THE GEOGRAPHY OF KNOWLEDGE SOURCES IN THE CZECH OUTDOOR EQUIPMENT INDUSTRY: KEY ROLE OF GLOBAL TEMPORARY CLUSTERS AND OF NATIONAL INFORMAL NETWORKS

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ABSTRACT

In contrast to the swiftly expanding set of studies devoted to the knowledge sources for high-tech industries in highly developed regions, the aim of this paper is to provide insights into the geography of knowledge sources of low-tech industry in the European semi-periphery. Czech outdoor equipment producing firms are primarily SMEs, often based on a tradition of homemade manufacturing from the period of state socialism. Nevertheless, some of them now compete on a global market. Qualitative research based on semi-structured interviews with the company owners/managers was applied. The results show a significant role of global temporary clusters for enhancing competitiveness of low-tech firms competing in mature markets. In the case of Czech outdoor equipment industry, the "global buzz" at international trade fairs is accompanied by the informal networks of relationships stemming from the climbers' community in times of state socialism.

Key words: competitiveness, geography of knowledge sources, temporary clusters, outdoor equipment industry, Czechia

1. Introduction

In current regional research, there is a large body of literature that examines the role of various factors on competitiveness of the firms. Among the key research questions are: what is the role of local factors and of various forms of proximity for competitiveness and what is the relevance of networks existing at various geographical levels for the transmission of different types of knowledge? An array of concepts was coined to stress a persisting or even growing relevance of local factors for competitiveness within the contemporary globalised world economy, such as industrial districts, clusters, learning regions, and regional innovation systems. These theoretical concepts also stress that the evolution of regions is shaped by their unique institutional settings related to their path dependency (for a critical overview of these concepts, see e.g. Asheim and Gertler 2005; Cooke and Asheim 2006; Gertler 2010; Lagendijk 2006 or Trippl and Tödtling 2007). However, despite several remarkable exceptions (e.g. Boschma and ter Wal 2007; Vale and Caldeira 2007), most of existing studies are focused on examining high-tech industries, often in highly developed regions (Tödtling and Trippl 2005). Therefore, this article aims to contribute to current discussions by an analysis of sources of competitiveness for non high-tech industry (producers of outdoor equipment) in addition located from a socio-economic point of view outside core areas of this industry – in Czechia.

The paper is organized as follows, first, the key theoretical approaches and concepts as used in existing literature are discussed. The following section introduces the Czech outdoor equipment industry, its origin and development. At the end of this section, the specific research questions for our research are presented. The next section describes the data and methodology of the empirical survey performed among the Czech producers of outdoor equipment. The fourth section presents the main results of our survey. Finally, in the conclusion, the key findings are summarized in the context of a recent theoretical debate.

2. Key theoretical concepts

The importance of innovativeness for competitiveness was fully acknowledged for the first time by J. Schumpeter (see e.g. Sojka 1991 or Asheim 1999). Nevertheless, the phenomenon of innovation did not receive systematic attention in academic literature and policy design until much later. Currently, both innovation and innovativeness are common buzzwords, widely used across a broad range of academic disciplines as well as by decision-makers from various hierarchical levels and – of course – by entrepreneurs. In the academic literature, two basic models of innovation have been developed. First, a science-driven linear model of innovation, called "science, technology, innovation", was conceptualized. Subsequently, the "doing, using, interacting" model was proposed (for more see Jensen et al. 2007) viewing the innovation process as a social process involving the creative use of knowledge and skills in producing, consuming and interacting with other actors including various types of consumers (Godin 2005; Lundvall et al. 2002; Oinas 1999). Consequently, the latter places much more emphasis on the social dimension

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of innovation and stresses the role of various forms of mutual interaction among key actors (Howells and Roberts 2000; Simmie 1997).

Recently, however, influential authors have argued that these models of innovation should not be considered as competing, but rather, that both models can help us to understand factors and processes important to innovation and that they are particularly strong when mutually combined (e.g. Asheim 1999). Additionally, very much in line with Schumpeter's question as to whether small or large firms are more innovative (Schumpeter himself argued that the large firms take the credit for being an engine of competitiveness and for enhancing the standard of living of the working class, see Schumpeter, 1942), a vast collection of literature concerning the innovativeness of both small and large firms exists (Pavitt et al. 1987). For an overview of the role of TNCs in innovation process see, e.g. Dunning (1993) or Pavlínek (2008). Recently, Srholec (2010) employed a multilevel analysis to identify key factors in determining the innovative performance of firms and concluded that the quality of regional innovation systems directly influences the probability of firms to innovate and that this effect is most profound in the case of small firms.

In general, research concerning innovativeness and knowledge channels is often performed within the context of theoretical advances in the geography of innovation and in regional studies. Specifically, over the last 30 years or so, an array of theoretical concepts have been developed that stresses the role of embeddedness in the cultural and institutional context of a particular region for innovativeness and innovations beginning with industrial districts such as the theory of flexible specialisation, the Californian School in geography, innovative milieu, clusters, learning regions and regional innovation systems (for critical overviews, see Blažek and Uhlíř 2011; Cooke and Asheim 2006; Lagendijk 2006). The authors of these theoretical approaches agree on the importance of intensive knowledge exchange among SMEs and among other actors in the region, facilitated by relations of trust and a shared local context (see also Porter 1998). Externalities, including knowledge spillovers, are recognized as key factors for innovation. Regions are believed to "buzz" with knowledge which can be acquired by "just being there" (Bathelt et al. 2004). Polanyi's concept of tacit knowledge (Polanyi 1967) strengthened "regional argumentation" by highlighting the importance of close personal contacts for its dispersion. The concept of trust is also frequently employed in this strand of reasoning and different types of links (strong and weak ties) have been conceptualized (Granovetter 1973). Storper (1995) distinguished traded and untraded interdependencies and emphasized the relevance of the latter for knowledge exchange.

Recently, a theoretical shift became evident within innovation and competitiveness studies. The simplified dichotomy of a) small enterprises – local context and b) large corporations – global networks has been questioned by numerous authors (see, e.g. Vale and Caldeira 2007). These authors argue that SMEs, which compete in the global market, can hardly succeed without relations that span the particular region. There is also an opposite school that stresses the decisive role of knowledge flows running between the firms within the global value chains/global production networks (GVCs/GPNs) for competitiveness rather than of local linkages (Gereffi et al. 2005; Humphrey and Schmitz 2002). This body of literature argues that it is especially the lead firm and the type of governance it imposes over particular GVCs/GPNs what determines the chances for learning and industrial upgrading of particular firms embedded in the chain or network.

Consequently, many authors stress the need for an effective combination of local and global knowledge sources (Boschma and ter Wal 2007; Bunnell and Coe 2001; Gertler 2003; Gertler and Levitte 2005; Maskell et al. 2006). In a similar vein, Bathelt et al. (2004) coined the term "local buzz and global pipelines" to stress the need to combine local and extra local linkages. While local buzz refers to a thick web of information, knowledge and inspiration that circulates between the actors of a cluster, global pipelines are trans-local/regional knowledge linkages about other markets and technologies to avoid lock-in (Bathelt 2007). Importantly, Bathelt et al. (2004) rejected the simplifying dichotomy that the local buzz transmits tacit knowledge while global pipelines transmit codified knowledge. An example of a mechanism by which tacit knowledge can be transmitted on a trans-local level are professional gatherings such as trade fairs, conferences and exhibitions (Bathelt 2007; Granovetter 1973; Maskell et al. 2006; Vale and Caldeira 2007;). Bathelt and Schuldt (2008) have recently interpreted a special type of information and communication ecology emerging in these types of temporary clusters (but especially at international trade fairs) as a global buzz. They see the trade fairs as important "platforms for processes of knowledge creation and circulation", and as "places where learning through interaction and by observation takes place" (Bathelt and Schuldt 2008: 3). It has been argued that mechanisms such as these are especially relevant for innovative SMEs located in peripheral or less developed regions. In this particular case, firms are frequently not able to find suitable partners nearby and, therefore, must search elsewhere, by using existing or establishing new ties (Bathelt and Schuldt 2008; Kaufmann and Tödtling 2000; Lagendijk and Lorentzen 2007; North and Smallbone 2000; Virkkala 2007).

Nevertheless, our understanding of innovativeness is limited by the fact that, until now, within the geography of innovation and knowledge studies, attention has been paid primarily to innovation and its sources within high-tech sectors and industries like life-sciences or IT sector (Tödtling et al. 2006). Therefore, in this paper we focus on the outdoor equipment industry as most of

goods for outdoor activities can hardly be considered as high-tech products although some materials used are of a high-tech nature (special fibres, etc.). Consequently, we analyze the origins of competitiveness and the geography of knowledge sources in the case of firms producing goods for outdoor activities, such as hiking, climbing and mountaineering.

3. Data and methodology

First, we are faced with the essential question of how to define outdoor, as there are no official statistics available, at least not in Czechia. Moreover, the definition of this industrial sector cannot be based on production categories, because it includes products as different as a snap hook, waterproof jacket or walking shoes. Nevertheless, outdoor brands, shops, magazines and trade fairs clearly exist. The term outdoor is widely used to identify sport/free time activities practised in nature. It is also perceived as the label of a lifestyle. This combination of lifestyle and activities results in a group of consumers with specific needs. That is why we decided to conceptualize outdoor as a market segment.

In addition, the particular meaning of the term "outdoor" is culture-specific. In Czechia, the assortment of outdoor shops is rather narrow; typically consisting of equipment for climbing, mountaineering, hiking, camping and ski-alpinism. Sports such as mountain biking or canoeing have their own shops, media and trade shows. The situation is different in the USA, where outdoor shops sell, for example, the equipment for hunting and fishing as well.[1] For the purpose of this study, outdoor equipment shall include climbing equipment, outdoor clothing and camping equipment. Due to the impossibility of applying other sources for the identification of outdoor firms, the target population was established on the basis of existing business directories of outdoor firms.[2] This list was subsequently compared to the assortment of major outdoor shops in Prague, in order to eliminate firms operating solely at a local/regional level or firms focusing on custom manufacturing, due to the fact that such firms compete in a very limited local/regional market. Also importers of outdoor equipment, which are not producers themselves, were not involved. Consequently, the target population of Czech outdoor equipment producers amounts to 37 companies. Interest in the individual firms' trajectories as well as the relatively small number of companies were the prime reasons for applying qualitative research based on semi-structured interviews with the company owners/managers. The companies for interviews were selected to represent the parent population in respect of "export scope" (domestic market, central European market, global market), specialization (climbing equipment, outdoor clothing, camping equipment), company age (founded during state socialism, at the beginning of 1990s, later) and company size (big, medium, small). Altogether, representatives of 20 firms were interviewed which is slightly more than a half of all outdoor firms identified in Czechia. The interviews were based on a questionnaire, developed as part of the Constructing Regional Advantage project (see e.g. Asheim et al. 2011 or Blažek et al. 2011), which was adjusted to correspond with the conditions of the outdoor equipment industry. The interviews lasted on average one hour and covered a broad set of topics including company history and present situation, strategy, the nature of innovation process, strategic partners and links with other firms. Sources of competitiveness were studied at three basic geographical levels – regional (NUTS3), national (Czechia) and international. To extract information from the interviews, content analysis of the interviews has been employed.

4. Results

4.1 Czech outdoor equipment industry – history and present situation

There are several reasons why this specific industry has been selected for a case study. To start with, the term "outdoor" was not known in socialist Czechoslovakia. The outdoor equipment market segment has gradually developed since the opening of the first specialized shops, at the beginning of the 1990s, in Czechia. The emergence of firms producing outdoor equipment was only a tiny part of the fundamental changes in the Czech economic landscape introduced by the collapse of the state socialism and with the subsequent restoration of a market economy (for more on the general economic changes during this transition period, see e.g. Pavlínek 2008).

Despite its limited size, the outdoor equipment industry represents a very interesting subject of study. The majority of Czech firms producing outdoor equipment were established in the early 1990s and a unique feature of these firms is the fact that they were founded by climbers, who had experience with homemade production of equipment during state socialism. This is why we call them "old school" companies in the text. Examples of such home-produced items include clothing, backpacks, sleeping bags, stoves, ice-crampons, etc. According to an expert on the Czech outdoor industry, it can be estimated that there were hundreds of these "do it yourself" producers, the majority of whom ceased their activity or even went bankrupt during the last 20 years.

In 2009, the production of outdoor equipment employed some 2,000 people in 37 companies producing goods under 38 brands. Nine companies focused

[1] See e.g. http://www.americaoutdoors.org/.
[2] Directories of outdoor companies: www.outdoorinfo.cz, www.ioutdoor.cz, www.svetoutdooru.cz.

on climbing equipment, the same number on camping equipment, eleven firms produced outdoor clothing. Eight producers had a wider portfolio consisting mostly of textile products (clothing, backpacks, sleeping bags, tents, etc.). Almost three quarters of companies were producing exclusively textile outdoor goods. With the exception of one company, all outdoor firms were SMEs. Despite this, they formed a very heterogeneous group that included sole traders as well as companies with more than 100 employees. The annual turnover spanned from 2 mil. CZK (78,000 Euro) to 490 mil. CZK (20 mil. Euro). There is no clear pattern in localization of Czech outdoor equipment producing companies.

In terms of the number of companies participating in the largest European outdoor trade fair "Outdoor Friedrichshafen" in 2009, Czechia ranked among the top ten countries in the world (Table 1). Further evidence to support the relatively strong position of Czech outdoor firms is the fact that another large sport/outdoor trade fair "ISPO Winter" (in Munich) launched a Czech language version of its website in autumn 2009. Obviously, one should not overlook the likely impact of geographic proximity. Both Munich and Friedrichshafen are relatively close to Czechia, facilitating the participation of Czech outdoor firms at these trade fairs. Nevertheless, the number of participating Czech companies (22) is very high, in comparison with other Central and East European countries (Poland – 4 companies, Bulgaria – 3, Russia – 3, Slovenia – 2, others – 0).

Tab. 1 The number of firms per country participating in Outdoor Friedrichshafen 2009

Rank	*Country*	*Number of firms*
1.	Germany	195
2.	Taiwan	82
3.	China	76
4.	Italy	68
5.	United Kingdom	57
6.	France	53
7.	USA	43
8.	Switzerland	36
9.	Austria	29
10.	Czechia	22

Note: Number of firms – number of exhibitors with their own stand at Outdoor Friedrichshafen 2009.
Source: Own calculation. Data supplied by Messe Friedrichshafen GmbH.

4.2 From "do-it-yourself" to global exporters? The development of competitiveness strategies in the Czech outdoor industry

Although the majority of Czech firms started as "do-it-yourself" producers under state socialism, some of them now compete in the global market with established brands from Western Europe or US, as well as with cheap East-Asian producers. None of them have become a global market leader but some have managed to penetrate western markets, others are reaching high annual turnovers mainly in Central East European (CEE) region and another are struggling to survive. Therefore, it is clear that, during a relatively short period of time, there has been a fundamental differentiation of the strategies of competitiveness of these companies. In this section we first introduce the typology of Czech outdoor producing companies and then focus on the process of the differentiation of their competitive strategies.

When thinking about the typology of the Czech outdoor equipment producers based on export success, we can identify three distinct groups of companies (see Table 2).

Tab. 2 The typology of interviewed Czech outdoor equipment producers

	Old school	*Newcomers*
Climbing equipment	Firms located in northern Czechia, represented mainly in specialized retail chains, export over 50% of total production, manufacturing in-house.	–
Number of companies	6	0
Outdoor textile products	No specific localization, represented mainly in specialized, independent shops, export less than 20% of production, manufacturing in-house.	Firms located in Prague and elsewhere, often operating their own retail chain, export mainly to CEE countries (20–49% of production), widespread offshoring.
Number of companies	10	4

Source: Own survey conducted in 2009.

The most successful exporters among Czech outdoor companies are the "old school" producers of climbing equipment who export more than 50% of their entire production. Target countries include "high end markets" such as Germany, Scandinavian countries, Switzerland or the United Kingdom. These companies' goods are also most strongly represented in the main specialized retail chains in Czechia.

On the contrary, the companies that achieve the highest sales are "the newcomers" who produce outdoor clothing and camping equipment. These were established later in 1990s, are located mainly in Prague and managed by professional businessmen and not by climbers. So far, they have been unable to expand beyond the CEE market.

Third, the "old school" companies specializing in outdoor textile export the smallest share of their production. They are usually only represented in small independent outdoor equipment shops in Czechia.

The two main attributes differentiating these three types of companies seems to be specialization and the age of the company. During the interviews, the "old school" respondents often drew a line between themselves and younger companies founded as "purely commercial projects" who do not share the mountaineering background and attitudes towards business. The specialization of the "old school" firms developed gradually as a strategy to fight the growing competition during the 1990s.

In the early 1990s, many climbers simply continued in producing the equipment as they did before 1989 but expanded the volume and established a legal entity, i.e. the firm. The entrepreneurs were not professionals, had no experience with business, design or marketing. As one "old school" owner of outdoor clothing company puts it:

> What was produced was sold; we had been purchasing the less popular and therefore cheapest colours of gore-tex fabrics, sewing patchy clothes and the consumers were banging on our doors for these products. For the first time in their lives they could really have a waterproof jacket.

"Old school" companies have been learning by doing, personal friendships developed into business relationships. In the first half of 1990s, thanks to a hungry market, successful companies grew from a one-man or family business into SMEs. But the growing market attracted foreign as well as domestic competitors. New companies were founded by entrepreneurs without climbing backgrounds and more professional business projects were launched. The "old school" entrepreneurs usually reacted by changing or strengthening specialization as is exemplified by the following statement made by an owner of a company producing climbing equipment:

> We used to produce basic outdoor equipment like sleeping backs and backpacks … around 1995 we decided to focus on climbing equipment (harnesses) solely.

Another company owner, this time an outdoor-textile producer, referred to the low end competition from East Asia becoming especially important in the case of technologically simple products such as sleeping backs:

> Originally, we focused on sleeping backs, but after 5 years we had to swing to waterproof clothing because of huge imports of cheap Chinese products. Nevertheless, we still produce some high- end tailor-made feather sleeping backs and jackets.

The decision about specialization was tightly bound with the localization strategy of the production. Due to the growing cost of labour force in post-socialist Czechia, outdoor equipment companies can no longer compete on a low cost basis (the average monthly wage in Czechia was approx. 1,000 EUR + 35% compulsory social and health insurance payments in 2010). While the producers of climbing equipment "can afford" to keep their entire production in Czechia, 8 out of 14 interviewed companies producing outdoor clothing outsource at least part of their production to low-cost countries, mainly China and Vietnam. The reason for this could be found in the nature of competitiveness in the global outdoor equipment industry. The worldwide market for climbing equipment is tiny when compared with that of outdoor textile products (clothing, sleeping bags, tents, etc.). This could be one of the main reasons why the climbing equipment market has not, as of yet, been occupied by East Asian producers. Another factor could be the low quality image of Asian products among consumers. Our knowledge of the outdoor equipment market suggests that consumers are more careful in selecting climbing equipment, upon which their life may depend, than in the selection of a clothing item, such as a jacket.

Entrepreneurs who decided to move the production to East/South-East Asia do not form a uniform group. Although all of them retain development and design in Czechia, they differ in what part of their production (on the low-end/high-end continuum) is off-shored. When asked about their motivation for this step, beside the obvious motive of cost-savings, some respondents surprisingly mentioned access to progressive technologies that are too expensive for them to buy, while Asian producers can afford them due to vast economies of scale. The other reason mentioned was the absence of technologically up-to-date Czech suppliers. Entrepreneurs who moved production abroad often expressed regrets about this step, even if they consider it as the only rational solution because of declining domestic textile-related industries and, therefore, a lack of quality suppliers. One of company owners (a newer company with textile products) formulated it as follows:

> It would be nice to produce here … but it is very difficult. Czech companies are fossils and technologically out-of-date, they have not changed since communism. Lot of our ideas were infeasible for production in Czechia.

Nevertheless, some "old school" companies continue to manufacture outdoor textile equipment in Czechia and form the least competitive group (Table 2). The technological strategy of these companies does not differ significantly. Materials (waterproof membranes, fibres) are bought from specialized suppliers abroad. Manufacturing processes are not technology-intensive. The firms started or expanded production with the help of cheaply bought used technology which has been gradually replaced by more modern machines. Few companies purchased more advanced and expensive technologies, such as laser-cutting machines or seam-sealing machines.

Strategy of only one company differs from the above as the firm is involved in the development and

production of a fibre for functional underwear. Its brand name has become a nationwide synonym for functional underwear and it is very popular. But there are technical limits to this fibre which influence both the product design and quality which is currently clearly lagging behind foreign fibres.

In the next section we ask if the above identified types of Czech outdoor equipment companies differ in terms of the geography of their knowledge sources.

4.3 The geography of knowledge sources in the Czech outdoor industry – the key role of temporary clusters and of informal networks

In line with Boschma and ter Wal (2007), we distinguish between market and technological knowledge. According to these authors, the first type of knowledge represents knowledge about consumer preferences, market sales trends, etc., while the technological knowledge concerns knowledge about new methods of production, new materials, new design techniques or new technology. We want to see if there are significant differences in the geography of knowledge sources between these types of knowledge particularly in the case of emerging and primarily medium- or even low-tech outdoor equipment industry in Czechia.

Generally, sources of knowledge that were external to the firms proved to be of greater importance for market knowledge than technological knowledge. Two main reasons could help explain this.

First, the innovation process in the Czech outdoor equipment industry refers primarily to design changes. Design and marketing gained importance with Czechs becoming richer over the last twenty years. The typical consumer is not a climber anymore but someone who likes to spend some of his/her free time outside. One producer has stated (somewhat bitterly) that "today we have to focus on design, function is just a bonus". Not only outdoor clothing but climbing equipment as well has become subjected to fashion. This is in line with the conclusions of Lüthje (2004), Shah (2000) and Desbordes (2002) on the importance of consumer preferences for innovation in outdoor equipment industry.

Second reason would be the position of entrepreneurs – climbers, who saw themselves as the bearers of relevant manufacturing know-how. Tacit knowledge (especially knowledge based on one's own extensive experience with using climbing equipment in practice and knowledge of other climbing community member's preferences and desires concerning particular problems and products) plays a major role in the innovation process. However, our research shows that its exchange is not bound by spatial proximity which corresponds with the findings of recent studies (e.g. Bathelt 2007). Rather it follows the pattern of social proximity and is strengthened by temporary clustering of actors.

The relevance of different geographical levels (regional, national, international) for flows of these two types of knowledge sources was examined. As can be seen in Table 3, the principal sources of market knowledge for Czech firms can be found on the international level. The international outdoor equipment market, entered by Czech firms in the late 1990s, was already well developed, highly competitive and had strong leaders. Therefore, Czech companies need to have an overview of their competitors' activities, general market trends and available technologies. Trade fairs, one type of "temporary clusters" identified by Maskell et al. (2006), enable Czech producers of outdoor equipment to participate in the global buzz (Bathelt and Schuldt 2008). Seventy percent of interviewed entrepreneurs and managers consider international trade fairs to be an important or very important source of market knowledge, irrespective of company age or specialization.

Tab. 3 Sources of market and technological knowledge in the Czech outdoor industry

Market knowledge				*Technological knowledge*		
Source of knowledge	*Level*	*Score*		*Source of knowledge*	*Level*	*Score*
– the most important				– the most important		
Trade fairs, exhibitions	global	3.63		Informal networks	national	2.94
Informal networks	national	3.21		Business partners	national	2.89
Business partners	national	3.05		Trade fairs, exhibitions	global	2.78
Customer feedback	national	3.05		Customer feedback	national	2.67
Informal networks	global	2.79		Business partners	global	2.22
– the least important				– the least important		
Business partners	regional	0.58		Informal networks	regional	0.28
Customer feedback	regional	0.58		Customer feedback	regional	0.28
Labour mobility	regional	0.47		Market research	regional	0.00

Note: A condensed version of the table is presented, highlighting only the most and least important sources of market and technological knowledge.
Rating = the average rating of each source of knowledge on a scale from 1 (not important) to 5 (very important), 0 = no use of the source.
Source: Own empirical survey conducted in 2009.

Sixty percent of the companies participated in at least one major European trade fair, as exhibitors, in 2009. Trade fairs facilitate meeting with existing and potential partners and friends, as well as monitoring competitors and new trends. International trade fairs also score quite high in the case of technological knowledge (3rd place).

Potentially, there is another knowledge channel on the international level originating from production plants in East/South-East Asia. Respondents from companies, which moved at least part of their production to East/South-East Asian countries, stated that they experienced problems with the unstable quality of products. Therefore, these companies are accustomed to sending their own supervisors to the production plants. In the case of "old school" Czech outdoor SMEs, this usually means that one manager spends from a few weeks to few months out of the year in a production plant in China or Vietnam. Respondents stressed that the supervisor needs to be "an insider" (i.e. to understand the production process, the quality and functionality of the equipment) to be able to maintain high quality production. Thus, the experience of manufacturer and equipment user combined in one person is seen as an important competitive advantage of "old school" entrepreneurs. This type of supervision practice is quite common within the Czech outdoor industry (out of 9 companies producing at least partly abroad, 5 mentioned that they practice this kind of supervision). Most importantly, according to our respondents, firms from other countries, including outdoor industry leaders, also send supervisors abroad. Consequently, this facilitates meeting with cognitive and institutionally close partners (managers of European and North American outdoor firms). Groups of supervising managers can form a specific type of temporary clusters for knowledge exchange. The "old school" owner of company producing backpacks explained that

> Occasionally I meet with the supervisors from foreign companies, i.e. we have dinner with a shared supplier. We talk about various things and sometimes I learn something professionally interesting as well. It's not a formal relationship; we just know each other and we chat when we meet.

On the national level, the temporary cluster of trade fairs was rated rather low and participation in these trade fairs was also quite limited but informal networks and business partners were considered as highly important sources for both technological (1st and 2nd place) and market knowledge (2nd and 3rd place). Moreover, in Czech conditions, these two sources are strongly interrelated. All the respondents from the "old school" group highlighted the importance of informal and friendly character of vertical business relations to distributors and retailers who also belong to the climbing community, and share a common hobby, lifestyle and even values.

Nevertheless, business relationships among "old school" companies are not always friendly or easygoing. For example, the largest retail chain, as the biggest purchaser, possesses the power to influence the entire market. This company was founded by a climber from the "old school" group, nonetheless, he is described as very tough entrepreneur by some of the respondents. He is the co-owner of two other companies, one produces climbing and camping equipment, the other high-end outdoor clothing. These form a very powerful alliance because secured access to the domestic market allows producers to expand. Independent companies without formed alliances are facing a much more difficult situation. An interviewed expert on the Czech outdoor equipment industry offered several examples where "huge pressure from the biggest chain nearly brought about the bankruptcy of some of the SMEs".

In addition, respondents often mentioned that professional and amateur climbers are important sources of knowledge. They are engaged in testing the equipment and therefore provide an important source of technical (even though strictly speaking not technological) as well as market knowledge. These groups command a sizeable amount of knowledge about the technology of production as well as consumer's taste. Therefore, even though the Czech outdoor industry is becoming more international, the networks of informal relations and business partners at the national level proved to be very important (see Table 3). These relationships could be viewed as "untraded interdependencies" as identified by Storper (1995) and Scott (1998) or as "buzz" on the national level.

Even though vertical relations (i.e. to suppliers, distributors, retailers and consumers) are considered as having higher relevance for competitiveness and knowledge exchange, there is at least one recent and interesting example of how horizontal cooperation among Czech firms might positively influence knowledge flows. The "Czech Village" is a recent joint project of six companies, producing complementary products, which for the first time prepared a collective presentation at the Outdoor Friedrichshafen 2009 trade fair. Despite the fact that the tangible benefits of such a joint project could not yet be identified, the companies in the "Czech Village" actually operate as a small island of local buzz within the temporary global buzz of the trade fair. Such collaboration of Czech firms during the trade fair multiplies their abilities to learn by observation and by interacting. Through this they optimize unique temporary information and communication ecology consisting of news, recommendations, rumours, experience, etc. (Bathelt and Schuldt 2008). Since five of the six companies involved in this project belong to the "old school" but are located in different NUTS 3 (even in different NUTS 2) regions, the Czech Village project supports the notion that social proximity is superior to spatial proximity in the Czech outdoor industry. This development further supports the hypothesis concerning the importance of informal networks and temporary clusters as a source of both market and technological knowledge.

In contrast to the international and national levels, regional sources of market and technological knowledge are rated very low by the firms in our sample (see Table 3). The situation does not differ in traditional shoemaking or textile regions. This relates to the before mentioned decline of textile-related industries in Czechia. Few company representatives mentioned collaboration with regional technical universities, but seldom valued this cooperation as a significant knowledge channel. Mostly they criticized the limited application potential of knowledge produced at universities as indicated in the following (otherwise fairly positive) statement from a manager of an outdoor clothing producing company:

> There is a reciprocal cooperation between the university and our firm. Our staff regularly serves as opponents for diploma theses while the university tests material for us. The university also serves as a source of qualified employees. Nevertheless, its research outcomes are not applicable in the company's daily life.

While international level seems to be most important for all types of companies, national level plays significant role for "old school" companies benefitting from the social proximity. Regional level is generally considered to be negligible because of the lack of suitable partners for cooperation. Of course we need to be aware of the geographical scales. Czechia is a small country (78,867 km^2), therefore, the application of regional level may seem inappropriate but it helps to distinguish between the impact of spatial and social proximity on the knowledge flows among companies as in the case of Czech Village project mentioned earlier.

5. Conclusions

Recent theoretical approaches stress the importance of intensive knowledge exchange among various regional development actors facilitated by relations of trust and a shared local context for enhancing their competitiveness. Nevertheless, according to numerous authors these local links should be accompanied by translocal relations to access strategic knowledge and to avoid lock-in (e.g. Bathelt et al. 2004; Vale and Caldeira 2007). However, the majority of existing studies focus on the examination of knowledge sources for firms in high-tech industries, often located in highly developed regions. Therefore, the aim of this article was to contribute to current discussions with a qualitative analysis of a non-high-tech industry (outdoor equipment producers), which is, in addition, located outside core areas of the industry. Our research first attempted to identify the type of strategies employed by Czech outdoor firms to achieve greater competitiveness and then the type of knowledge channels they have developed. We also investigated the relevance of local versus non-local (national and international or global) sources of competitiveness.

Concerning the geography of knowledge sources, two key types of external knowledge sources were identified. First, informal long-lasting social networks on the national level based on shared mountaineering background and on experience with "do it yourself production" under the state socialism. Second, the international temporary clusters (namely, international trade fairs) which special information and communication ecology has been called "global buzz" (Bathelt and Schuldt 2008). International trade fairs were rated by Czech outdoor equipment producers as the most important source of market knowledge and an important source of technological knowledge as well. In both cases, the nature of the knowledge exchanged is predominantly tacit, either referring to personal market trend observations at trade fairs or informal relations with business friends on national level.

Respondents from companies that moved at least part of their production to East Asian plants, mentioned relevance of occasional meetings with managers from other companies, Czech and foreign, supervising production on site for knowledge exchange. This practice could give rise to a special type of tiny temporary clusters, which could develop into yet another important channel for knowledge exchange.

Tacit knowledge proved to be of fundamental importance for a firm's competitiveness and the lack of suitable partners within the surrounding area is compensated for through alternative types of proximity in temporary clusters and by informal networks operating on the national level. Our conclusions support the argumentation of authors such as Kaufmann and Tödtling (2000), Lagendijk and Lorentzen (2007), North and Smallbone (2000) or Virkkala (2007) regarding the need for SMEs located outside the core areas of an industry to establish translocal ties to find partners for knowledge exchange.

The decisive part of production in the Czech outdoor equipment industry is of a non-high-tech nature, therefore, the need for global pipelines, in case of technology knowledge, is less pressing. Moreover, due to the tradition of the "do-it-yourselves" production under state socialism the entrepreneurs of "old school" command a significant amount of technological knowledge which is, however, not of high-tech nature. This observation is in line with the finding that sources of knowledge that were external to the firms proved to be of greater importance for market knowledge than for technological knowledge. This accords with conclusion of Maskell (1996) who studied sources of competitiveness of Danish furniture firms and argues that the "…international competitiveness of many small producers originates from their superior ability to create and accumulate knowledge internally…" (Maskell, 1999: 16). However, in contrast to Danish furniture firms, whose spatial proximity plays a key role for various cooperative interactions, in case of the Czech outdoor equipment producers, the relevance of spatial

proximity appears to be surpassed by social proximity, most likely due to unusually strong social affinity of "old school" producers given by their shared mountaineering background. However, similar conclusion about a dominance of a social rather than of a spatial proximity pattern were drawn by Rallet and Torre (1999) or Torre and Gilly (2000).

Therefore, our results show that firms of low-tech industries which are, in addition, located outside core areas of the industry can sustain or even enhance their competitiveness provided they command with first, unusual accumulation of internal knowledge, and second, with relevant translocal knowledge linkages (both on global and national levels). If these results are confirmed by studies from other countries and regions with a variety of socio-economic characteristics as well as from industries with differing competitive strategies, this could provide a valuable contribution to deepening of our understanding of relevance of knowledge flows and eventually even in designing more finely tuned policy initiatives for low-tech industries in mature markets.

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RÉSUMÉ

Geografie zdrojů znalostí českých výrobců outdoorového vybavení: klíčová role dočasných klastrů a národní síťě neformálních vztahů

Na rozdíl od rychle rostoucího souboru studií věnovaných geografii zdrojů znalostí v high-tech průmyslu ve vysoce rozvinutých regionech se tato práce zaměřuje na geografii zdrojů znalostí low-tech průmyslu v prostředí Evropské semi-periferie. České firmy vyrábějící vybavení do přírody jsou především malé a střední podniky, často založené na tradici domácí výroby z období komunismu. Některé z nich však nyní soutěží na globálních trzích. Musely tedy nezbytně udělat obrovský skok kupředu v oblasti konkurenceschopnosti během relativně krátké doby. Tento článek se proto zaměřuje na strategie, které tyto firmy použily pro dosažení vyšší konkurenceschopnosti a na roli různých zdrojů znalostí. Jádrem metodologie byl kvalitativní výzkum založený na polostrukturovaných rozhovorech s vlastníky či manažery firem. Výsledky ukazují na velký význam „nad-regionálních" zdrojů znalostí pro konkurenceschopnost low-tech firem ležících mimo jádrové oblasti daného průmyslu. Nejvýznamnější identifikovaný zdroj znalostí, „globální bzukot" na mezinárodních veletrzích, je v případě českých výrobců outdoorového vybavení doplňován sítí neformálních vztahů založených na sociální blízkosti „lezců ze staré školy", kteří za socialismu představovali relativně malou komunitu, avšak s velmi výraznou vnitřní identitou.

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