
Eliciting small firms' competencies: Methodological issues

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In this paper, the authors propose a methodology aimed at eliciting small firms' competencies in order to support the small enterprises to manage organizational development through the identification of their training priorities. With small firms' competencies here we essentially refer to entrepreneurial competencies. Traditional approaches developed in literature for competency analysis are not easily exportable to small firms context for the impossibility of describing entrepreneurs' different activities within standardized roles and processes, as it happens in traditional approaches to competency management. Starting from this assumption, in this paper the authors deal with the major difficulties deriving from the necessity of analyzing entrepreneurs' skills and knowledge, given the deeply entrenched overlapping between managerial and entrepreneurial activities carried out by entrepreneurs within this kind of firms and the strong degree of inter-dependency of small firms from the environment in which they operate.

1 Preface

As result of the well known growth in downsizing, outsourcing, manufacturing delocalisation phenomena and, simultaneously, of the boost of high-tech SMEs in the latest years, SMEs are playing a crucial role and, in some cases, a prevailing role in the international economic scenario. However this success is not associated to a simultaneous growth in proper management tools and methodologies aimed at meeting SMEs' specific needs. In fact it is well known that, due to the typical attributes of small firms, it is impossible, or at least very difficult, to adjust to them management methodologies and techniques developed for large firms (Marchini 1995). In particular, within the organisational development, the traditional methods to manage human resources, and specifically the methodologies typically used to analyse training needs, can hardly be applied to SMEs.

This deficiency is becoming increasingly critical in a competitive context where environmental turbulence and rapid technological changes require all industries, also the traditional ones, to up-date and constantly challenge their know-how to cope with the different needs of the external environment. In fact the main causes for SMEs crisis are: drying up of the initial creativeness, obsolescence of the entrepreneurial know-how or, difficulty to transmit it to new entrepreneurial generations. Many studies have confirmed that entrepreneurial know-how is one of the main sources on which the innovative capability of SMEs is based which also encounter many difficulties when they autonomously have to fund costly R&D activities, acquire technological competence from the external world and maintain them within the firm. Sometimes the training need gap relates not so much to technological aspects but to managerial skills, in particular when firms have to manage growth through the implementation of specific managerial techniques and practices.

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Consequently it is necessary to have proper tools to analyse the training needs of SMEs in order to understand which is the knowledge gap that has to be fulfilled by them to improve their competitiveness level and plan proper training actions.

To this purpose, this paper puts forward a methodology to map SMEs' competencies developed within a European research project² aimed at defining proper methodologies to analyse SMEs' training needs.

By *competencies of SMEs* we basically mean *competencies of the entrepreneur*, or of the entrepreneurial group; therefore in this paper the wording "competencies of small firms and *entrepreneurial competencies*" will be interchangeable. The analysis is then mainly focused on the entrepreneur/entrepreneurial group.

Due to the central role played by the entrepreneur, to his/her high involvement in the technical and operational issues associated to manufacturing, and due to the simultaneous lack of explicit structures, roles and mechanisms for delegation and control, it is more difficult to analyse the activity performed by the entrepreneur which is not a mere managerial-administrative activity (Marchini 1995).

To manage this complexity the attempt made by the entrepreneur (deliberately or not), is to find a balance between entrepreneurial behaviours (innovation creativeness, searching for new opportunities, acquiring new resources) and administrative behaviours (efficiency, specialisation, management of existing resources). This mix is a function of the entrepreneur's attributes, the environmental conditions, the development stage of the firm, the availability of proper human resources (Reid, Jacobsen 1988).

Due to the complexity resulting from this overlapping of behaviours, the traditional methodologies developed for large firms to evaluate managerial competencies cannot be applied to analyse entrepreneurial competencies (Boyatzis 1982, Spencer, Spencer 1993). This analysis is even more difficult as small firms and entrepreneurial behaviours are strictly related to the environment where the firms operate (Lorenzoni 1987, Mussati 1990).

To understand the characteristics of the entrepreneurial behaviours resulting from both the specificity of the activities performed, and the specificity of the environment, the methodology suggested is based on the following theoretical assumptions:

- a) *Knowledge-based* approach to the theory of the enterprise; in this paper reference is made in particular to the notion of enterprise as a whole set of routines and procedures to meet external demands (Nelson, Winter 1982). The assumption is made that when these routines are distinctive and associated to higher performances they require introduction of one or more competencies.
- b) *Resource-based theory*; according to this theory SMEs' competitive advantage is highly affected by the availability, within the firm, of unique and inimitable resources (Barney 1991, Grant 1991, Conner 1991, Rumelt 1987).
- c) *Situational approach to the analysis of competencies*; according to this approach competence is the entrepreneur's capability of using in-firm and out-of-firm resources to deal with specific situations (Capaldo and Zollo, 2001).

² This proposal has been developed in a stage of the SOLCO research project funded (see footnote 1).

In this paper the attempt is made to use these theoretical assumptions to solve some methodological problems, adjusting some outcomes and general perspectives developed in these approaches to small firms.

2 Theoretical issues

2.1 *Capturing firm's uniqueness through knowledge, skills, and resources*

Following the knowledge-based approach to the theory of the enterprise, an enterprise can be basically viewed as an attempt to cope with the limited skills of individuals to manage complex tasks. According to the *bounded rationality* paradigm (Simon 1961), the enterprise is a means to increase the skills of collecting and processing the information required to make proper choices. In-firm co-ordination mechanisms are aimed at increasing these skills so that they can be substantially higher compared to individual skills. Grant (1991) views the enterprise as a site for application and integration of knowledge. Prahalad and Hamel (1990) highlight the role played by the enterprise in creating and developing distinctive competencies capable of increasing competitive advantage. Nelson and Winter (1982) maintain that enterprises, to cope with the limits imposed by a limited rationality, work out standardised responses (routine) modified over time through selection and mutation processes based upon an evolutionary approach.

In particular, following Nelson's and Winter's approach, we can state that a possible way to explain the phenomenology of the enterprise is to view it as a site for development, application and creation of knowledge. This knowledge can take the form of procedures and action plans, which are attempts made by the firm to react to stimuli from the external environment.

Due to many reasons mainly referred to the central role of the entrepreneurial know-how, in particular in some stages of the firm's life cycle, this approach can be a useful starting point to develop a methodology to investigate SMEs' competencies. These reasons are the following:

- a) Close inter-relation between the entrepreneur's know-how and the procedures to implement operational and organisational processes (in other words the small firm is designed by the entrepreneur *around the entrepreneur*)
- b) Possibility to describe SMEs in terms of procedures, processes and recurrent behaviours, rather than through the traditional approaches of the structural organisational analysis (organisation chart, roles, job-description, organisational structure)
- c) Recognition of the entrepreneur's role as a manager and integrator of different competencies.

Then the knowledge-based approach enables to describe small firms in terms of know-how, behaviours, routine and standard procedures developed through selection and retention processes, implementation of strategies aimed at maximising the adjustment degree between the firm and the external environment. However, from the operational standpoint, knowledge-based approaches are characterised by some remarkable limits. Firstly, they were not developed with reference to small firms but rather to explain, in

general terms, the enterprise phenomenology, irrespective of its size. Additionally, while these approaches are characterised by a high level of speculation and theoretical investigation, their central notions, such as the ones related to information, knowledge and skills can hardly be used from the operational standpoint (Fransman 1994).

For this reason it is necessary to adjust these approaches to the context of the small firms and resort to a more operational reformulation of the knowledge and skill-related concepts to use them for developing a survey and analysis methodology of the entrepreneurial competencies.

An attempt towards this direction, in particular towards the identification of the determinants of the enterprise performance, can be found in the resource-based theory, where the firm's competitive advantage is related to its capability of having access to and/or developing, within itself, critical and inimitable resources (Barney 1991, Grant 1991, Conner 1991, Rumelt 1987). This theory has the merit to relate firm performance to items which, apparently, are easier to be evaluated and described. Moreover, according to this theory the real key for the firm's competitive advantage is not only the availability of resources but also the capability of the firm to combine them in an effective action plan aimed at achieving strategic and operational objectives.

The resource-based approach has been applied by many authors to small firms (Capaldo et al. 2002, Steinmetz 1969, Wiklund 1996). Such applications enable to overcome the difficulty to analyse SMEs because of their excessive unsettled state resulting from a relative scarcity of roles, structures and formal procedures, by considering the firm itself as a black-box and relating its performance to its distinctive resources. Through the resource-based approach it is also possible to analyse the complex firm-environment relationship by analysing both the environment capability of supplying the firms with the resources required to survive and compete and the attempts of the firms to acquire these resources or have access to them.

However, even the supporters of the RBT approach warn on the difficulty of investigating and describing resources from the analytical standpoint. In fact, as these resources are tacit and firm-specific, it is difficult to imitate them; in other words a resource which is available to or can be imitated by everybody is no longer a resource but a commodity (Lado, Wilson 1994). This sets a limit to the possibility of making the notion of resource an operational notion. Moreover, in this approach the difference between the notion of resource and the notion of capability of using resources is not a clear-cut difference, as these two aspects sometimes tend to be used in an interchangeable manner. Also in absence of this overlapping, the problem associated to the determination of the capability of using and integrating resources is not dealt with properly, as the firm is viewed as a block-box and analysed allowing for its inputs and capability of getting them.

2.2 Competencies as a tool to analyse SMEs

The knowledge-based approach to the theory of the enterprise highlights the role of the firm as a repository of knowledge, i.e. as a set of routines and procedures where the firm inscribes its knowledge to respond to the external stimuli selected through an evolutionary process of life-long learning. The resource-based approach relates the

firm's performance to its capability of acquiring resources from the environment where it operates and developing rare and inimitable in-firm resources.

Through the introduction of the notion of competence, developed by the supporters of the situational approach (Sandberg 2000, Capaldo, Zollo 2001) it is possible to combine the notions of knowledge and resource and use this combination to define an operational methodology to analyse entrepreneurial competencies. According to the *situational approach*, the individuals' competencies can be analysed by segmenting the whole set of typical activities performed by a person holding positions under recurrent *work situations*. With respect to entrepreneurial competencies, the work situation can be described based on the following dimensions (Capaldo, Zollo 2001):

- *Behaviours and activities* implemented by the entrepreneur when performing his/her work
- *Observers*, namely stakeholders who represent the network of clients/customers and declare their expectations on the outcomes of the activities performed by the entrepreneur
- *Objectives*, i.e. the targets the entrepreneur is trying to achieve under a specific situation
- *Resources* involved.

In line with the inductive approach, competencies can be defined as the capability of the entrepreneur of using his/her own resources, environmental resources, firm's resources to face specific work situations successfully. In other words, in the inductive approach, competence does not coincide with acquired knowledge, problem solving skills, individual attributes of the entrepreneur only, but it is a complex notion including some fundamental notions, such as activities, resources, objectives, organisational stakeholders. It is also related to the specific way in which each entrepreneur is capable of using these resources, adjusting them from time to time to the specific activities, to the specific situation and to the stakeholders he/she has to interact with when performing the activities required by his/her role.

Most models proposed in the literature (Boyatzis 1983, Spencer, Spencer 1992) are instead related to the deductive-rationalist approach. This is mainly due to the fact that in this case models can be made operational and then sufficiently meet the needs for business efficiency. However it should be emphasised that these models are not very useful to analyse entrepreneurial competencies because of two reasons at least:

- a) These approaches focus on *managerial competencies*, namely the competencies required to manage and allocate resources, when entrepreneurial competencies are mainly related to his/her capability of acquiring resources.
- b) The entrepreneurial behaviour, being a mix of entrepreneurial and administrative behaviours (Hansoff 1975) is highly context and firm specific and, as such, cannot be described in terms of roles, activities, job description which can be included within well defined organisational structures and typical processes as in the case of the managers and cadres working in large firms.

These problems can be overcome by using models related to the *inductive approach* (Sandberg 2000). In fact, in this case competencies are not defined a priori, but *from the bottom*, through the observation of specific individual behaviours. In this case the com-

petence evaluation process is more effective but less efficient. In fact, adopting an inductive-interpretative approach means *building* from time to time a specific competence model (which can be hardly generalised) based upon both a detailed analysis of the activities and, above all, a survey on the meaning assigned by the entrepreneurs to their work.

Then it is necessary to develop a general framework including the wide range of situations experienced by the entrepreneur when performing his/her activities. Overlapping the entrepreneurial and administrative role implies the simultaneous performance of a set of activities which, in line with Ansoff's approach (1975), are classified in this paper as follows: administrative management, social management, competition management, entrepreneurial management, logistic process management (figure 1).

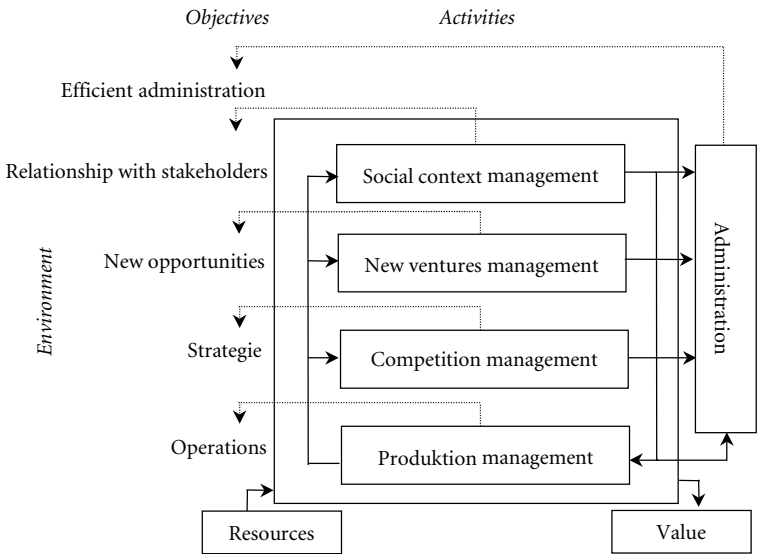


Figure 1: The entrepreneurial mix (source: Ansoff 1975)

The basic assumption is that the entrepreneur supervises and/or directly manages most or all activities associated to these management processes, and that this management requires specific competencies under specific situations. The typologies of usual situations can be classified in each of the five processes identified which refer to a set of categories of very general objectives (administrative efficiency, relationships with the stakeholders, new entrepreneurial opportunities, operations management and strategic objectives).

The assumption underlying the methodology suggested hereunder is that, through a case-study approach and a set of interviews to entrepreneurs and experts (as observers), it is possible to reconstruct for each firm and each process in figure 1 the following elements:

- a) Identification of the routine through the description of recurrent situations

- b) Analysis of the relationship between the firm and the external world through the description of the characteristics of the context in terms of resources and capability of the firm of acquiring them
- c) Identification of the competencies downstream, an analysis of the best practices in a sample of firms properly selected.

3 Methodology

The methodology illustrated hereunder suggests a set of tools which can translate into practice the theoretical assumptions outlined in the previous sections: The methodology includes the following:

- a) Selection of a sample of firms
- b) Analysis of the context
- c) Analysis of the competencies and validation of the outcomes.

3.1 Selection of the sample of firms

While large firms operating in specific industries develop homogeneous features as to strategies, organisational structures, production modes, culture etc., this rarely happens with SMEs. Not only belonging to a specific industry does not have a major impact on the structural features of the firms, but these features highly depend on other circumstances, such as entrepreneur's attributes (Schollhammer, Kuriloff 1979, Stanworth et al. 1989), typology of the entrepreneur (Smith 1967), entrepreneurial style (The Stratos Group 1990), firm's life cycle (Greiner 1977, Churchill, Lewis 1983), firm's location (Marchini 1995, Mussati 1990). Therefore, to identify a methodology which can be generalised as much as possible, it is necessary:

- a) To carry out a cross-industry study to compare the final results attained from samples of firms performing in different industries.
- b) To specify accurate choice criteria to get a sample with homogeneous features. With respect to the first point it is sufficient to identify a set of industries on which the methodology can be tested. The research project within which this work was developed, provides for each partner to carry out the same survey on a different industry so as to compare the outcomes downstream the field analysis and test the possibility to use the methodology for more general purposes. With respect to the selection criteria of the sample, the choice was made to use a time criterion (i.e. selecting firms which are going through the same stage of development cycle), and a space criterion (i.e. selecting firms performing in a specific area).

Belonging to a given industry and area, homogeneity of the firms with respect to their development stage, are necessary requirements to get some homogeneity in entrepreneurial behaviours, work situations and resources used by the entrepreneurs.

3.2 Context analysis

The aim of this step is to provide an analytic description of the environment in which firms operate in order to understand to what extent SMEs development is affected by the territory in which they operate, and how firms react to this environmental influ-

ence. According to the proposed methodology this characterisation can be obtained analysing the following two environmental dimensions:

- Economies related to *geographic proximity*
- Degree of *organisational integration* within the context
- Kind and role of *institutional regulation*.

In order to obtain this information the following steps are to be implemented:

1. *Collection of data* on the selected sector and context (environment features, enterprise size, markets, etc.)
2. *Development of a check-list of attributes* related to three dimensions of analysis (geographic proximity, organisational integration, institutional regulation). This list is developed based on the results obtained in the previous step and on the literature analysis. An example of check list is illustrated in table 1 with respect to geographic proximity.
3. *Delivery of check-list* (by a structured questionnaire) to a team of experts, including a local trade union representative, two representatives of local authorities and two representatives of local SMEs' associations; the check list can be regarded as a support tool for the experts, in order to eliminate irrelevant factors and/or add new elements in the check list.
4. *Analysis of questionnaires* to elicit the critical attributes, i.e. the environmental features that are relevant to experts within the specific context.
5. *Focus group* with experts in order to determine
 - which attributes can be considered as *critical success factors* playing a major role in influencing firms' performance within the context?
 - which are the resources available within the context that can be acquired and exploited by firms to leverage critical success factors?
 - which are, if any, the resources that are not available to firms and how firms cope with this deficiency?

Focus	Key dimensions
<i>Geographic proximity</i>	Involvement of enterprises in political, social and cultural life
	Territorial specialisation
	Availability of commodities
	Human resources
	· Training made by the enterprises
	· Availability of competencies in local labour market
	· Networks to find human resources
· Skilled labour mobility	
	Entrepreneurial culture
	Territorial competencies (traditions, local crafts)

Table 1: Example of the check list to elicit attributes related to geographic proximity

The output of this step is an analytical characterisation of the environment throughout the following elements:

- A list of environmental attributes related to one of the three main dimension (geographic proximity, organisational integration, institutional regulation) that play the role of critical success factors strongly influencing the firms' performance.
- A set of resources related to critical success factors that firms are able to acquire and exploit.

3.3 Competence analysis

Adopting an inductive approach, individual competencies can be viewed as the whole set of reasons *shared* by a group of observers explaining individuals' performance (Capaldo, Zollo 2001). The most important methodological consequence resulting from this assumption is the need to build this whole set not only through direct observation, but also through a wide participation of entrepreneurs and observers.

Adopting the inductive approach during the competence survey implies the need to carry out a wide survey on the reference entrepreneurial population. This survey cannot just be a direct observation on the field, rather it has to be an observation/interaction process between the researcher and the organisational context. For this reason an approach based on constructionist epistemology has to be used (Berger, Luckmann 1969, Giddens 1979, Weick 1976) to deal with methodological issues such as: which are the information to collect during the field analysis? Which are the information sources and the most suitable tools to gather and analyse the data collected?

Typology of information. The method proposed is based on an *situational approach*, according to which entrepreneurs' competencies can be surveyed by segmenting the whole set of activities typically carried out by individuals holding this position within recurrent *work situations*.

With respect to the scheme in figure 1, which illustrates the entrepreneurial activity as a mix of supervision activities and implementation of complex processes, the survey of entrepreneurial competencies can be made by analysing each of the processes investigated in terms of work situations. Each work situation can be characterised in terms of:

- a) *Behaviours and activities* implemented by the entrepreneur when performing his/her work.
- b) Specific sub-objectives correlated to the macro-objective.
- c) One or more stakeholders/observers who represent the network of clients/customers expressing their expectations as to the outputs of the activities carried out.
- d) One or more critical resources used within the situation under investigation.

As already stated in §2 and in line with the situational approach, entrepreneurial competencies can be defined as the capability of the entrepreneur of using his/her own resources, environmental resources, and organisational resources to face some work situations successfully.

Information sources. The methodology developed aims at highlighting competencies as result of an accurate analysis of the way in which entrepreneurs manage their work under real situations, interpret the outcomes of their actions and construct the meaning of the competencies through and interaction with in-firm and out-of-firm stakeholders.

The information sources are the individuals themselves. In fact the explanations given by entrepreneurs and observers to justify their evaluations (Schanck 1986, Toulmin 1979) enable to get many information on the dimensions of the competencies (situations, activities, resources, stakeholders), and to catch the points of view of the stakeholders who declare their specific expectations and interact with the person who plays a specific role at different times and under different situations.

To make a survey of the competencies it is then necessary to identify for each case investigated a net of stakeholders who, as observers, are able to illustrate the work situations and the entrepreneurial skills (figure 2). These observers were three, at least: the entrepreneur (self-evaluation), an in-firm stakeholder and an out-of-firm stakeholder.

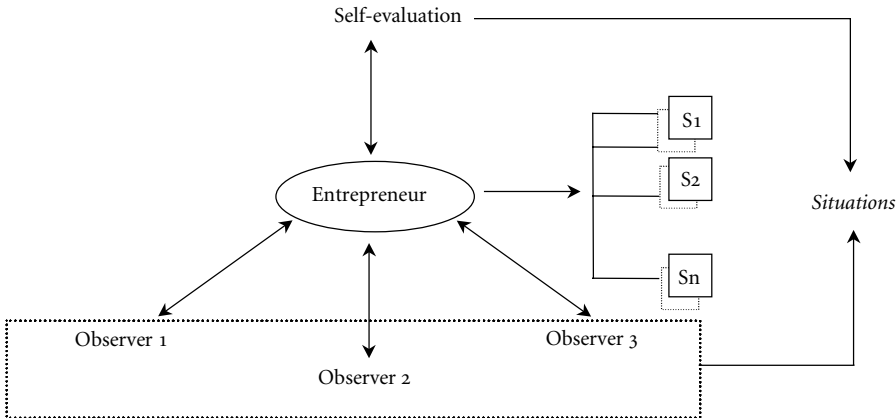


Figure 2: Survey of the entrepreneurial competencies through a network of observers

Survey tools. The methodology illustrated in this paper is based on the assumption that it is possible to make a survey of the competencies starting from the analysis of the explanations through which observers reconstruct the meaning of their actions (Schanck 1977, 1986). Consequently, making a survey of the competencies implies having proper tools and techniques to analyse the words through which individuals rationalise and explain what generates their and others' behaviours and performances.

The evaluations made by the observers and their explanations to justify them will be recorded through semi-structured interviews made according to specific protocols to facilitate collection of meaningful information in the following stages, when the data collected during the field survey will be analysed. The objective of the interview is to highlight situations of recurrent work for each role, and the competencies used within each situation according to the point of view of each member belonging to the network of observers. The findings of the interview will be analysed through text analysis techniques (*argument analysis and content analysis* – Fletcher, Huff 1990, Toulmin 1979). This in order to highlight, through the explanations of the evaluations made by the observers, the action capabilities which better illustrate the competencies of the sample individuals under the different situations.

To process the information obtained through the interviews, a survey scheme will be developed along with standard formats where the most meaningful information will be summarised. The analysis stage will have two objectives:

- Identification of the most meaningful *work situations* for each type of macro-process.
- Identification of the *competencies and resources used* under each situation.

		<i>Situations</i>					
<i>Competencies</i>	C1				□		
	C2						
	...			□		□	
					□		
				□			□
	Cn		□				
	Objectives						
	Resources						

Figure 3: *The situations / capabilities / resources matrix*

These information can be summarised through the *situations/skills/resources matrix* for each of the macro-processes analysed (entrepreneurial management, administrative management, competition management, social management and logistic process management), as in figure 3. The matrix is a tool to summarise the results obtained from the analysis of each firm through a case-study approach. To summarise, the basic methodological requirements for survey and mapping of entrepreneurial competencies are the following:

- The survey of the entrepreneurial competencies has been made on a substantial sample of firms selected according to specific criteria related to the location of the firm and its life cycle.
- The competencies survey has to assume as its input a detailed analysis of the context to identify the resources and the critical success factors typical of the territory.
- The survey of the competencies has to be made through the analysis of the words through which observers explain their and others' behaviours and performances.
- Competencies are those skills which explain the performance gap between a sample of best performers and a sample of average performers; to select the two samples specific indicators will have to be identified which will enable to evaluate the performance of the firms.

4 Conclusion

The methodology presented in this paper is aimed at implementing an operational procedure to make a survey of the SMEs' competencies to identify their training needs. Through this methodology SMEs can be provided with support tools to identify their training needs in a competitive context. As result of the internationalisation of competition and of the technological innovation turbulence, it is becoming increasingly difficult for small firms to manage this competitive context, as they cannot afford high investments for innovation and research. From this perspective, the survey of the SMEs' training needs can become a valid tool to manage the territorial development in all those areas where SMEs are highly integrated with the territory and are the prevailing form of enterprise.

This methodology is based upon the observation that the firm-environment relationship and the entrepreneurial skills are the very core of the analysis and that SMEs' competitive advantage lies in the interconnection between these two fundamental dimensions. Therefore, entrepreneurial competencies are highly firm-specific and an inductive approach is required to analyse the features of the territory (defined as critical resources) and the entrepreneurs' attributes (defined as distinctive skills related to the capability of: acquiring these resources, controlling the internal/external relationship, integrating these resources and knowledge with an action plan aimed at achieving specific objectives, implementing a consistent monitoring of a chaotic and complex set of very different processes). Once this basic approach has been accepted, the main methodological critical points relate to the actual capability of the tools proposed of gathering and describing the specificity of the firm-environment relationship and catching the slight differences in the content of the entrepreneurial competencies. In addition to this it will be necessary to check the possibility to generalise the outcomes overcoming the limits resulting from a specific characterisation obtained through a bottom up approach. A first step to get this result is a comparison between samples of firms performing in different industries and territorial contexts.

From the practical standpoint, the outcomes obtained in terms of training needs and guidelines will have to be translated into concrete actions. In addition to this it will be necessary to find a way to transfer this methodology to those organisations which could draw a direct benefit from it (firms, trade associations, trade unions, local organisations).

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