Pure plant

The project was aimed at supporting diversification strategies, the most difficult to develop, as they require both financial resources and managerial capabilities to move away from the core business. It had several positive features. First, it was mainly based on the “exploitation” of a knowledge pool strictly related to original capabilities developed within the original geographic

<sup>8</sup> Once an agreement has been reached, the figure of the project manager comes in with the task of carrying out pre-feasibility studies for each project. The business plan is drawn up by analyzing the following aspects: technical–scientific characteristics of the technological innovation proposed; results expected from introduction of the new technology; estimate of the financial requirement necessary to introduce the new technology in the company; perspectives for job losses; problems of licenses, patents, commercial agreements; competence necessary to introduce the technological innovation; objectives, program of activities and relative timing.

Table 2  
The proposed projects

	Technology	Donor	Recipient
<i>Pure plant</i>			
Financed	Modular standardization of small/medium plants for energy cogeneration	Ansaldo Energia (research center, division of large firm)	Crosa & C., S.p.A (installation, mounting and maintenance)  Cormin s.c.r.l. (construction, installation, mounting) Multiservice s.r.l. (plant control)
Not financed	High-temperature dust filtration system	Ansaldo Ricerche (research center, division of large firm)	Omev s.r.l. (installation, mounting and machinery for cokeries) Cormin s.c.r.l. (construction installation, mounting)
Not financed	Rising platform, floating dock type, made with fiberglass elements	BC Engineering (research center, division of large firm) Navalimpianti (small firm)	Sambin s.n.c. (main contractor, installation, mounting and maintenance) Tecnofluid s.r.l. (engineering and construction of fluid dynamic system)
<i>Components and automation system</i>			
Financed	CAD system for personalization of vibrating feeders	University of the West of England, Bristol, UK	Gasco s.r.l (vibrating feeders)  Wado s.r.l. (engineering and development of components)
Not financed	Advanced field bus for naval applications	Dibe University of Genoa Navalimpianti (small firm)	Simco s.r.l. (engineering and construction of electronic system) FAE (engineering and construction of electronic system)

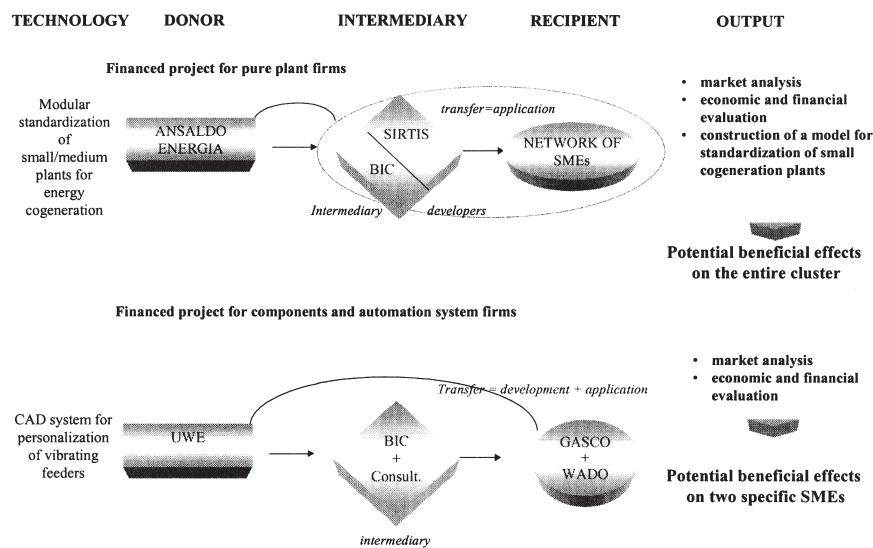


Fig. 2. Projects promoted by the STPL Committee of Evaluation: essential features.

context of potential recipients. The technological know-how had been originally developed by Ansaldo Energia. The intermediary was Sirtis — a spin-off of Ansaldo — in collaboration with Business Innovation Center. Close relations between the donor and the intermediary facilitated communication processes. Although the technology was not intrinsically new, its application was innovative. In general this may facilitate the process of technology transfer, because both costs and risks associated with development can be better controlled. Fur-

thermore, it was potentially directed towards more than one recipient firm, and this was consistent with the primary goal of the action taken by STPL, which was oriented towards developing innovation for the entire cluster. The application in fact required different capabilities related to designing, development, engineering and production of the new product, as well as commercial capabilities, which were not available in a single firm. For this reason the best possible solution would have been to set up a network of SMEs, with Sirtis — the inter-

mediary — acting as a coordinator of the activities developed within the network.

## 6.2. Components and automation system

The project selected by the STPL Committee was perhaps riskier than the one described above. First, it implied an international transfer of technology: the donor was the University of West England, Bristol. Second, it consisted in the development of industrial applications of a technology which is not intrinsically new, but which had not yet been developed for the specific industrial application envisioned. Third, it had two potential recipients: one would develop a new automated system for customized vibrating feeders, the other would supply the components. During the first phase of the implementation both firms appeared to be enthusiastic, and pooled their resources and activities. On the other hand, there were serious problems of communication between donor and recipients that the intermediaries were only partially able to overcome. We must also add that perhaps the project was disproportionately ambitious, if compared with the true capabilities of the beneficiaries: full implementation would have required an additional investment amounting to 1.2 billion Lire over a period of two years (i.e., 20% of the annual average income of the primary recipient firm). When EU funds ended, the project was interrupted.

As regards the projects that were not selected by the STPL Committee, they were all abandoned at some point, and the firms involved showed great disappointment.

## 7. Conclusions and implications

It is difficult to draw any final conclusions from this project of technology transfer to SMEs in the plant engineering and industrial automation sectors. Indeed, the effectiveness of actions aimed at enhancing the competitiveness of SMEs through technological innovation cannot be judged only a few months after their implementation.

However, we can attempt to make some preliminary observations that may be of general interest.

First of all, the door-to-door model of intervention used was successful in overcoming entrepreneurs' diffidence.

As we have already underlined (see Section 4), the action promoted by the STPL was judged very positively by a large portion of the firms analyzed (70%). Secondly, it produced positive results, because meetings with the work team members made entrepreneurs more aware of technological development opportunities. Furthermore, the methodology used in order to select potential recipients — based upon the evaluation of the competitive and

technological position of each firm — contributed to increase entrepreneurs' understanding of trends in the competitive environment and of strengths and weaknesses of their firms.

Nonetheless, we must recognize that results were well beneath our expectations.

Not only were the non-financed projects almost immediately abandoned by the firms, but even those projects which were selected for financing were interrupted at the pre-feasibility study stage.

What is worse, all the firms contacted later on showed clear signs of disillusionment and impatience because of the impossibility of continuing development of the projects; firms showing the greatest disillusionment were those which had the least chances of developing the projects independently. This may even increase the original mistrust towards public actions, and may represent a potential threat to further initiatives sponsored by the Science Park. For these reasons, institutions involved in assisted technology transfer projects should perhaps reconsider the guidelines used to select projects and firms, i.e., fund allocation criteria and SME prerequisites to benefit from the technology transfer.

Indeed, we may argue that the STPL Committee of Evaluation selected, for this particular filère, two projects that were too ambitious (one involves diversification strategy, the other an international transfer of technology which is far from being completely developed) if compared with the features of the beneficiaries.

Finally, we must point out that technology transfer is only a *partial solution*. Similar initiatives should be viewed as necessary but not sufficient to elicit significant changes in the external context and in the behavior and practices of SMEs. Although it is important to stimulate and provide assistance for the adoption of new technologies, it is also necessary to understand that such actions will surely be far more fruitful if they are accompanied by complementary interventions aimed at compensating the deficiencies (financial, managerial, information) in innovative behavior due to structural weaknesses in SMEs.

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