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PERFORMANCE AND ORGANISATION OF VERY SMALL FIRMS IN THE SUPPLY CHAIN

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The authors present some results of an empirical research aimed at investigating the evolution of the relationship between large purchasing firms operating on the international market and very small subcontractor firms. The factors that have proved critical in establishing the process of subcontracting are identified and analysed. Under pressure from the high level of international competition, purchasing firms are beginning to demand better qualified and better skilled subcontractors. For many very small firms it effectively means that they are excluded from the large firms' production cycle or are relegated to a lower position in the supply chain. There are three possible evolutionary paths open to the very small firms, paths which are not alternatives: operational and management repositioning, strategic repositioning in the area of the "product" and strategic repositioning in the area of the "market".

INTRODUCTION

This paper presents the results of empirical research which was designed to analyse the evolution of the relationship between large purchasing firms operating on the international market and very small subcontractor firms. The research was carried out in Friuli Venezia Giulia Region (North East Italy) on a sample of five large purchasing firms - public and private, operating in multi-domestic or global markets, major clients for outside contractor firms - and on 31 very small firms who work as direct subcontractors for the large firms.

By referring to themes such as the integration and globalisation of markets [1], the existence of partnership [2] and codesign [3] policies and the role of technological innovation, this research seeks to investigate how the relationship between the large purchasing firms and the local very small subcontractor firms are changing, and also to underline both the opportunities and threats these changes represent for the very small firms.

In a period of transition, like today, when there is a massive reorganisation of the supply and subcontractor pool, it is important to identify the variables that affect the persistence, and the development, of direct relations between the large and the very small firms involved in the supply chain [4].

Very small firms are an important productive and economic reality in Italy. They make up 36% of all registered firms, produce 15% of GNP and employ 14% of the total labour force. During the 1980s their numbers rose by 18.6% [5]. Historically, the small firm has always played, and still plays, a special role in Italy and represents an integral and constituent part of the Italian social and economic fabric.

THE DEVELOPMENT OF SUBCONTRACTING RELATIONS

In recent years the share of total turnover taken up by provisioning has increased steadily. This fits into the move towards developing technological specialisation and know-how. Components and sub-assemblies purchased from outside represent a growing proportion of the value of the final product, to the point where they are the major share within the cost of the final product [6].

Purchasing from subcontractors plays an important role within provisioning, and is undergoing a spurt of development today. Subcontracting seems to offer itself as "an answer to technological challenge and to international competition". In 1989 the European subcontracting market was worth about 100 thousand million ECU, the average share taken by provisioning was over 60% and the percentage of purchases from subcontractors on total purchases was often as high as 65 - 70% and recent studies have confirmed that the trend is continuing [7].

The data above show that in the current competitive situation choices to externalise are no longer incidental (as they could be in the past), but are the fruit of a precise strategic plan that increasingly allocates a supporting role to supplying, above all to subcontracting, within the production system of large purchasing firms [8].

Today, subcontracting is no longer an option [9]. There are many situations where competition takes place between groups, or systems, of firms [10]. From this perspective, the subcontractor is no longer seen as playing a complementary role, an appendix to the production process of the large firm, but rather is seen as a protagonist, an actor, within the system itself. The competitive strengths

of the subcontractor become the competitive strengths of the large firm (and vice versa) particularly when a relationship based on sharing, exchange, and transmission of knowledge, is established between them [11].

The Japanese realised this in the 1960s and began to interpret the relationships between their large firms and the smaller productive units associated with them in a new way. Eventually, the new attitudes spread to the United States and Europe [12].

RESEARCH METHODOLOGY

This research was carried out in two phases. During the first, theoretical phase, the aims of the research and working hypotheses were formulated and two structured questionnaires drawn up for use in the field one for the large firms and one for the very small firms.

The second phase proceeded as follows:

- selection of the sample of both large suppliers and subcontractors;
- empirical data collection for both types of firm;
- elaboration of data and interpretation of the results.

When selecting the sample the large firms were chosen first. It seemed better to use a restricted sample, which would be able to satisfy research requirements for carrying out an in depth study through case studies.

The criteria adopted for choosing the sample were:

- selection of firms operating in multi-domestic or global markets which used local (regional) subcontractors.

- choice of units that represented subcontractors in wide range of manufacturing industries.

One of the motives behind the final choice of firms for the sample was the desire to bring to light any relationships between different approaches to subcontracting and the various structural and contextual variables of the large firm, such as the level of internationalisation of markets and the industry to which they belong.

Thus, the two largest manufacturing groups in the region, one private one public, were selected from the electromechanics and mechanics industries. In the furniture industry, a major employer in the Region, two important firms were chosen. The fifth firm was chosen from the electronics industry: a firm with high tech production and with a particularly wide spread of production plant and affiliated companies in the area.

After this the very small firms who have direct subcontracting relationships with these five large firms were selected.

We sought to make up a sample which would accurately reflect the multiplicity of subcontracting objects, the performance spectrum and the range of

innovative solutions that characterise the very small firm.

Figure 1 shows the distribution, by industry of the 31 very small firms selected.

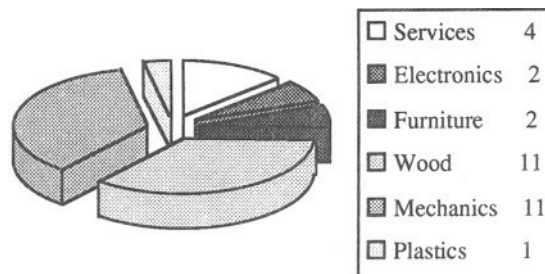


Figure 1 - Number of subcontracting firms by industry

SUBCONTRACTING RELATIONS BETWEEN THE LARGE PURCHASING FIRMS AND THE VERY SMALL FIRMS IN THE SAMPLE.

Our data confirmed the broad trend regarding the development of provisioning and subcontracting. In general, purchases are becoming a larger proportion of total turnover and subcontracting represents an increasing proportion of purchasing among the large firms in the sample. In 1991, purchases oscillated between 40% and 70% of total turnover and subcontracting represented between 25% and 93% of purchases in the large firms in the sample.

However, the number of firms with whom the large firms have a subcontracting relationship has decreased and there is a growing tendency, among the large firms, to concentrate their subcontracting activity. Reduction in the number of subcontractors is seen as a necessary prerequisite for implementing integration policies which are based on long term acquaintance and continual exchange of production experience and technical and organisational know how[13].

In 1991, in the very small firms, 96% of total turnover came from subcontracting. This is higher than the figure 90.8% obtained for the whole of Italy in 1990 by a national survey on subcontracting in the mechanics industry [14].

As regards the object of the subcontracting (i.e. processing or products) in the sample, subcontracting for components, sub-assemblies, groups of products or finished products, represent 59% of the total value produced. However, if one looks at the type of subcontracting (i.e. capacity or speciality), these "finished products", are characterised by their low level of "speciality".

Breakdown, by client, of the composition of the very small firms' total annual turnover shows 77% of turnover comes from the top three clients, with a high point of 94% in the mechanics industry.

This should not be taken as a positive sign because, in reality, it has proved to be the result of other factors (e.g. geographical position, historical

connections) so the high percentage of turnover concentrated on a few clients does not necessarily indicate an integrated relationship, rather, it underlines the very small firms' dependency on a relationship that is not necessarily founded on equality and collaboration.

COMPARISON BETWEEN PERFORMANCE EXPECTED BY THE LARGE FIRMS AND PERFORMANCE OFFERED BY THE SUBCONTRACTORS.

One significant result of this research is connected to the attempt to identify and analyse the factors that are critical when defining the subcontracting relationship.

For the large firms, we identified the performance and the parameters seen as most important, and as the basis for discrimination when either choosing their subcontractors or consolidating already established relationships, and for the very small firms, we elicited their strong points and competitiveness, as perceived by them, in specific subcontracting relationships. On a 1 - 10 scale, Figure 2 shows the priorities given to performance factors by both types of firm in the sample.

The **quality** factor comes top of the list. Both parties see it as the most important factor in subcontracting. This fits with the increasing attention being paid to the issues of quality in management [15]. However, what the various firms actually mean by quality, and what they respectively expect and offer as quality, is often rather different if not contradictory.

For example, less than 50% of the very small firms are asked to certify quality by the large firms, even though in 87% of cases the norms codifying production and quality parameters have been set by the large firms themselves.

There is still considerable ambiguity regarding both the perception of quality and the criteria that should be used firstly to decide, then to evaluate, what is important about it. In the furniture industry, certification of quality is synonymous with proof of origin of the materials used, in the naval engines industry it means respecting government norms and, in the mechanics industry, it means adhering to engineering and production specifications.

Punctuality and promptness with deliveries also came high on the list of priorities. When this is related to the high scores given to quality then it is

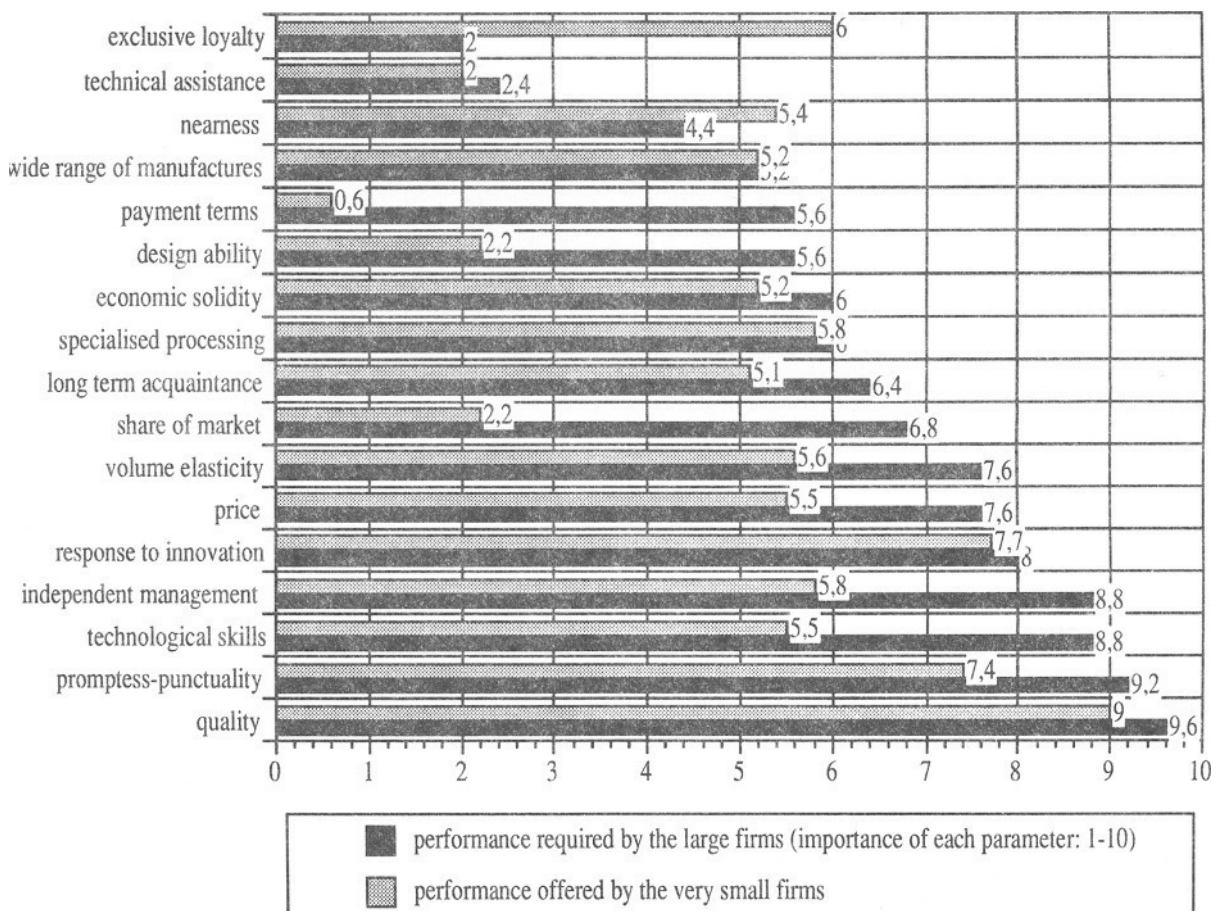


Figure 2 - The priorities given to performance factors by both types of firms in the sample

a comforting sign, because it means that even very small firms have understood the importance of these factors which, unlike the traditional concept of efficiency, are connected to the overall effectiveness of the skills and services offered [16].

The opposite can be read into the high priority given, only by the large purchasing firms, to **independent management** and **technological skills**, which suggests that very small firms may have a rather hazy perception of the changes underway in the subcontracting process.

In particular, large firms see independent management as the corollary to high quality subcontracting where skills in technologies, engineering, production and organisation are required in order to manage the entire subcontracted project. Thus it is not only a question of innovating products, although this is a crucial factor, rather, it is to show a predisposition to respond quickly to any changes in organisation and production induced by innovation.

As regards the **response to innovation**, large firms see this as an important criteria on which to evaluate and choose subcontractors (value 8). Even though the very small firms in the sample considered that their ability to respond to innovation was their strong point (value 7.7), it seems likely that their ability is more the "problem solving" type than the "problem setting".

In other words, the inability of many very small firms to cope with problem setting (the ability to identify themes/problems before they arise) and, to a lesser extent, with problem solving (the ability to resolve themes/problems pose) could endanger their relationships with large firms. This means that in order to receive commissions for subcontracting work, not only does a very small firm have to demonstrate that it is able to resolve problems in a brilliant manner, but it also has to show that it is able, independently, to first identify them and then propose suitable solutions.

When analysing the other parameters, a degree of homogeneity emerges from the evaluations of long term acquaintance, specialised processing, economic stability, wide range of manufactures and technical assistance.

However, this should not be mistaken for real homogeneity. For example, for many very small firms their declared **specialisation in specific processing** revealed itself, in reality, simply to be technological availability - linked to the presence of flexible or innovative technologies - that is, production capacity which, only potentially, would be able to deal with specialised processing.

Long term acquaintance is cited by the large firms as a fundamental prerequisite for setting up agreements to collaborate. As regards the very small firms in the sample, they were quick to

declare their interest in long term relationships. But, in reality, this interest is only concern about having some sort of guarantee of future commissions, and it ignores all the other aspects that purchaser/subcontractor integration presupposes and entails.

The lukewarm interest shown by both parties in a **wide range of manufactures** can be explained by the definition of the term subcontracting itself [17]. The large firm asks its subcontractors to focus entirely on its production problems, and is not interested in the fact that they may be able to offer a wide range of products made to stock. **Technical assistance** too was awarded a very low value by both parties which is borne out by the lack of skilled assistance the large firms offer to the very small ones.

The largest discrepancies in evaluation were in share of market, design ability, payment terms, price, volume elasticity and exclusive loyalty.

One of the greatest discrepancies in evaluation was for **share of the market**. For large firms, who would like to follow a policy of integration and partnership with their subcontractors, the share of the market is a useful indicator of their prospective partner's ability to respond to change, while the very small firm's size represents an inalterable limit.

In terms of **design ability**, this research has shown that the small firm's evaluation should be understood in the most general sense, i.e. as the ability to intervene in solutions to the large firm's unsolved problems and to offer solutions and functional and economical applications. But this does not meet the large firm's expectations. Large firms seem to understand design ability as a subcontractor who is able to take a dynamic and active role in design, (see problem setting versus problem solving).

Analysis of the parameter **payment terms** shows that 77% of the very small firms in the sample see this as a factor that has no influence. This, on the one hand, confirms the fact that deferred payment should no longer be seen as a source of competitive advantage - which is not what the large firms think - and, on the other, reveals the process of lengthening of the financial cycle subcontractors have undergone in the past.

There are also differences in evaluation of the parameter **price**, which the large firms see as being important. Yet, the need for more competitive prices does not often lead to a joint search, by large and very small firm, for a way of reducing costs, instead, in many cases, it becomes a narrowing of margins only on the part of the very small firms.

The data for **exclusive loyalty** are important: 94% of the very small firms see this as a fairly strong

point (value 6), which agrees with the fact that, on average, those in the sample receive 77% of their total annual turnover from their top three clients.

On the other hand for the large firm, even those that intend to pursue a policy of comakership, exclusive loyalty cannot be seen as a decisive factor, but only as the corollary of an equal and collaborative economic relationship which is based on reciprocal advantage.

But many very small firms know only too well that in many cases their dependence on the large firm is not the result of a commercial policy able to seize market opportunities, rather it is a reality they must submit to. In other words, although exclusive loyalty has no influence on the large firm when it is choosing its subcontractor, it is important, and represents a high risk, for the very small firm.

As regards **volume elasticity**, the production volumes that are commissioned are extremely variable (over 80% of the cases examined). This confirms that the large firms still tend to see the role of the very small firms as that of a buffer against shortage of available production capacity, there to be used when necessary. This makes it impossible for the very small firms to plan and balance production capacity over time, and often forces them to work with demand peaks in concentrated periods.

Analysis of the parameter **geographical nearness** is complicated, and merits special attention. There is a close bond between very small firms and their territory and geographical nearness implies a common history and culture. However, when trying to predict the future situation of very small firms, historical-geographical considerations have to be examined in the light of economic considerations. The process of globalisation and internationalisation of markets affects many industries, including some in our sample, and there are clear indications that firms wishing to compete on the world market can no longer base their supply strategy on local, regional or national sources.

Even though the scientific debate seems to affirm that globalisation and localism are not necessarily antithetical terms [18], because every global strategy must be planned and organised locally the problem remains of how to manage the territory. A broader and more flexible interpretation of local bases means that factors of geographical nearness and common history and culture will take on a different type of importance in the economic relations established between the various parties.

However, many very small firms have yet to become aware of the changes that are taking place. There is some solace in the fact that many of the very small firms in the sample do not consider geographical location to be a strong point in their favour. Thus these firms have managed to go

beyond the traditional idea that the very small firm receives subcontracting commissions mainly on the basis of its physical nearness to the large purchasing firm.

STRATEGIC AND OPERATIONAL CHOICES FOR VERY SMALL SUBCONTRACTING FIRMS

Under pressure from the high level of international competition, purchasing firms are beginning to demand better qualified and better skilled subcontractors [19]. The process of selecting subcontractors initiated by the large firms aims to gradually reduce the size of the pool of available suppliers so as to develop even more direct relations with fewer collaborators. The very small firms are beginning to feel the consequences of this policy. For many of them it effectively means that they are excluded from the large firms' production cycle or are relegated to a lower position in the supply chain.

The increasing share of total turnover absorbed by purchases and the increased portion of total purchases taken up by subcontracting in the large firms do not seem to leave much room for a policy of greater attention, on their part, to the needs of the very small firms. Because of this, the very small firms should not place their trust in the large firms' growing need for subcontracting as a source of more commissions for them.

In our opinion there are three possible evolutionary paths open to the very small firms, paths which are not alternatives:

- "operational-management" repositioning, that is, intervening in the area of operations, which is designed to go beyond traditional operating methods. This means the introduction of technological innovations and, above all, of organisational and managerial innovations (such as Just In Time [20] and Total Quality Management [14]).

- strategic repositioning in the area of the "product", that is, product/speciality subcontracting. A large number of the firms in the sample offer processing capacity (not parts and assemblies) which have a markedly low qualitative and technological content. This situation offers little prospect of advancement in the subcontracting market, indeed, it is more likely to offer a prospect of insecurity and danger for those firms who continue with this type of production. The very small firms should therefore try to leave the area of processing/capacity services and move over into the area of product/speciality services which, potentially, offers higher returns and which is the area where the large firms seem to be seeking relationships of integration or even partnership [21].

- strategic repositioning in the area of the "market", that is, the extension of the area covered by commercial activities which is usually restricted to the surrounding, local area.

"Operational-management" repositioning

As we have already said large firms are increasingly requiring better performance from their subcontractors, in terms of quality, punctuality and promptness, independent management and the ability to find technological solutions. This improved performance could be obtained by very small firms through what has been termed "operational-management" repositioning.

Out of the three areas where operational interventions are possible, (innovation in production processes, JIT and TQM), the very small firms have tended to concentrate their attention on the first. Furthermore, in the very small firms of the sample, innovation, when introduced, seems rather a casual or contingent event, which takes place whenever new plant or machines are acquired (technological breakthrough) rather than being part of a continuous improvement [22].

This study has brought to light the fact that personnel in the very small firms have neither the skills nor the time to become involved in the planning and management of those organisational-managerial interventions that are necessary if the firm is to improve the service it offers in terms of quality, flexibility, delivery times etc. The fundamental reasoning behind investment choices and the external services the firms in the study turned to, proved to be an expression of a culture that is insensitive to the "soft" aspects of management, but which pays a great deal of attention to quantitative parameters and to the tangibility of physical resources. Furthermore, even where there is a greater degree of sensitivity it rarely goes hand in hand with the courage to change established praxis. Investment choices almost inevitably lean towards fixed assets, i. e. machines and plant. Spending on software and education and training are minimal in respect of the total value of investment in plant. Very small firms seem to consider, and follow up, the same, restricted investment opportunities, and many of them do not even seem to be aware of the importance of intangible resources [23].

Training is usually only given when new machinery or new instruments are acquired, thus it is sporadic and often inadequate. Certification of quality, like training, rarely comes up to the expectations of the large purchasing firms or of the market. Outside consulting services, such as development-engineering, production management and advertising, are rarely used.

The traditional strong points of very small firm production are no longer enough to face up to and beat the demanding challenges set by the large firms' new needs. There must also be growth and development in industrial philosophy [24]. Very small firms should know and apply (in the knowledge and application of) management techniques that are both suitable for, and congruent with, the processes and the management philosophy adopted by the large firm. In our opinion, Just in Time and Total Quality Management are techniques and methodologies that are well within the reach of even the smallest firm and which will be able to raise the potential competitiveness of subcontracting firms to the levels required by the large purchasing firms.

Strategic repositioning in the area of the "product"

Large purchasing firms are increasingly turning to subcontractors who are able to offer "product/speciality" subcontracting. A large firm's demand for speciality subcontracting can arise either from the decision to send out production phases for which the know-how is retained by the large firm (and can therefore be taken back if necessary), or, from the need for parts/processing that the large firm does not have the resources/skills to carry out (which therefore cannot be taken back).

The data show that subcontracting which falls into the second category makes up a large part of the total volume of all subcontracting, and this share offers an important opportunity to the subcontracting firms who are able to align with this type of production. The empirical research carried out for this study has shown that there is a divergence between the large firms' demand and the very small firms' offer. For the most part, this offer is concerned with processing/capacity subcontracting, a type of subcontracting that is characterised by low profit margins and a high degree of dependence on the large purchasing firm.

Meeting the large firm's demands often necessitates changes that represent a real strategic repositioning of the product for the very small firm, that is, a change in their offer in terms of object and type of production. This repositioning of the product requires appropriate help from various quarters, the most important of which seems to be strategic marketing. Subcontracting Agencies can play a vital role in this. In recent years these Agencies have spread rapidly in certain areas. Where they exist, they provide a service for subcontractors which offers knowledge, information and guidance to the market, a means of collecting and passing on demands from large purchasing firms and, a "sensor" that can pick up on the trends and opportunities offered by the market.

Strategic repositioning in the area of the "market"

The process of rationalising the pool of small suppliers and subcontractors begun by the large firms is also connected to the geographical distribution of the subcontractors: a distribution that is gradually losing its local characteristics and broadening out. In this context the third competitive option identified by this study should be considered: repositioning in the area of the "market".

If one considers two variables - the size of the large firm (with the firms in the sample this is directly proportional to the geographical spread of the market they serve) and the location of the subcontractors - then it is possible to find a direct proportional correlation between the size of the market served and the amount of subcontracting generated. This correlation can be understood if one considers the link between size of market served, economies of scale, value-added incorporated in the object supplied, quality reliability, specialisation etc.

In general, the data collected during this research show that the catchment area of both small and large subcontracting firms is slowly widening and beginning to involve not only the whole of Italy but also, more and more frequently, firms abroad. Obviously this represents a threat to the very small local subcontractors: the parameters for comparison are growing and competition is increasing. The opening up of the European market will only accelerate the process. But the widening of the catchment area is not only a threat, it also represents an opportunity that should be examined carefully. As the number of direct competitors increases so too does the number of large firms potentially seeking subcontracting services, i.e. the market on which to offer such services expands too.

This is particularly important for those specialised associations (for example Subcontracting Exchanges and Agencies) that aim to create and develop the subcontracting market. Therefore such associations have to implement commercial activities that go beyond national boundaries. For some time now, the growing number of Agencies, Exchanges and Associations for subcontracting in some Italian regions have facilitated the exchange between demand and offer through the use of high tech methods (data base, telematic networks, value added services). To sum up, it seems to be important that a real effort should be made to promote subcontracting on a far wider basis than its traditional local orientation.

CONCLUSIONS: A NEW ENTREPRENEURIAL IDENTITY OF VERY SMALL SUBCONTRACTOR FIRMS

At present, the relationships between large purchasing firms and their very small local subcontractors are undergoing a rapid transformation that puts the survival of many of the very small firms at risk. Nowadays, these firms are being asked to evolve and change so as to be able to comply with the technological and quality requirements imposed by the large purchasing firms. In particular, the very small firm production model, in its traditional guise, must be updated and equipped to meet the current challenges of competition. In our opinion, the very small firm of today should evolve in the following directions.

- the legacy of knowledge and technical skills should be actively enriched and developed and not only transmitted through a quasi-osmotic process from older, more experienced entrepreneurs and technicians to apprentices. In today's situation where technology is evolving very fast the importance of education, training and continuous updating is not an option that can be left to the usual "master-pupil" process. Only too often the small firms in the sample were like closed systems, where the only input of new information came from specialised journals and where input from education and training was not only seen as a useless expense but, at times, even considered harmful, in that it took personnel away from production activity.

- knowledge and abilities, that must, in general, remain broad, should nonetheless be divided up more rigorously among the personnel of the production organisation. Thus, the problem of specialisation must be faced even in firms with very few employees. As a result:

- even such firms must become aware of the problems of the division of labour. Thus, even where the number of personnel does not warrant a real division of activities, the task that falls to each member should be defined as clearly, and as formally, as possible. Here we are thinking of those firms in the mechanics industry whose total annual turnover is, on average, about two thousand million lire and where often the entrepreneurs themselves carry out all the organisational roles from that of direct contact with the large firm to that of co-ordinator (when not the executor too) of production activity.

- most very small firms must also set themselves the task of discovering new forms of investment other than those concerned with the tangible and directly productive resources.

Apart from these considerations regarding the identity of the very small firm, local subcontracting units who intend to nurture or consolidate their relationship with medium or large firms can do so by taking up one of three, not alternative, paths of development: "operational-management", "product" or "market" repositioning. In our opinion, despite the potential threat posed by the current evolution taking place in the relationship between large purchasing firms and the pool of available subcontractors, it is still possible for the very small subcontractor firm to find good opportunities, which may even lead to operating partnerships for those very small firms who are able to intuitively find the right direction for their development.

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