

Value creation in small firms: a competence-based approach

Guido Capaldo^a, Luca Iandoli^b, Cristina Ponsiglione^c

Summary

For Small and Medium Enterprises (SMEs') competencies we mean the capability of entrepreneur and of her/his collaborators of acquiring, using and developing successfully resources for their business purpose, in the specific context in which firm operates.

Thus a direct link exists between competencies, value creation and firm's strategy and growth.

Several contributions were developed by literature on competencies evaluation and management; these contributions are, in general, related to organizational needs of large firms and are not able to be used in de-structured organizational environments as SMEs.

The purpose of this paper is to make a contribution to the problem of competencies analysis and management in SMEs. The aim of this work is to present a methodological framework, developed within the European research project SOLCO¹, in order to identify SMEs' training needs priorities and support the organizational development, the intellectual capital management and the knowledge-based value creation strategies.

1. Introduction

As it is well known, according to the competence-based theory, the value creation process of firms is strictly related to the capability of managers of acquiring and develop critical, not imitable resources (Rumelt, 1987; Grant, 1991; Barney, 1991; Prahalad and Hamel, 1990). Within this perspective, the competitive advantage of a firm depends on the availability of specific and critical *capabilities*. By *capability* we mean the firm ability to match tangible and intangible resources, in order to implement several business process of value creation for customers. *Capabilities* are the outcomes of integration of several organizational processes, in which individual competencies are activated.

Summing up, the value creation processes of a firm are based on individual competencies, but the development of capabilities requests the existence of a network of links among competencies, within business processes and crossways different processes. The individual competencies activate the tangible and intangible resources that take part in the value creation processes (Cannavaciolo et al., 2003). If individual competencies are the starting point to activate critical capabilities, on which, in turn, the value creation processes are based, then it is crucial for firms employ suitable methodologies to support the analysis and development of these competencies.

^a Guido Capaldo, Associate Professor in Business Economics and Organization; tel: +39 081 7682936, Fax: +39 081 768 2154; email: guido.capaldo@unina.it

^b Luca Iandoli, Researcher in Business Economics and Organization; tel: +39 081 7682935, Fax: +39 081 7682154; email: iandoli@unina.it

^c Cristina Ponsiglione, PhD; tel: +39 081 7682935, Fax: +39 081 7682154; email: ponsigli@unina.it (corresponding author)

Address for all authors: DIEG - Dept. of Business and Managerial Engineering, University of Napoli Federico II, Piazzale Tecchio 80, I-80125 Napoli (Italy)

¹ Partners of project SOLCO (Leonardo Program) are, DIEG, RSO (Italy), ASE (Belgium), CGIL (Italy), PGP (Spain) and ERDC, University of Birmingham (UK). SOLCO is aimed at develop and test methodological tools suitable to support small and medium firms to manage their organizational development, through the

According to this aim, this paper presents a methodological framework, focused on SMEs, to support these specific firms in analysing competencies and their training needs priorities.

Coherently with the competence-based theory, by SMEs' competencies we mean the entrepreneur's and his/her collaborators' abilities to acquire, use and develop successfully a number of resources for their business purpose, within the specific context in which the firm operates. Competencies of SMEs are highly firm-specific and context-specific (Becattini, 1989, Lorenzoni, 1990; Marchini, 1995; Mussati, 1990).

. Because of this reason, it is difficult to develop standardized training programs for SMEs. Being firm-specific and context-specific SMEs', competencies cannot be analysed through the standardised methodological approaches suggested by the literature for large firms (Boyatzis, 1983; Spencer e Spencer, 1993). On the contrary, the analysis of SMEs' competencies requires an inductive approach, based on the analysis of the wide range of situations experienced by entrepreneurs and his/her collaborators (Capaldo and Zollo, 2001; Sandberg, 2000), through an in-depth investigation of the context in which firms operate.

While it seems impossible to design standard training programs, it might be reasonable to develop standardized methodologies to analyse SMEs' training needs which would enable us to identify the specific competencies to be developed in order to strengthen the firm's competitiveness e in order to support the value creation processes.

This research deals with the methodological issues related to building of competence-based methods to analyse SMEs' training needs related to the strategic development.

2. Critical issues in eliciting competencies in SMEs

The methodology proposed in this paper is based on two theoretical pillars:

- the context-specificity of competencies of SMEs;
- the contingent approach to competencies management

2.1 Context-specificity of competencies of SMEs

The analysis of SMEs' competencies is mainly focused on the entrepreneur/entrepreneurial group. As result of the central role played by the entrepreneur, of his/her high involvement in the technical and operational issues related to manufacturing, and of the lack of explicit structures, roles and mechanisms for delegation and control (Marchini, 1995), it is difficult to analyse the activity performed by the entrepreneur which is neither a mere managerial-administrative activity, nor a pure entrepreneurial activity (Hansoff, 1975; Marchini, 1995). For this reason, we'll use the wording "entrepreneurial competencies" to refer both to the entrepreneurs and to the key managerial roles within the firm.

Competencies elicitation is critical as small firms and entrepreneurial behaviours are strictly related to the environment in which firms operate (Becattini, 1989, Lorenzoni, 1990; Mussati, 1990).

identification of their training priorities. According to the methodological framework developed within the project, each partner tested the methodological tools in a specific industrial and geographic context.

This specific relationship between context and competence specificity in SMEs can be explained allowing for two factors:

- *the high dependence of small firms on the entrepreneur's traits and culture.* The frequent overlapping of the ownership and control functions and the concentration of entrepreneurial and administrative-managerial functions in the hands of the entrepreneur, contribute to outlining a framework where the entrepreneur's personality and culture have a major impact on the state of his/her business. It can be stated that "the individual entrepreneur is an interpreter of the entrepreneurial atmosphere within which he/she develops his/her business" (Raffa, Zollo, 2000); consequently, if we really want to understand the development paths followed by small firms, we have to make an in-depth analysis of the context in which the entrepreneur operates.
- *small firms' organisational flexibility.* Small firms are usually characterised by a low level of formal organisational structures and by a lack of staff members who can define tasks, standardise organisational procedures and processes, carry out functions to support typical management functions (marketing, finance, management control, research and development) on a regular basis and in a structured manner. In most cases this results in a not clear-cut setting of the firms' borders: unlike large firms, small firms are not self-sufficient vis-à-vis the external environment, they do not have an "in-firm environment" (Raffa, Zollo, 2000) which can provide them with an intrinsic autonomy.

These factors suggest two fundamental conclusions for this paper:

- small firms can be defined as "incomplete" economic agents, as they depend on the external environment for all human, cultural, financial, economic factors required for their performance;
- the relationship between small firms and their specific context is very complex. Even the notion of context-territory has to be analysed from a multi-focus perspective taking into account not only the physical and geographic but also the social and cultural attributes of the territory.

This makes us realising that individual competencies in SMEs cannot be identified through competence evaluation methodologies developed for large firms (Boyatzis, 1983; Spencer and Spencer, 1993). Actually, in large firms individual competencies are made explicit by analysing structured processes and roles; in small firms the higher dependence on the context, the need to access to its resources, the higher organisational flexibility, the impossibility of setting a clear-cut border between the out-firm and the in-firm environment, require the development of ad hoc methodologies which take these specificities into account and view the territorial context as a core element of the analysis. Those specificities ask for a contingent approach to competencies management.

2.2. Competencies as results of situated action

The knowledge-based approach to the business theory highlights the role of the firm as repository of knowledge (Penrose, 1959) made up by a whole set of routines and procedures, selected through an evolutionary

life-long learning process (Nelson and Winter, 1982). The resource-based approach refers to firms' capability of acquiring and developing critical, rare, not-imitable resources.

Introducing the notion of competence formulated by situational approach supporters (Sandberg, 2000, Capaldo e Zollo, 2001) it is possible to integrate the concepts of knowledge, capability and resource and use this integration to outline a methodology to identify entrepreneurial competencies. According to the situational approach, a possible way to identify individuals' competencies is to segment the whole set of the typical activities carried out by the individuals performing the roles investigated within *work situations*.

In line with the situational approach, competencies can be defined as the *individual's ability to activate his/her own resources*, the environment's and firm's *resources* to cope with specific work situations successfully; as such, competencies are then strictly linked to the way in which individuals interpret and attach importance to their work (Sandberg, 2000). In the situational approach, competence does not coincide only with acquired knowledge, capability of solving problems, personal traits; it is rather a complex concept including a number of crucial dimensions: activities, resources, objectives, organisational counterparts, in-firm and out-firm customers.

Most models suggested by literature on competence management (Boyatzis, 1983; Spencer e Spencer, 1993) can instead be referred to the deductive-rationalist approach. This is mostly due to the fact that in this case models can be easily translated into managerial tools meeting the large firms' needs for organisational efficiency. However it is worth stressing that these models are not very useful to analyse entrepreneurial competencies in SMEs. This is due to two main reasons:

- a) these approaches are focused on managerial competencies, i.e. the competencies required to manage and allocate resources, and entrepreneurial competencies are mainly related to the acquisition of resources;
- b) in SMEs activities and behaviours are extremely context and firm specific; as such, they cannot be described in terms of roles, activities, job profiles, job descriptions within well-defined organisational structures and typical processes, like for managers working in large firms.

2.3 Methodological implications

Based on these remarks and on what illustrated in the previous sections, it is clear that a methodology aimed at identifying SMEs' competencies should include the analysis of three main points:

- a) an analysis of the in-firm/out-firm relationship through the description of the characteristics of the territorial context in which the firm operates, in terms of resources and of firm's capability of acquiring them;
- b) identification of the routine procedures developed and established by SMEs to meet the environmental stimuli, in terms of work situations;
- c) identification of the competencies used in the routine procedures, in terms of best practices implemented in a sample of firms properly selected.

4. The methodology

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

- 1) context analysis;
- 2) firms identification and analysis;
- 3) elicitation of competencies and analysis of training needs.

4.1 Context analysis

The aim of this stage 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 territorial area where they perform their activity, and how they react to this environmental influence. According to the methodology suggested in this paper, this can be obtained analysing the following environmental dimensions:

- 1) geographic proximity;
- 2) inter-organisation integration;
- 3) role of institutional regulation.

A check-list (for example see table 1) of factors related to these three analytical dimensions was developed as result of a literature review and several meetings with the other partners of the project.

The context analysis phase includes the following steps:

- gathering of quantitative data on the selected sector and context (environment features, enterprise size, markets, etc.);

- delivery of the check-list (by a structured questionnaire) to a team of experts including local trade union representatives, representatives of local government and representatives of local SMEs' associations;

- analysis of the questionnaires to elicit the critical attributes, i.e. the environmental features viewed as crucial by the experts within the specific context;

- focus group with the experts in order to define:

- i) the attributes that can be considered as critical success factors playing a major role in affecting firms' performance within the context;

- ii) the resources available within the context that can be acquired and exploited by firms to leverage critical success factors;

- iii) the resources not available to firms and how firms cope with this deficiency.

The output of this stage is an analytical characterization of the environment including the following elements:

- a list of the environmental attributes related to one of the three main dimensions (geographic proximity, organisational integration, institutional regulation) playing the role of critical success factors which highly affect the firms' performance;

- a set of resources related to critical success factors that firms are able to acquire and exploit.

Focus	Key dimensions
Geographic proximity 	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

4.2 Firms identification and analysis

The aim of this stage is to provide an analytic description of the most important processes carried out by a sample of selected firms in order to identify - through case studies and interviews with entrepreneurs and external observers - the most recurrent job situations for entrepreneurs, the resources activated and the parties involved in each situation.

The selection of the sample of firms to be investigated is a critical stage in developing the methodology; it must meet specific homogeneity criteria such as geographic location, industrial sector, life cycle stage, firm size (in terms of sales turn-over and number of employees). After selecting the sample of firms, the methodology includes semi-structured interviews with entrepreneurs and managers in order to get the following data:

- general data;
- employment and organization structure;
- main processes carried out (business, management and control, support processes);
- reference professional figures managing the processes identified;
- points of strength and points of weakness;
- strategies and development plans.

The output of this stage is a classification of the main processes carried out by the sample firms and a preliminary identification (followed by a further analysis in the following stage) of the critical recurrent situations faced by the entrepreneur or his/her collaborators when managing the processes mentioned above.

4.3 Elicitation of competencies and training needs analysis

When adopting an inductive approach, individual competencies can be viewed as the whole set of reasons shared by a group of observers when explaining individuals' performance (Capaldo and 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 involvement of entrepreneurs and observers.

Adopting an inductive approach in a competence survey implies the need to carry out an in depth investigation of the reference entrepreneurial population. This investigation cannot be a mere direct observation on the field; it has to be an observation/interaction process between the researcher and the organisational context. For this reason a constructionist epistemology-based approach has to be used (Berger e Luckmann, 1966, Giddens, 1979) to deal with methodological issues such as: which are the data to be gathered during the field analysis? Which are the information sources and the most suitable tools that can be used to gather and analyse the data collected?

Typology of information. The methodology suggested here is based on an situational approach, according to which entrepreneurs' competencies can be investigated by segmenting the whole set of activities typically carried out by individuals holding this position within recurrent work situations. Each work situation can be characterized in terms of:

- behaviours and activities implemented by the entrepreneur when performing his/her work;
- specific sub-objectives correlated to the macro-objective
- one or more stakeholders/observers who represent the network of clients/customers expressing their expectations as to the outputs of the activities carried out;
- one or more critical resources used within the situation under investigation.

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-firm stakeholders.

The information sources are the individuals themselves. In fact the explanations given by entrepreneurs and observers to justify their evaluations (Toulmin *et al.*, 1979; Schanck, 1986) enable us to get many data on the competence dimensions (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 an analysis of the competencies it is then necessary to identify for each case investigated a number of stakeholders who, as observers, can illustrate the work situations and the entrepreneurial skills. The research work requires a minimum number of three observers: the entrepreneur (self-evaluation), an in-firm stakeholder and an out-of-firm stakeholder.

Survey tools. The methodology illustrated in this paper is based on the assumption that an analysis of the competencies can be made starting from an analysis of the explanations through which observers reconstruct the meaning of their actions (Schank, 1986). Consequently, making a competence survey 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 have been recorded through semi-structured interviews carried on according to specific protocols to facilitate gathering of meaningful data in the following stages, when the data collected during the field survey will be analysed. The objective of the interview is to highlight recurrent work situations 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 and Huff, 1990; Toulmin *et al.*, 1979). This in order to highlight - through the explanations of the evaluations made by the observers - the action capabilities which better illustrate the individual competencies used under different situations.

The analysis stage has 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.

The data obtained can be summarised through the situations/skills/resources matrix for each of the macro-processes analysed (fig. 1). The matrix is a tool to summarise the results obtained from the analysis of each firm through a case-study approach. Within this matrix, competencies are related to one or more work situations and each work situation is characterised in terms of an objective and in terms of activated resources.

Figure 1. The Situations/Competencies matrix

		<i>Situations</i>			
		S_1	S_2	...	S_m
<i>Competencies</i>	C_1		X		X
	C_2			X	
	...		X		
	C_n	X			X
<i>Objectives</i>		O_k	O_k	O_k	O_k
<i>Resources</i>		R_k	R_k	R_k	R_k

5. Main outcomes

The proposed methodology was tested through a cross country-cross industry study, in order to understand the level of applicability in different contexts; the following sections show the outcomes of the application of methodology in the plant engineering industry of the province of Naples.

5.1 Main outcomes of Context Analysis

The outcomes illustrated hereunder refer to a field survey carried out in a specific territorial/sectorial context: the plant engineering industry located in the province of Naples. The plant engineering industry located in the province of Naples accounts for 13%² of all industrial activities performed in the same district. This industry mainly includes small and medium sized firms (only 24.4% of them with a number of employees exceeding 40) performing in the design, installation and maintenance functions of industrial works. The people involved in the context analysis were selected in order to get different points of view on the main features of the specific context. The individuals selected in this project stage were: representatives of SMEs, representatives of local Trade Unions, members of the main entrepreneurial associations. The context analysis outcomes were collected and summarised by means of a tool named correlation table (for example see tab. 2). In this table the experts had to describe, with respect to every key dimension contained in the check list described in §4.1, the context factors representing an opportunity (plus), or a threat (minus) for the enterprise development. With respect to each dimension experts were required to specify the local resources available to small firms in order to exploit the plus and/or to overcome the minus related to each dimension.

As to the geographic proximity, the survey conducted highlighted a strong rooting of the firms into the territorial area resulting in a low propensity to internationalisation. The mainly local dimension of the outlet markets and the low level of specialisation of the production processes seemed to be the main factors affecting the firms' success; in particular, the low process specialisation seemed to be strongly affected by the difficulty in finding professional figures specialised in specific critical areas. This was due to the lack of proper training programmes and to skilled workers propensity to mobility.

Table 2: Correlation between geographic proximity and key dimensions

<i>Key Dimensions</i>	<i>Plus</i>	<i>Minus</i>	<i>Resources</i>
Rooting of the firms in to the territory and participation in the local political-social life		Low propensity to internationalisation	Participation in trade associations (still low)
Entrepreneurship which favours search for new business areas and innovation	Exploitation of local synergies, know-how enhancement and transfer		Availability of adequate public funds allocated by local institutions
Specialisation degree (product/process)	Highly specialized product	Low process specialisation	
Proximity of raw materials (easy		Low availability of	

² Mercurio Project, *Analisi dei fabbisogni formativi delle Piccole Imprese dell'API, Napoli*

to find)		raw materials	
Human resources: Training carried out directly by the firms	Presence in the territory of bodies and trade associations which carry out monitoring and orientation activities	Low availability of internal financial resources	Availability of adequate public funds allocated by local institutions
Availability of key competencies (easy to find)		Low availability of professional figures specialised in specific sectors and/or areas	
Mobility of skilled labour		Skilled workers tend to leave Campania because of low wages	
Procedures and channels for staff recruitment.		Inefficient communication	Local newspapers, trade associations, temporary job agencies (still under- used, word of mouth).

As to the *organisational integration*, the survey highlighted a low propensity to co-operate amongst the firms performing in the same industry. This was mainly due to two factors: a deep-rooted individualist culture of the industry firms and the lack of properly skilled professional figures both in the operational and in the managerial fields. Both factors generated a number of critical situations such as: difficulty in managing demand fluctuations in a flexible manner, difficulty in increasing the market size, inability to produce innovation.

As to the dimension related to the institutional *regulation*, the survey highlights a mis-alignment related to the institutional training offer and the firms' needs. As widely recognised, this mis-alignment generates: lack of skilled professional figures, difficulty in having access to new technologies, the low propensity to innovation. There are also problems related to the management of the firms-institutions relationships (time-wasting bureaucratic procedures); this generates a difficult communication between firms and institutional bodies and very complicated routine activities.

5.2 Main outcomes of firms identification and analysis

In line with what illustrated in section 4.2, the sample firms were selected based on criteria which guaranteed the homogeneity of the firms with respect to location, life cycle, size, industrial sector. Specifically the following elements were taken into account:

- representativeness of the firm with respect to the typologies of the production processes carried out in the industry (electrical, hydraulic and industrial systems);
- ability of the firms to face critical situations highlighted by the context analysis .

The survey of the sample firms was carried out through semi-structured interviews. The aim of these interviews was to identify the main processes implemented by the firms, the recurrent critical situation in the process management, the reference managerial figures to address critical situations, the growth strategies pursued by the sample firms.

Table 3: Correlation scheme between the outcomes of the first and second stage of the project

<i>Firms' strategic objectives</i>	<i>Critical processes and situations</i>	<i>Management</i>		<i>Resources activated or to be activated</i>		<i>Outcomes</i>	
		<i>Functions</i>	<i>Competencies</i>	<i>In-firm</i>	<i>Out-firm</i>	<i>For the firm</i>	<i>For territorial context</i>
Opening of new markets	Strategy formulation	Top management	Planning and control skills Strategic and marketing skills	Planning and control systems	Creation of strategic alliances	Increase in the market share	Economic development of the area, competitiveness increase
Product diversification and innovation	Human resources management (Selection, training of skilled personnel) Human resources management (in-firm commun.) Financial cycle management	Technical management Business finance Entrepreneur	Technical-specialist skills Financial skills Managerial skills	Specialist know-how Informal communication channels	External advisory Know-how Contracting bodies	Competitiveness increase, possibility to compete on international markets	Know-how transfer, dissemination of an innovative culture.
Process and technologies innovation	Technological transfer (training of skilled personnel)	Entrepreneur	Technical-specialist skills Managerial skills	Employees motivation, informal communication systems	Institutional support (bodies, trade associations, schools, universities)	Increase in the quality of processes and products; increase in performance (in terms of costs and time)	National and international competitiveness increase
Size increase	Financial management (out-lays /receipts adjustment) Human resources management (search for skilled labour)	Entrepreneur	Recruitment skills Negotiation	Strong attachment to work	Public funds for training	Higher soundness of the firm, possibility to compete on European and American markets	Employment
Creation of alliances and partnerships	Individualist culture (no willingness to create alliances and co-operation relationships)	Entrepreneur External communication	Networking		Support by trade associations	Balancing of the demand flows, know how increase, possibility to compete on international markets	Economic growth, job increase, growth of a territorial culture

Table 3 summarises the main elements come out from the interviews carried on in the second stage of the Solco project, outlining a correlation between the context attributes analysed in the first stage of the project (§ 5.1) and the specific reality of the firms included in the sample selected. The analysis of the first line of this table highlighted a strong link between the outcomes of the context analysis and the outcomes of the interviews carried on in the second stage of the project: opening of new markets and internationalisation are recognised as main growth opportunities for the single firm and as an economic development opportunity for the whole area. However, these opportunities are not currently caught by the entrepreneurs of the five sample firms. They are

rather viewed as long-term strategic objectives for which an exhaustive planning and proper tools have not been developed.

Most sample firms have already started projects to diversify and innovate their products; but these projects have to deal with a number of problems generated by the difficulty in finding skilled professional figures specialised in critical areas.

The implementation of these projects might contribute to developing an innovation culture both within the firm and in the area, with a resulting impact on the territorial economic development of the context investigated.

The process and product technological innovation is one of the strategic objectives of all sample firms, although all of them highlighted how difficult it was for them to implement innovation projects given the difficulty of getting specialist know-how, and given the current lack of formal processes for in-firm communication (with resulting organisational co-ordination problems).

The size increase of the firms is highly affected by the low level of financial resources, which is due to the fact that it is difficult for entrepreneurs to manage the financial cycle in a balanced manner and to get an adequate support by institutional bodies.

The five firms selected recognise that creating strategic alliances is a crucial objective. However these alliances are difficult to be established due to the cultural barriers which are deep-rooted in the reference context. It is then necessary to favour the development and the dissemination of a more co-operation oriented entrepreneurial culture both in the firms and in all stakeholders (Local Authorities, Entrepreneurs' Associations, Research and Training Centres, Universities and Trade Unions) which can play a crucial role in the economic and social development of the area.

5.3 Main outcomes of competencies elicitation and training needs identification

The competence identification process can be sub-divided into two steps: identification of the entrepreneurial/managerial competencies to govern the critical situations faced by the firm in implementing typical processes (situations highlighted in the second stage of the project); identification of the competencies required to support the firm's development strategies, but not possessed by the company.

In both cases, identification is carried out through interviews with the entrepreneurs of the sample selected.

As to the analysis of the competencies required to manage the typical processes implemented by the firms, the interviews highlighted that critical situations can be differently coped with by the entrepreneur along on a "continuum". At one end of this "continuum" there are the critical situations faced by the entrepreneur by activating knowledge and capabilities; at the other end there are critical situations - mainly linked to exogenous factors - that the entrepreneurs is not capable of governing.

To allow for these elements, the methodology used to analyse the interviews included the following steps:

- 1) analysis of the factors generating critical situations;
- 2) sub-division of the crucial factors into two categories: mainly endogenous factors and mainly exogenous factors;
- 3) identification of the competencies based on the factors generating the critical situations.

The identification in point 3 was made in two different stages:

3a) as to the endogenous factors, competencies were identified which enable the entrepreneur - given the specific context - to improve his/her capability of managing critical situations;

3b) as to exogenous factors, competencies were identified which are useful to the firm to widen its scope of action within the context, given the impossibility of radically changing the surrounding conditions.

Some results of the analysis are illustrated in table 4, with reference to one of the typical processes highlighted in the second macro-stage of the project: plant design/installation.

Table 4: Mapping of the competencies related to the plant design/execution

Plant design/execution

- 1) check of the project and management of the activities
 - 2) search for skilled personnel in case of excess demand
 - 3) management of the bureaucratic procedures for the operation of the plant
 - 4) management of the personnel making the plant
 - 5) management of the critical situations linked to the concrete feasibility of the project
-

This first stage of the survey highlighted that the competencies identified denoted an adaptive rather than pro-active entrepreneurial behaviour aimed at managing specific circumstances and context constraints.

As to the strategic development, it is worth stressing that the five sample firms are “successful” firms and, consequently, they are developing projects aimed at increasing their market shares. The competencies required to implement these projects can be summarised as follows:

- innovation management;
- establishing and managing stable relationships with research and training centres;
- organisational development;
- networking.

The competencies identified (both those related to management of critical situations and those related to growth strategies) were classified based on a number of criteria:

- a) degree of adequacy: competencies owned or to be developed;
- b) strategic importance: high, medium, low;
- c) nature and accessibility: implicit, explicit, firm specific, firm addressable;
- d) mode of acquisition: make or buy.

This classification is the main output of the research work; thanks to it, it is possible to summarise and identify the competence needs of the firms allowing for their strategic aims and the characteristics of the surrounding context. To summarise the outcomes of this classification a number of matrices were used; for example, table 5 illustrates the positioning of the competencies along two dimensions: the *strategic importance* and *adequacy degree*.

Table 5: Positioning of the competencies with respect to the strategic importance and adequacy dimensions

<i>Strategic importance</i>	<i>Adequacy degree</i>	
	<i>Low</i>	<i>High</i>
<i>High</i>	Technical-legal and financial knowledge to manage global service projects; Development of a long-term entrepreneurial vision Planning and control; Human resources management; training needs identification,; selection and evaluation, training management; Strategic development: strategic marketing, design and management of a commercial network, innovation management.	Knowledge of the market, of the local context and of the suppliers. Approach to the customer based on advisory and suggestions Ability to motivate collaborators; leadership skills Customer-oriented strategy and focus on quality
<i>Low</i>	Evaluation of the suppliers and of the procurement process management Project management - quality control - vision by process	Informal activity planning Technical-specialist knowledge Knowledge of bureaucratic procedures for operation

The sample firms differently evaluated their points of strength and points of weakness and, consequently, their training priorities. However, despite these specific evaluations some common trends were identified:

- only competencies related to the core operational activities of the firm are usually considered as adequate competencies; specifically, those related to plant execution and participation in tenders for contract;
- knowledge and capabilities related to resource management are considered as competencies “to be improved”; in particular those related to management of human resources and procurement;
- knowledge and capabilities related to planning and control are perceived as competencies “to be improved”, in particular those related to times and costs of the orders;
- competencies related to strategic planning (strategic marketing, networking, implementation of development strategies, etc.) are perceived as competencies “to be improved” or to be acquired ex-novo.

As to the strategic importance, it can be observed that the competencies perceived as more important by the firms are also those considered as competencies to be improved or acquired. This might be related to the high firms’ need for market diversification and to the difficulties encountered by the firms in finding the necessary know-how to implement a market diversification strategy.

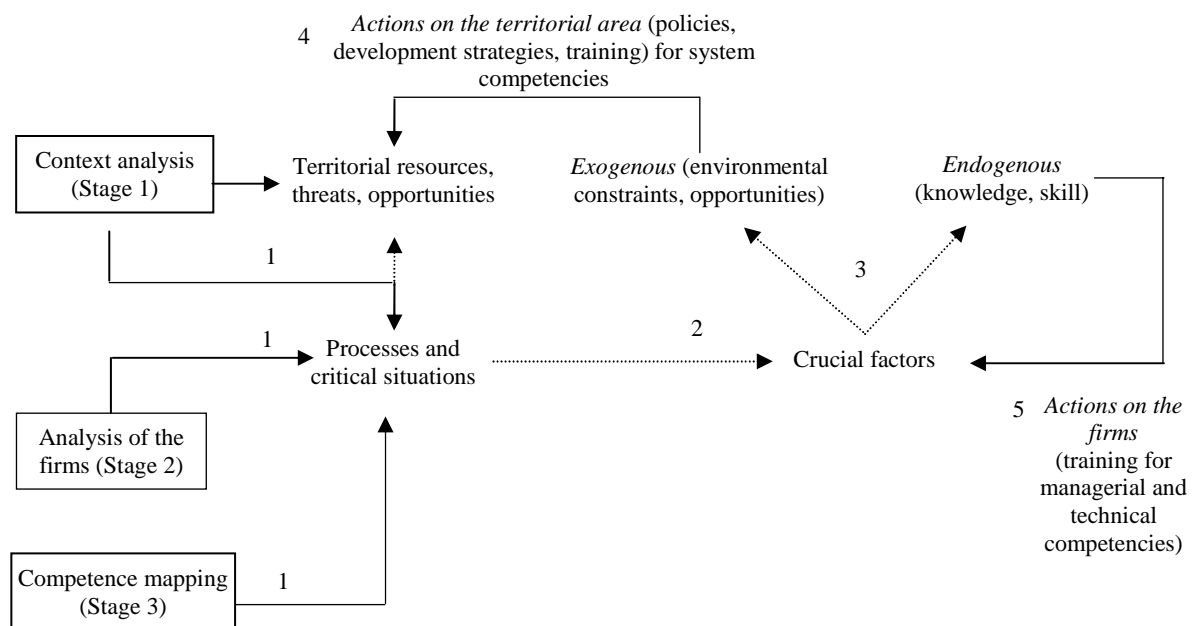
6. Conclusion

The scheme illustrated in figure 2 is a synthetic description of both the methodological and empirical path followed to develop the methodology and the field analysis. The proposal put forward here is to integrate the

outcomes of the individual stages in order to identify a relationship between entrepreneurial/managerial competencies and local development and outline proper modes of intervention (see fig. 2).

The context analysis (stage 1) enabled to get a description of the territorial context in which the different clusters of firms operate in terms of *resources, threats and opportunities* in the area. The analysis of the firms (stage 2) enabled us to collect detailed information on employment structures, strategies, activities, production processes and business supporting processes, in-firm organisation, points of strength and points of weakness, critical situations experienced by the firms in the various contexts and in the various industries investigated. In stage 3 an in-depth analysis was made of the processes and critical situations through a mapping of the competencies activated by the firms. Specifically, the outcomes of the third stage highlighted how the entrepreneurial and managerial action of the small firms consists of a mix of choices and actions changing from time to time and including both proactive choices and actions – driven by an entrepreneurial approach – and adaptive choices and actions aimed at managing specific situations, constraints and limits imposed by the context.

Figure 2: Relationship between entrepreneurial/managerial competencies and local development



From the operational point of view, these two levels of entrepreneurial and managerial actions were analysed through the identification of the *crucial endogenous factors* over which the firm is able to exert a given degree of control, and of the *exogenous crucial factors*, faced by the firm in an adaptive way, as it is impossible for it to have an effective impact on the environmental constraints which go beyond its scope of control.

This sub-division of the crucial factors for the development of small firms' competencies into endogenous and exogenous factors can contribute to identifying two main typologies of action (actions on firms and actions on the territory):

a) a first typology of action carried out by the individual firms through training and development of the managerial and technical competencies required to manage endogenous factors successfully;

b) second typology of action carried out at territorial and systemic level, through training and development of system competencies, exploitation of the opportunities and resources in the area, reduction of the negative effects generated by the constraints and the low level of competitiveness which characterise the reference area.

These conclusions suggest the actions to be undertaken by entrepreneurs and local development agents. The main outcomes of the project might be a starting point to refine and transfer this methodology. The first steps to transfer the methodological tools designed were already made; research outcomes were shared with small firm entrepreneurs, managers of training centres, researchers and representatives of local institutions during dissemination meetings, in each of the countries involved in the project. Similar initiatives have already been scheduled; they are mainly aimed at comparing the research outcomes with the outcomes obtained by the European partners in different geographic contexts in order to enhance the general applicability of the methodology.

References

- Barney J.B., 1991, 'Firm resources and sustained competitive advantage', *Journal of Management*, **17**, 99-120.
- Berger P.L., Luckmann T., (1966), *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*, New York, Doubleday.
- Becattini G., (1989), "Riflessioni sul distretto industriale marshalliano come concetto socioeconomico", *Stato e Mercato*, **25**, 111-128.
- Boyatzis R.E. (1983), *The competent Manager*, New York, Wiley
- Cannavacciuolo L., Iandoli L., Ponsiglione C., (2003), "Una metodologia basata su Activity Based Costing e Analytic Hierarchical Process per la determinazione del costo delle competenze", paper presented at the XIV Annual Scientific Meeting of the 'Associazione Italiana di Ingegneria Gestionale, Bergamo, Italy.
- Capaldo G., Zollo G. (2001), "Applying fuzzy logic to personnel assessment: a case study", *Omega*, **29**, 585-597.
- Fletcher, K.E., Huff, A.S., (1990), "Argument Mapping, in Huff A.S. (edited by), *Mapping Strategic Thought*, Chirchester, Wiley.
- Giddens A., (1979), *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis*, Berkeley, University of California Press.
- Grant R.M., (1991), 'The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation', *California Management Review*, Spring.
- Hansoff, H.I. (1975), "The state of practice in management systems", working paper presented at *Eiasm*, Brussels.

- Lorenzoni G., (1990), *L'architettura di sviluppo delle imprese minori: costellazioni e piccoli gruppi*, Bologna, Il Mulino.
- Marchini I. (1995), *Il governo della piccola impresa*, I e II, Urbino, Aspi/InsEdit.
- Mussati G. (1990), *Alle origini dell'imprenditorialità. La nascita di nuove imprese: analisi teorica e verifiche empiriche*, Milano, EtasLibri.
- Nelson R.R., Winter, S.G. (1982), *An Evolutionary Theory of Economic Change*, Cambridge (MA), The Belknap Press of Harvard University Press.
- Penrose, E.T., (1959), *The Theory of the Growth of the Firm*, Oxford, Basil Blackwell.
- Prahalad, C. K., Hamel, G. (1990), "The Core Competence of the Corporation", *Harvard Business Review*, 68.
- Raffa M., Zollo G., (2000), *Economia del software*, ESI, Napoli.
- Rumelt R.P., (1987), 'Theory, strategy, and entrepreneurship', in Teece D.J. (ed. by), *The Competitive Challenge*, Cambridge (MA): Ballinger, 137-158.
- Sandberg, J. (2000), "Understanding human competence at work: an interpretative approach", *Academy of Management Journal*, 43(1), 9-25.
- Schank, R.C., (1986), *Explanation Patterns: Understanding Mechanically and Creatively*, Hillsdale (NJ), Lawrence Erlbaum.
- Spencer, L.M. and Spencer, S.M. (1993), *Competence at Work. Models for Superior Performance*, New York, Wiley.
- Toulmin, S.E., Rieke R., Janik A., (1979), *An Introduction To Reasoning*, New York, Mac Millan.