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**Absorptive capacity of industrial districts**

**Version 5**

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## **1. Introduction**

Absorptive capacity has become a widely used concept to describe and evaluate the ability of firms to access and implement information produced outside the single firm. The interest in the ability of firms to absorb external information can be seen as a result of the growing specialisation of firms (Smith 1981) and the need to access and implement external information to create new knowledge and useable end-products (Richardson 1972). To make use of information produced outside the firm is often considered as problematic and costly to the single firm (Dahlman 1979). Some of these costs are related to the fact that knowledge is dispersed, contextual determined and its real value and benefit often unknown to the potential user and contextual determined (Hayek 1937).

The definition of the concept of absorptive capacity used in this paper derives from the much quoted article by Cohen and Levinthal from 1990, and covers the ability of firms to recognise the value of new external information, assimilate it and apply it to commercial ends (Cohen and Levinthal 1990 p: 128). Central to the concept is that even though the absorptive capacity of a firm is dependent on individuals Cohen and Levinthal (1990) stress that the organisational set up is decisive. Where the organisational structure includes the structure of the firm in relation to their interaction with the external information sources and their internal information flows. Moreover, it is the degree of complementarity between the knowledge which the firm already possesses and the external base of information of interest which has a crucial impact on the absorptive capacity of the firm. The more an overlap exists between the firm and the external information the higher the absorptive capacity of the firm will be.

The absorptive capacity of a firm defines the ability of a firm at a given time to absorb external information. Most firms will need to develop and be dynamic to ensure their competitive advantage. This calls for an ability of the firm to develop, change or enhance their absorptive

capacity. This dynamic process relates to the absorptive capabilities of firms, which covers the process of creating new knowledge ensuring an up-to date competitive absorptive capacity of the firm.

The creation of new knowledge or the accumulation of knowledge has in relation to absorptive capacity traditionally been dependent on the amount and characteristic of their R+D investments in a firm perspective (Cohen and Levinthal 1990, Trispas 1997). Recently new approaches in relation to accumulation of knowledge and the object to enjoy the benefits of absorptive capacity has developed and broadened. Today the research objects regarding absorptive capacity of firms in different organisational settings like MNCs (Björkman et al 2002), but also nations, regions and smaller regional entities as industrial districts (Aage, 2001, Giuliana 2002, Criscuolo & Narula 2002). The accumulation of knowledge has also developed from mostly focussing on R+D to include other sources of knowledge creation and learning through different organisational strategies, including networking and other firm relation to more systemic and institutional elements (Cooke 1998, Grabher 2002, Lundvall & Maskell 2001).

Of special interest is the development in the research of the absorptive capacity of firms located in clusters like industrial districts (ID)<sup>1</sup>, and to participate in the development of a model, which explains the competitiveness of some ID not only as a result of internal processes, but also as a result of the ability of the ID to interact and to make use of information sources from outside the ID<sup>2</sup>. The article focuses on the question, whether it is possible to approach the ID as *one* organisation and to identify if the concept of absorptive capacity developed for firms can be applied to the entity of IDs. Important organisational features as structure, knowledge creation and learning mechanisms and the need for leadership and direction are included in the study to identify a possible absorptive capacity at a district level.

To test the presence of absorptive capacity at industrial district level an empirical study from the industrial district of Montebelluna located in the Veneto region, SE Italy, is included. Even though this district is situated quite isolated at the foothill of the Dolomites, it has been able to stay competitive within leisure and sportswear industry for more than 100 years. The central aim of the study is to identify crucial aspects and micro-processes in the industrial district, which have important impact on the absorptive capacity of firms. Likewise the empirical study seeks to identify whether the district includes elements and processes, which makes it possible to

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<sup>1</sup> Clusters constituted by co-located firms have been defined and named differently. Here the concept of ID will be used. The concept is defined later in the article.

<sup>2</sup> See Becattini & Rullani 1996

see the district as a self-contained organisation and relate the concept of absorptive capacity to a district level.

### **1.a Knowledge and information**

As mentioned in the beginning knowledge is difficult and costly to absorb as a result of the nature of knowledge and its contextual relation. This entails that knowledge is unique and place-specific, a social output of a historical process of accumulation of technological capabilities and skills. Both codified and tacit knowledge are included in contextual knowledge, where especially tacit knowledge makes it problematic to transfer from one firm to another. Problems related to transfer of tacit knowledge is found in the fact, that tacit knowledge is a subjective property of knowledge, linked to the abilities that an individual possesses on the basis of pieces of knowledge developed through practical experiences (Belussi & Pilotti 2002).

It follows here that knowledge produced outside the firm in a different context is information to the single firm, where information are communicated data, which starts the cognitive process of towards knowledge. In this way information is interpreted and implemented in the firm and becomes knowledge, which gives the firm further opportunities to create more knowledge, innovate and learn. When knowledge leaves the context in which it is produced, and transferred as information to another firm and context, it will not be similar to the original knowledge, due to interpretation of the receiving firm.

### **2. Absorptive capacity of firms**

The cognitive distance between provider and receiver of respectively knowledge and information, often explains the problem of firms to absorb knowledge. Especially cognitive proximity between firms and their environment, which here cover other firms and their markets, is seen as important to the ability of the firm to absorb information (Maskell 2001). The entrepreneur or the leadership in a firm and the place-specific characteristics (e.g. physical environment, history and institutions) are important to the constitution of the cognitive characteristics of the firm (Marshall 1925, Spender 1998), developed and supported through knowledge creation and learning taking place in the firms (Cohen and Levinthal 1990, Loasby 2000).

In the work of Loasby (2000) the cognitive features of firms are seen as having a dominating impact on the absorptive capacity of firms. The cognitive features of firms are represented by the concept of interpretative systems, which focuses the device of the firm and

structure the knowledge and skills within an interpretative frame. The interpretative frame constitutes the cognitive boundaries of the firm, which are reinforced by the emergence of locally relevant institutions. The aim of the interpretative system is to arrange and simplify the complex content of knowledge in a firm and affect what people in the firm can learn and accomplish. Within this interpretative system some extent of cohesion, due to the interpretative framework, must exist to structure and rationalise actions due to an ambiguity of knowledge inputs and possibilities available. To obtain cohesion it is important to use compatible patterns of interpretation in the firm to create an orientation of the firm. Construction of beliefs shall help to take decisions and conduct activities, which are credible within the context of the firm (Loasby 2000). But it is not only the framing conditions of the firm, which has an importance to the absorptive capacity of the firm.

Cohen and Levinthal have in their article from 1990 a more internal firm perspective on the organisational requirements for absorptive capacity of firms. In their work organisational requirements for absorptive capacity include prior knowledge in the firm, which is a result of former R&D conducted in the firm and direct involvement and experience from production and manufacturing. The characteristics of prior knowledge in a firm are likewise an outcome of the diversified knowledge base of the employees, which can be both of a technical character or more general in terms of knowledge of useful complementary expertise within and outside the firm. Prior knowledge is important to the absorptive capacity of the firm, as it enhances the ability to understand external information, interpret it into knowledge and learn and innovate within related subjects, following that learning is cumulative<sup>3</sup>.

Also the organisation of information flows within the firms and between the firms and their environment, including firms and markets, are seen as important to the absorptive capacity of the firms. Gatekeepers are persons in firms, which bring external information into the firms. Their importance and role differ both due to the complementarities between the knowledge bases within the different sub groups in the firm and the knowledge the firm already hold and what external knowledge it needs. The more cognitive differences that exist between providing and receiving firm the more there will be need for gatekeepers (Cohen and Levinthal 1990). Even though the role of the gatekeeper traditionally is central to the absorptive capacity of firms their presence can also damage the access to useful external knowledge. Under circumstances with rapid and uncertain change the gate-keeper might not be the best to estimate what is important external information and

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<sup>3</sup> Cumulative learning provides more learning within a related field, but this does not imply that it is the most appropriate learning that takes place. In this way the cumulative learning can lead to lock in situation, because some knowledge loses its actuality.

what is not (Cohen and Levinthal 1990). In general the role of gatekeepers includes not only their access and absorption of external knowledge and information to the firm, but also to increase the information processing capability of the whole sub-unit by making the members capable of communicating across units within and outside the firm (Tushman & Katz 1980). Cross-functional absorptive capacities cover the ability of the organisation to bridge the interfaces between different units in the firm like the R&D department and manufacturing. Direct personal contacts across divisions and functions are seen as one of the most important conditions for cross-functional absorptive capacity. Certain preconditions have to exist to facilitate that information is able to flow and get absorbed. Shared knowledge and expertise is essential for communication. To optimise the communication process both within and across sub-units shared language and symbols are necessary (Cohen and Levinthal 1990).

Both Cohen and Levinthal (1990) and Loasby (2000) stresses the importance of diversity in the knowledge creation in the organisational set up in to be able to develop distinctive skills. Likewise both sources stress the advantage of broad and general interpretative system to meet the demands of overlapping knowledge bases and complementarities to enhance the absorptive capacity of the firm. “However, what needs to be similar is the orientation of the business, and the perception of the environment, to which that orientation is meant to correspond” (Loasby 2000 p: 11). The weaknesses of a narrow interpretative system, which favours the creation of specialised knowledge and the impact of the absorptive capacity of firms as a result of certain organisational communication structures are underlined beneath.

“ With regard to the absorptive capacity of the firm as a whole, there may, however, be a trade-off in the efficiency of internal communication and against the ability of the sub-units to assimilate and exploit information originating from other sub-units or the environment. This can be seen as a trade off between inward-looking versus outward-looking absorptive capacities (Cohen and Levinthal 1990 p: 133).

### **Summing up**

The capacity of firms to absorb external information is dependent on the presence of compatible cognitive knowledge bases between firms or firms and other sources of external information like organisations and markets. The interpretative system of the firm defines what kind of knowledge creation and learning that takes place in the firm, which constitute the knowledge

base in the firm both according to content and extend (specialised or general knowledge). The frame that defines the interpretative system is a result of the place-related institutional impact and the entrepreneurial role, which includes leadership and directions.

The prior knowledge, which constitutes the knowledge base of the firm, is an outcome of the history of the firm, including their R&D investments, other learning and knowledge mechanisms and production experiences and can be of both technical and complementary character. The complementary knowledge is important as it helps communication both within and among firms. General and overlapping knowledge bases are important to the absorptive capacity just like the structure of the firms in relation to their way to recognise the value and implement external information in the firm. Gate-keepers are individuals within firms who create relations between the firm and its environments. The more the nature of the knowledge bases differs between firms and their environment or between sub-groups within firms the more there is a need for gate-keepers. Certain preconditions have to exist to facilitate that information is able to flow and get absorbed. Shared knowledge and expertise is essential for communication so information can flow and get absorbed. Shared language and symbols are necessary to optimise this process.

### **3. Absorptive capacity of industrial districts**

In this chapter the features of ID will be examined and related to the identified characteristics of absorptive capacity of firms dependent on their interpretative system and organisational set-up. In this way there will be a focus on the knowledge creation and learning mechanisms and institutions found in ID and how the different mechanisms influence the ability to absorb information external to the district. It will also be examined if leadership to direct the orientation and to make strategic choices of the ID can be identified.

#### *Industrial districts*

Industrial districts will here cover the spatial agglomeration of similar and/or related firms. The concept relates to a sub-regional area with a specialised industrial production. The institutional set-up and collective action of agents within the system have a crucial impact on the competitive advantages of the industrial district.

The concept of industrial district is closely related to the work of Marshall and his theory of external economies, which can develop within an agglomeration of firms in the same industry (Marshall 1925). These external economies are a result of links between firms, organisations and

institutions within a geographical area. The external economies include access to a labour market with specialised skills and the development of specialised inputs and services, and knowledge spill-overs that arise. The external economies lowers transaction costs and raises benefits of firms. Where Smith explained the division of labour between specialised industries, Marshall underlined the development of variation within a specialised production. In recent studies the division of labour within the specialised production in industrial district has been approached like a cognitive division of labour (sharing competencies in a community-district or through open networks) (Pilotti 2000). The presence of external economies and the development of knowledge spill-overs leave the firms with an advantage not only to lower transaction costs in their activities in the district, but also to gain access to knowledge and experiences developed in the other firms.

“ Because there are many firms, the industrial district has an important advantage over a single human brain in facilitating external assessments of the effectiveness of operating routines within each firm, by its customers, its suppliers and its competitors. Within such an environment individuals can also partially escape the limitations of their own brain by exploiting the differences between brains in the evolution of their internal division of labour; they can draw on vicarious experience, which appears directly relevant and discuss each others routines” (Loasby 1998 p: 80).

The benefit from knowledge spill-overs not only ease the interaction of agents inside the ID, but also give the single firm access to other firms experiences and knowledge pools, which can be used in a wider perspective than mere interaction in the ID. Still the content and extend of the knowledge pool vary among ID just as the accessibility of firms. In the following the impact of different knowledge and learning mechanisms to the characteristics of the knowledge pool are presented.

#### *Knowledge creation and learning in industrial districts*

The interaction between firms, organisations and institutions is crucial to the knowledge creating and learning mechanisms in the industrial districts. Knowledge creating and learning mechanisms will often be unique due to the economic structure (the special industry and organisations located in the place), where “institutions define how things are done and how learning take place, while the economic structure affects what is done and therefore what is learnt” (Lundvall & Maskell 2000 p: 362).

Even though the single industrial district must be considered as unique it is possible to identify types of knowledge and learning mechanisms in industrial districts. Maskell (2001) has identified two types of knowledge creating and learning mechanisms in clusters. The mechanisms are either related to a horizontal or a vertical dimension, based on the dynamics of the activities of the firms and their mutual interaction, knowledge enhancing mechanisms and institutional preconditions. Firms conducting similar activities constitute the horizontal dimension of an industrial district. The presence of common knowledge due to similar production conditions and activities allows knowledge enhancing mechanisms as variation, observation, comparison, selection and rivalry to exist. These knowledge creation and innovation mechanisms are much related to Marshallian external economies and spill-overs. The institutional setting in the district is influenced by cognitive proximity, where shared language and codes ease communication, spread of knowledge and innovations and interpretation of local events. The vertical dimension of industrial districts is found where the tasks of the firms are complementary and firms are linked together in input-output relations. The knowledge enhancing mechanisms are related to specialisation, interaction, exchange, co-ordination and collaboration. Trust is the key institutional asset in this kind of district, enhanced by the need of the firms to co-ordinate and co-operated in inter-firm relations, due to the division of knowledge in the district (Maskell 2001).

To stay competitive firms in ID will in most cases have to absorb information external to the ID. A taxonomy of knowledge creation systems in districts are also produced by Belussi & Pilotti (2000). Here the focus is on the relation between knowledge produced within the ID and the degree and what kind of information that derived from outside the district. The taxonomy contains three types of industrial districts presented below:

#### Industrial districts with socialisation of local knowledge

The knowledge pool is primary based on tacit and local derived knowledge. The structure of the innovation system is formed by interactions of firms within the districts. Knowledge is transferred in production networks, where firms co-operate at arm's length. The inter-action of firms is based

on the fact that they hold different knowledge. The knowledge distributed is mostly tacit and without the presents of innovation and expansion of the given stock of knowledge.

#### Industrial districts with absorption of external knowledge and recombination of global/local knowledge

The knowledge pool within this kind of district is a mix between tacit and codified knowledge. External knowledge is absorbed, and a recombination of different sorts of knowledge takes place. The knowledge stems from both internal and external networks and agents. The global knowledge is absorbed both by firms and local organisations. The stock of knowledge grows incrementally, with the ongoing industrial activities. Firms learn to react and to adjust to market signals, to cooperate in dense, but territorially dispersed networks. The knowledge absorbed by firms and local organisations are spread among agents in the industrial district, as a result of imitative procedures. Sources of innovation is more formalised taking place in engineering departments and through local interactions with suppliers, sophisticated clients, local experts, suppliers of machinery and local organisations. Product innovations are frequent.

#### Industrial districts with absorption of external knowledge and development of new global knowledge

Even though this kind of district has a high prevalence of codified knowledge, tacit knowledge is still important. The firms are technologically dynamic, and the leading firms in the districts frequently patent. In many firms formalised R&D-departments exist. A large amount of original knowledge and (systematic radical) innovations are created to feed the global circuits. The district is an exporter of knowledge either through their products or disembodied. Not all firms in the district fit this description, but only a small group of innovative leading firms. These leading firms absorb external knowledge, combine it with new pieces of knowledge and transfer it to their subcontractors and specialised suppliers. Through time this knowledge creation process has enlarged the stock of knowledge in the district.

Even though codified knowledge is in focus in this type of districts the importance of tacit knowledge is stressed, as tacit knowledge is seen as central to the absorption and utilisation of external knowledge (Belussi & Pilotti 2000 p 7 – 8).

The absorptive capacity of firms is growing through out the three types of industrial districts in the taxonomy. The growing district internal sophistication in R & D and the knowledge creation can especially be emphasised as an explanation to the growing absorptive capacity, together with the ability of the district to exploit the external information in the industrial district, creating a diversified pool of knowledge. In the highest stage of the absorptive capacity related to the taxonomy, the lead firms in the district are pointed out as the main sources to absorb external information to the district. This indicates that a kind of leadership could exist in the district and play a directive role of the information entering the district to the benefit of the firms in the ID. The role of leadership to the absorptive capacity of firms in industrial districts will be developed further later in this paper.

### *Institutions*

As mentioned above institutions within the district have an impact on the relations between firms and between firms and other organisations, just as they define how things are done and how learning take place. Institutions will in relation to industrial districts capture a broader economic sphere than within the trans-action cost approach. In this way the impact of institutions will not only be to constrain opportunism in markets, but a mean to direct the action of agents, both by constraining and by constituting behaviour within a wider economical sphere including knowledge creation and learning in and among firms. A distinction can be made between institutional environments and institutional arrangements, where institutional environments support, condition, constrain and enable institutional arrangements. Institutional environments include law, police and professional, educational, scientific and financial structures, which is a reflection of the norms and values in the district, while the institutional arrangements (habits and life style) include a wide variety of social practises (Nooteboom 2000).

In an industrial district it is also possible to talk about two types of institutions, general and specific. The general institutions relate to the overall community in the district, while the specific institutions relate to the economic sphere and the economic structure of the industry, as the dimensions of the clusters mentioned above. Institutions in industrial districts will often be place-related, as they are a result of the culture and history of the specific territory. The place-related institutions often result in social learning processes of the people in the district (Maskell & Malmberg 1997, Witt 2000):

“Communication, particularly of the non formal kind that occurs in socialising with other agents, enables people to observe, and make comparison with the behaviours of others and their rewarding or non-rewarding experiences. The more frequent and intense the latter observations are, the more likely there are some similarities in the subjective representation of knowledge. In this way it is not only socially shared interpretation patterns that can emerge, so too can common tacit knowledge of facts, hypothesis, practises, skills, and actions, including socially shared knowledge of rewarding or penalizing experiences (Witt 2000 p:10).”

In this way institutions have an impact on the function of the relations, which constitutes the knowledge creation and learning mechanisms. The communication is eased as a result of both a common language in its formal sense, but also as a result of the evolution of a common interpretative system. The interpretative system consists of both a shared subjective (what is good and bad) and objective (knowledge of skills and practises) interpretations. Institutions in industrial district can both have positive as well as negative impacts on the knowledge creation and learning mechanisms. Some institutions enhance innovations due to ease of communication, while other institutions hamper the need for change, if the institutions in the industrial district create relations that are so tight, exclusionary and durable, that they create inertia or lock-in situations.

### **3. a. Leadership in industrial districts**

An important role of leaders in firms is to create an orientation, which shall help to take decisions and conduct activities credible to the firm in a world with an ambiguity of information input and possibilities available.

The role of leadership in industrial districts is to be compared with the one in firms, where leadership can direct what kind of knowledge that enters the industrial district and construct belief structures and an orientation of the information firms will have access to in industrial districts, and in this way meet the problems of information overload and the bulk of useless information ( Bathelt et al 2002). The development of belief structures also provide a way to overcome problems, if there is a lack of common knowledge, as the belief direct the actions of agents within a firm, even though the agents do not posses the same amount or type of knowledge (Foss 2001).

Leadership in firms is mostly exercised through authority. Leadership can be divided between personal and impersonal authority. Personal authority is achieved through

persons giving orders, while impersonal authority is carried out by codes of conduct in a society (Arrow 1974). It is here suggested that firms, intermediary organisations, can exercise leadership in industrial districts and institutions. Intermediary organisations in industrial districts can be research and higher education institutes, technology transfer agencies, chambers of commerce, governance agencies, business associations, vocational training organisations etc. In recent studies the role of the single successful entrepreneur is also underlined in relation to the direction of the development in the industrial district. Here the entrepreneur influences the general industrial development through taking various initiatives, which is explained by the wish of the entrepreneurs to *give something back* to this certain place (Feldman 2001). Some intermediary organisations and firms can be categorised as what Pilotti defines as meta-organisers, which is a category of agents and organisations, which is found in highly competitive industrial districts. The role of meta-organisers in industrial districts is

“ ...to participate in the problem solving process of the firms belonging to the local production system related to innovative activity; they have the ability of contextualising and seeking out new problems to be dealt with, since they are the bridges and connectors (for the de-contextualisation or re-contextualisation of knowledge) between the district and the outside world” (Pilotti 2000 p:153).

In this way meta-organisers, where it is possible also to include individuals, in industrial districts direct the actions of the firms and create an orientation through their structuring and selection of important problems to be dealt with and to focus on. Firms, who act as meta-organisers, will often be successful firms, and where the success has been visible due to spatial proximity. Firms who hold a lead position can influence the belief of other firms, as their actions previously have resulted in successes and adoption of the actions of the successful firms will often take place by other firms (Miner & Haunschild 1992). A multi-divisional leadership can exist in some industrial districts. Here one leadership is to be found within the marketing division in the district, another leadership could be found within the production or a single niche.

Also the institutional set-up in industrial districts can be said to have a directive role through indirect authority. Institutions in industrial districts can be compared with the impersonal leadership. Institutions creating codes of conduct direct the actions of firms and other agents in industrial districts. The shared knowledge and/or beliefs of firms help them to structure their actions under a variety of circumstances and possibilities. The guidance by institutions shows

similarities with the type of strategy in firms, which is characterised as emergent and build on perspective<sup>4</sup>. Here it is of key-importance that the perspective is shared among the agents in the organisation through shared values and norms. A sort of collective mind is established, where individuals are united through common thinking, behaviour and associated beliefs (Mintzberg & Quinn 1992).

#### **4. Summing up**

The presence of an institutional set up which creates a shared interpretative system in some ID leaves the firm and other agents with the advantage of approaching the knowledge bases of other firms, organisation and agents not as information, but as knowledge. In this way it is possible to explain enhanced absorptive capacity in some ID as the result of the access of firms to a pool of knowledge, which are based on external economies in general and dynamics found within the principle of variation especially.

The external information produced outside the ID is captured by firms, through relations to firms or other information sources outside the district. The pool of general knowledge access-able to the firms leave them as a part of a broad and diversified interpretative system constituted by the industrial district, which favours their ability to absorb external knowledge. The presence of institutions, lead firms, and intermediary organisations form a sort of leadership in industrial districts, which create an orientation and direct activities credible to the firms located in the district. An important advantage of the membership of firms in industrial districts is that they are included in a wider interpretative system. An interpretative system that a single firm never would be able to hold itself, because of cognitive limitations. Having access to a shared knowledge pool, deriving on internal and external sources, firms in industrial district do not have to hold the total knowledge available. The firms can, when they need it, access the knowledge pool and absorb the knowledge that they do not posses themselves. The existence of a leadership through the role of meta-organisers and institutions in industrial districts ensure that actions are directed and focused among an ambiguity of possible information inputs.

Cognitive proximity exists in two ways. Cognitive proximity can be found among the agents in some industrial districts due to the presence of shared knowledge, language and

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<sup>4</sup> Strategy as emergent and as a perspective has been taken from the classification of strategies developed by Mintzberg. Here the degree of deliberateness is central to the different types of strategies. Beside perspective as a type of strategy also plan, play, pattern and position are included in the classification.

institutions including symbols and interpretative systems. An enhanced cognitive proximity is likewise obtained through the shared pool of knowledge leaving the single firm with a greater pool of general knowledge, which make the absorption of external information easier. The cognitive proximity is enhanced by the knowledge creation and learning mechanisms related to spatial proximity. Especially the horizontal knowledge creation and learning mechanisms seems to contribute to a shared pool of knowledge, as the firms share the same production and market conditions.

The presence of an extended cognitive perception, due to the industrial district, also allows the local processing of even more global information in the district that the same number of firms outside a district could never account for. On the other hand it will also be possible to find industrial districts with a weak ability to absorb external information, as a result of a narrow and specialised interpretative systems.

## **5. The industrial district of Montebelluna, NE Italy**

### *Introduction to the district and the survey*

Montebelluna is a city situated quite isolated at the foothills of the Dolomites located in the region of Veneto North East, Italy. The city is the present centre of the district. The production in the district is mostly city- and sports shoes within the industry of leisure and sportswear produced both by local producers like Tecnica and Lotto, but also multinational firms like Salomon and Rossignol-Lange. Firms like Arena, Nike and Prada have in the recent years located in Montebelluna to get access to the employees and the knowledge in general concerning design. At the same time firms in the district have increasingly re-located low-tech manufacturing to low cost countries, especially Rumania. Even though the district is considered to be one of the most successful in Italy the problem with overcapacity exists. Product diversity is the answer of most of the firms to this problem, and production of a wide range of leisure and sportswear products is very common within the single firm. Still it is possible to talk about two main categories of firms, footwear and clothing firms, as it also appears below.

The district consists of Montebelluna and 11 surrounding municipalities. Approximately 425 firms, where 304 mainly produce footwear and 121 clothing, are located in the district. The majority of the firms have from 2 – 10 employees. In 1999 8220<sup>5</sup> people was employed in the district (6185 in footwear and 2035 in clothing). Today clothing, city and leisure shoes,

mountain boots and ski boots are the products, which are most important for the total output in the district accounting for 1300 mio. USD. The district account for following percentages of the world production in following products: 50% of technical mountain shoes, 65% of after ski boots, 75% of ski boots and 80% of motorcycle shoes (Banca Veneto 2000).

Because of the dynamics and the competitiveness of the district of Montebelluna, the district has been well-studied (see e.g. Belussi & Pilotti 2000, Pilotti 2000). This empirical presentation is based on these previously studies and my additional research, which focuses on the absorptive capacity of firms. The survey includes 12 interviews, which took place in May 2001 with firms producing mostly sports and leisure shoes under their own brand name. There is a majority of local firms, but also multi-national firms are included in the survey. The average size of the firms in terms of numbers of employees in the survey is higher than the average size of firms in the district, which can be explained by the focus on end producers with their own brand name and multinational firms. The main part of the firms is in the high end of technological advanced firms in the district conducting R & D and patent innovations. The survey also includes an interview with a design firm and relevant organisations and meta-organisers in the district. The figures and statistics derive from the OSEM rapport from 2000 produced and financed by the local bank, Banca Veneto in co-operation with a central meta-organiser intermediary organisation in Montebelluna; Museo Dello Scarpone. The aim of the survey was to uncover the absorptive capacity of firms within fashion and design in the district of Montebelluna. The firms were asked about the nature of their relations and sources of information deriving from outside the district and how these were influenced by their location in the ID of Montebelluna, related to the features of knowledge creation and learning mechanisms, institutions and leadership. Features identified as important to absorptive capacity of firms. The interviews were semi-structured and had a duration of 1 –2.5 hours and often including a visit to the production facilities.

#### *Outline of the historical development in the district*

The production of leisure and sportswear in Montebelluna started in the 1890s. The main product was a multipurpose boot, which could be used for both skiing and climbing. In 1930 firms in the district began to produce single purpose boot (one boot for mountain and one for skiing). A specialisation entered the district, with a division of labour among firms, where some firms produced soles, other firms the upper, inner and outer body of the boots. In the 1960s the district

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<sup>5</sup> In 1991 people employed in the municipality of Montebelluna accounted for 8.413

consolidated itself with strong lead firm-subcontractor relations and the development of brand names to the single lead firms. In the late 1960's a radical innovation was released within the production of the most produced item in the district at this point, the ski boot. Instead of having a boot created by a lot of single parts of both leather and plastics the American firm Lange introduced the ski boot, as we know it today, a full form plastic ski boot<sup>6</sup>. The innovation was created in USA, but put into production in Montebelluna, as the firm could not succeed in turning their innovation into a usable end product in USA. Lange established his production in Montebelluna to commercialise the innovation. To produce the full form ski the firms had to require new and expensive production technology. Not all producers choose to follow this development, but instead they started production within similar products as tennis shoes, after ski boots and city shoes. In this way the production became diversified in the district, and at the same time firms started displacement of the production of low-tech goods to countries with lower costs.

The development with further diversification of products within leisure and sportswear and relocation of most manufacturing has proceeded up till today. 70% of the production in Montebelluna are non-winter items and include sports clothes and shoes, sun glasses, bags and outdoor clothes. The biggest single group of products in Montebelluna is city and leisure shoes accounting for 28 % of the total production in Montebelluna in 2000 (Veneto Banca 2000) Still only 3% of the firms have more than 100 employees.

Even though vertical knowledge creation and learning exist in Montebelluna, the horizontal dimension is dominant with many firms producing end products under their own brand. Research and development, design and manufacturing of models and test products are produced in the district, while some or all low-tech manufacturing often is de located to low cost countries like Rumania.

### *Knowledge creation and learning*

#### *Use of information and knowledge deriving from outside the district*

Most of the firms in the survey state that their products are a result of experience and knowledge already existing in the firm. An exception is found within the input on fashion and design. Here all the firms in the survey stated that they had a high external information input in their products, which for the majority of the firms derived from outside Montebelluna. Traditional and smaller

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<http://www.montebelluna.too.it/>

local firms informed that external information about fashion and design from the district made up an important share of the total input.

New information about market and customers, innovations and services within the sphere of the leisure and sportswear industry is mostly captured through relations outside the district. This includes collection of data with customers and distributors and participation in different kind of fairs, through magazines related to the industry and more general magazines of fashion and design. All firms had contacts to designers outside Montebelluna. The contacts with external designers were often at a consultant basis and close formal relations are rare. The big firms often use students from design schools all over the world including a big share of students from the School of Art in Venice.

Selection of designers from outside the district is often a result of their reputation circulating among the firms within the district. Contacts to firms and persons outside the district are in some cases established through other firms in the district. An example is a local designer who got his Japanese customer as a result of a fair with the aim of showing forms to produce shoes in Montebelluna, where the customer was not so interested in the forms themselves, but more in who had developed the design. In this case the *modalista*<sup>7</sup> referred to the local design firm.

It is not only the firms in Montebelluna who try to capture information about fashion and design. This is likewise being undertaken by some organisations, which will be further dealt with under the chapter on leadership.

### *Knowledge creation and learning among firms inside the district*

The input of technical knowledge in the products developed outside the firms is mostly a result of a very mobile labour market, and the fact that employees bring knowledge with them from former workplaces located inside the district. Nearly all interview persons have been

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<sup>6</sup> The firm Lange was established by the American Bob Lange, who also was responsible for the radical innovation.

<sup>7</sup> *Modalistas* (pattern developer) as an occupational group has always been present in the district. The education is mostly related to the single firm, but with scheduled courses at schools. The *modalista* is a person who makes the prototype of the shoes. The designer comes with the idea. In the small firms they only have *modalistas* and here the *modalista* take care of the prototype production, design and fashion input. Sometimes they use external designers. In the big firms they have *modalistas* (who make the prototype), internal designer (interpret fashion trends to the firm and design) and external designers, who come with the ideas.

employed in other sports- and leisurewear firms in Montebelluna, and often they and the rest of the workforce have friends and family members employed in other related firms.

All the firms stated that the level of co-operation within the district was low in relation to their products. Still nearly everybody knew each other, and it was stated that gossip within the industry went around fast, because of informal relations with friends, former colleagues and family.

Observation of the competitors plays a crucial role as a part of the information flow in the industrial district. According to observation nearly all the firms, had samples of their competitors products. Copying of competitors products was a part of the knowledge creation process, where the firms stated that they took good ideas and innovations from the competitors and transformed them into products adapted to the knowledge base of the single firm and the preferences of their customers. Some of the firms with a high innovation rate explained that they had displaced the testing of their products to locations like China to avoid coping. A smaller local firm recognised the problem with coping of knowledge deriving from both their firm and their use of knowledge developed in other firms. The access of knowledge developed by competitors firm entered the firm through personal contacts among the workforce. Even though this coping was problematic some times for the single firm it was estimated to have an overall positive impact on the innovation in the district. Among the lead firms it was believed that coping and transparency in the district had a positive impact on the general innovation rate, as the big firms were pushed hard to innovate all the time to keep their lead position.

As opposed to new information, more general and older information seemed to circulate more intense in the district. The circulation takes place through personal relations, often build up through a long period of time and a common background (work colleagues, educational background), which excludes firms located recently from some kind of information. Often the sharing of general and older information took place at fairs and travels outside Montebelluna and meetings among firms within the district and included information about designers, customers and workforce.

### *Institutions*

The production of shoes and boots has taken place in Montebelluna and been dominating the whole industry for more than 100 years. This has resulted in the fact that a lot of the general institutions in the districts also are institutions linked to the development in the production of leisure and

sportswear. In this way the shared history of Montebelluna is also the shared history of the industry. Most people know what a “modallista” does for a living, that Mr. Tomat is the president of the local firm Lotto and a successful businessman, that most manufacturing is re-located to low cost countries, etc.. It is said, that there exists a general belief by the people in the district, that what the neighbour can do, I can do better. A belief, which is also found between the producers of leisure and sportswear in Montebelluna.

Of institutions with special relations to the leisure and sportswear industry the specific knowledge about a broad range of subject within the industry is present. This is often explained by the high mobility of the workforce among the firms and the fact that nearly all have friends and family also employed in the industry. Often the present workforce is the 3rd generation in the industry. Professional pride among the workforce is stressed by a leader from a foreign firm. The craft culture in the district has an impact on the products. The workforce will often deliver high quality and sophisticated solutions to simple products as shoelaces.

Trust is not a central institution in relation to knowledge creation mechanisms within the firms in the survey, as their knowledge creation mechanisms are mostly related to the horizontal knowledge creation dimension in districts. This is explained by the competition among the firms. Trust did exist in some lead firm-subcontractor relations, but these were seen as not very important relations. Within some of the local firm leaders new and firm specific knowledge was exchanged. This knowledge never went further, as it would be too obvious where the specific knowledge derived from, due to the transparency in the district. Use of confidential knowledge to own favour would mean exclusion from the group. On the other hand nearly all the firms used observation and copying of competitors products as a knowledge creation mechanism. The general knowledge within the district makes it easy for other firms to find out of what an innovation or a good idea created outside the context of the firm entails. The impression is that it is considered as fair to copy products, which is already produced and presented at the market, but not to use information, which the firm producing the knowledge not yet has had the chance to commercialise.

Trust and co-operation have a relatively low importance among firms. Still both firms and intermediary organisations state that the district undergoes changes within this institutional feature. Firms tend to show a growing interest for co-operation in the form of knowledge sharing and participation in initiatives taken by both the firms themselves and intermediary organisations. The initiatives are often taken by leading local firms or central intermediary organisations, which have a dense network of social and practical relations in the district. The reason for this new

development is explained by the growing competition from outside Montebelluna and awareness of the importance of working together.

#### *Leadership and direction in the industrial district of Montebelluna*

Several intermediary organisations exist in Montebelluna, and are build up around or to support the interests of the leisure and sportswear industry. The regional trade chamber, the regional employers organisation and the regional bank are some of the intermediary organisations. Two of the most important intermediary organisations, which also can be described as meta-organisers are the Museo dello Scarpone de lla Calzatura Sportiva and UNIndustria Treviso, the provincial employer association.

The museum has since 1992 been managed by a foundation representing over 60 large, middle and small sized firms, CAN (artisan association), Unindustria Treviso, Messe München and Banca Popolare Asolo and Montebelluna. The administration and maintenance of the museum are mostly financed by firms in the district and Banca Veneto and directed by the Professor Durante, one of the originators of the Museum and a former politician. The aim of the museum is to support leisure and sportswear firms in Montebelluna. The museum is a central unit in many initiatives in the district. The museum gives through a detailed exhibition a historical outline of the leisure and sportswear production in the district. Samples of shoes, which beside from their informative role, is used in the increasing legal processing about patent rights that the firms in Montebelluna participate in. The museum conducts regularly analysis of the training demands of the firms and arranges refreshment courses for the employees in the firms and courses for unemployed. Right now the museum follows a newly initiative taken by A.N.C.I., the national league of shoe producers, to set up a new poly-technical school in Treviso (City and Commercial Centre in Veneto) , which will include an upgrading of the education of the very important occupational group in the firms, the “modallista”. An owner of one of the biggest local firms in Montebelluna has a seat in A.N.C.I.. In relation to fashion and design the museum has just started a project, which is going to support the access of information to the firms about fashion and design for the firms to be able to predict new trends. A long-term aim of the project is to limit the dependency of trends created outside the district and become trend-setters themselves. The museum and UNIndustria initiated the project together with some of the big traditional firms in the district under the name Sportssystem Montebelluna. One of the tasks is to create an annual book like the one a famous French design firm creates, which is a kind of idea book for the firms worldwide. Designers from

countries where the firms in Montebelluna have a large market are invited to participate in the project. Professor Durante stressed that the firms in the district prefer to use their own designers or designers located in Montebelluna. Still there is a need to know what they do in the US and the preferences among the customers over there. The importance of the presence of foreign designers in Montebelluna shall also be seen in the light of the fact that the concrete style, derived from the world wide fashion trends is created in Montebelluna.

The museum also acts a kind of information central and as a co-ordinator among firms within and outside the district (Gambarotto et al 2001). In some occasions retailers and sales people have contacted the museum to be directed to the suppliers or buyers that they need to get in contact with.

UNIndustria, the provincial employer organisation, serves 2000 firms. 100 of these come from the leisure and sportswear industry in Montebelluna. The main task of UNIndustria, besides from giving individual aid to member firms, is to arrange information-sharing groups among the member firms. Right now there exist three groups with interest for the leisure- and sportswear industry. One group for participating in an European initiative to establish quality standards and certificates to secure the competitiveness of European shoemakers. A group, which discusses the supply of new technology and finally a group in relation to the Montebelluna sportssystem. Mostly it is the traditional local firms who constitute the groups and take new initiatives. Newly located firms are often members of UNIndustria, and are invited to the meetings, but mostly it is the same firms who participate, and the groups are always hard to establish. At last Banca Veneto also plays a crucial role in the industrial district of Montebelluna. The bank is owned by 7000 local shareholders, which put a pressure on the bank to support community initiatives and to participate in local investments. The bank is mostly used by the small and medium-sized firms in the district. Because of mostly informal relations between owners and the bank and the long term localisation of the bank in the region the bank has better information of the perspectives and financial situation of the single firm than other banks. 20 years ago Banca Veneto was the only bank in Montebelluna, today more than 20 different banks are located in the district, and their customers are mostly big firms. In relation to the de-location of low-tech manufacturing processes to especially Rumania, banca Veneto has acquired a Rumania bank to be able to serve the Italian customers in Rumania.

Both firms and organisations state that inter-firm co-operations, both with and without the participation of intermediary organisations, often are declined by the firms. The intermediary

organisations explain this declination with the fact that the firms don't believe in co-operation with references to the competitive situation that the firms are in. The firms elaborate this explanation with the fact, that if they agree in doing things in a similar way, as interpret and collect the same information about fashion and design, then the competitive advantage of the single firm will be lost. The lost of competitive advantages are also used as an explanation to why firms will not share interesting knowledge, which often will be information close to the production of the single firm. Still both the intermediary organisations and the firms state that the attitude towards co-operation is changing. This is explained with the growing external competition and a changed attitude towards co-operation in general. The growing co-operational spirit is also explained by the fact that the relations between firms are changing. As many new firms were established ten years ago in Montebelluna, as a result of the growing division of labour within manufacturing, the de-location of many of the manufacturing processes has resulted in strategies which calls for more co-operation among already existing firms. An example of newly established co-operation among firms in Montebelluna is found in the case of Lotto. Lotto is a traditional local firm founded in 1973 with 210 employees and a wholesale on 100 mill. dollars in the first 6 months of 2001 together with continuously high growth rates ([www.lottosport.com/inglese/news](http://www.lottosport.com/inglese/news)). A regression period and risk of closing the firm four other local firms in Montebelluna bought the majority of the shares in the firm, and have started a close co-operation to make promotion and to open shops together all over the world presenting the different brands of the firms. It is believed that the survival strategy of the firms to respond to the growing power of retail stores and big multinational companies will be co-operation around sale and marketing, but with a strong focus on the single brand. A lot of firms likewise state that even though they don't believe in the local initiatives to co-operate they still attend to the meetings, give lessons on courses in the museum when required and participate in social events. The reason to this is to maintain old relations and to show social responsibility.

### **Summing up**

Even though the ID of Montebelluna is situated quite isolated it has been able to stay competitive within an industry, which require constant information about development within fashion and design. The firms in the survey used a wide range of information sources deriving from outside Montebelluna to develop the fashion and design in their products. Relations to firms outside Montebelluna are often established on the basis of reputation and recommendations from other firms and organisations within the district. The survey also showed that the firms create knowledge

an learn through the mechanisms of the horizontal dimension, where especially observation and coping were important mechanisms, which contributed to the creation of a pool of knowledge, to which firms in the district have access. The knowledge is spread through observation, a mobile labour force and through formal and informal relation between agents in the district.

Cognitive proximity exists in the district both as a result of the horizontal dimension, but also because of the institutional set up in the district. Due to the long and specialised history of the district the citizens share experiences and social knowledge. Institutions like pride and tradition of craftsmanship is present just like competition. Trust and co-operation were not very noticeable, which are explained by the competition situation of the firms. Still codes of conduct are respected among the leaders in relation to the protection of crucial and new information and knowledge, just as co-operation among agents in the district is an emerging practise.

Several organisations co-ordinate and support activities of the firms in Montebelluna. Some of these organisations can be said to perform a sort of leadership as they try to direct the development in Montebelluna through ex ante activities. Of direct ex ante activities the most important is found in the *Montebelluna Sportssystem* initiative. Here a central aim is to become world-wide trend-setters within fashion and design through production of yearbooks of fashion from the district and co-operation with top designers from their most important markets in US and Japan. A position as world- wide trend-setter will lower the cost and risk of interpreting trends at the global market. Critical voices among firms within the district state that a direction of the fashion and design in the district will threaten the competitive advantage of the single firm, could indicate that the *Montebelluna Sportssystem*, have success in achieving their goal. Other directing activities are found in the situations where agents participate in different national and international organisations, which have impact on the leisure- and sportswear industry by setting up standards and providing new and enhanced access of firms to education. Successful firms also influence the development in the production as they due to their success and good reputation often serve as trend-setters and leaders to other firms in the district.

## **Conclusion**

The aim of this article was to examine if it is possible to approach ID as an organisation possessing absorptive capacity and the impact on the single firm.

The knowledge creation and learning mechanisms found in some ID give firms and organisations access to a broad pool of general knowledge. It is possible to establish this big broad

pool of general knowledge, as the firms contribute with differentiated knowledge due to different tasks and interpretative systems within the same industry, following the mechanisms within the principle of variation. It is proposed that ID is approached as interpretative systems which are both determined and a result of the knowledge creation and learning mechanisms present. The firm can make use of this pool of knowledge when they need to address external information within a subject of which they may not hold appropriate knowledge. In this way they have access to a larger knowledge base than they produce within the boundaries of the single firm and can in this way overcome the limitations of cognition to some extent and enhance their absorptive capacity. The access to the knowledge pool is likewise eased if features like common language and experiences and institutions are present. The empirical study shows that the firms in Montebelluna make use of the pool of general knowledge to access district external information. The interpretative system of some ID enhances in this way the absorptive capacity of the whole ID, because general and overlapping knowledge bases between firms, and firms and other sources to external information are important to the absorptive capacity.

The concept of interpretative systems includes the role of orientation, which in most organisations is taken care of by a leadership. Sorts of leadership in ID are represented by meta-organisers and institutions that ensure that actions are directed and focused among an ambiguity of possible knowledge inputs. Leadership by institutions include mutual experiences and common subjective and objective beliefs and knowledge. The meta-organisers in Montebelluna, both presented by intermediary organisations, lead-firms and individuals, capture external knowledge outside the district and distribute it in the district through external relations. Often their role can be compared to the gatekeeper function, where gatekeepers not only capture and distribute information, but also enable the other members of the organisation to relate to the environment outside the organisation. The meta-organisers in Montebelluna also act as directors of the development in the district by participation in external organisations and initiatives believed to be of importance of the future competitive position of the districts, where the dynamic often was found in the wish to be included in the group and to give something back to the district. The presence of a leadership in Montebelluna and in industrial districts like *Industrial districts with absorption of external knowledge and development of new global knowledge* in the taxonomy of Belussi and Pilotti could be the reason to the success of the district. Here leaders secure the absorption of the selection and implementation of the right information to establish a competitive pool of general knowledge, and help the district to avoid information overload and useless information. The

empirical study shows that direction and ex ante initiatives is taken place at district level and elements of leadership exists at a district level, still it is not possible to make a direct link to the organisational form of a firm, where other mechanisms exists, as the *right* to conduct leadership often due to direct ownership.

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