

The Role of Innovative Clusters in the Process of Internationalization of Firms

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Abstract—This article focuses on innovative clusters and the role they play in the process of business engagement into foreign markets. This concept falls into the network approach of firm's internationalization, according to which an enterprise may internationalize when it develops a set of exchange relationships. One of the specific forms of network is cluster, with geographical and sectoral concentration as the key characteristic distinguishing it from other kinds of network structures. The aim of the article is to examine the role of clusters for innovation activity and for facilitating the process of internationalization of firms. The study shows that the latter may happen twofold: through clusters influence on affiliated company's internationalization behavior from the one side and by increasing location attractiveness of the regions for foreign direct investments from the second side.

Index Terms—About clusters, innovation, internationalization of firms, foreign direct investments (FDI).

I. INTRODUCTION

Internationalization of firms has become a key concept in modern world economy, with many organizations embracing the opportunity to go international. The global market is gaining popularity and importance as a market and a base for internationally active companies and those which want to internationalize. In contemporary world economy, successful businesses must take advantage of opportunities created by many factors that drive globalization processes, like: dynamic technological and communication developments, decreasing barriers to international trade and investment or regional integration. It results in vibrant increase of firm's international engagements, like: exports and imports, foreign direct investments and networking of suppliers, consumers, technology developers and researchers. The globalization of business can be easily recognized in the spread of many brands and services throughout the world.

One of the most important concept explaining the process of companies engagement into foreign markets is network approach. J. Johanson and L. Mattsson [1] consider business networks as the relationships a firm has with its customers, distributors, suppliers, competitors and government, which are the actors in a network. According to them, as the company internationalises, the number and strength of the relationships between different elements of the business network increases. The network model of internationalization revisits one of the key elements of the

Uppsala Model [2], which is experiential knowledge. Through network internationalization, a company can gain access to other firms' experiential knowledge without necessarily going through the same experiences. An enterprise learns about the capabilities, needs and strategies of its partner, as well as about business conditions and the networks. In this case, a typical internationalization process has changed from gradual, sequence expansion to expansion in leaps by joining the nets [2].

One of the most popular type of network is cluster, which was defined by M.E. Porter as "geographic concentration of interconnected companies, suppliers, service providers, firms in related industries, and associated institutions (e.g., universities, standards agencies, and trade associations) in particular fields that compete but also cooperate" [3]. The concept of clusters explains generally observed phenomenon that most industrial and commercial activities, especially in high-tech sectors, tend to be more and more concentrated together in space. There is a growing number of evidence that cluster structures play an important role in the process of firm's internationalization. This is connected with the new trend in the phenomena of clustering, namely opening to foreign partners and international collaboration in supra-regional and transnational networks. This means a change in the traditional approach to cluster concept, according to which cluster structures were regarded as closed production systems limited to specific location. With the globalization of the world economy and increased specialization in the value chain across national borders, cluster initiatives are taking on new international strategies and forming transnational partnerships.

II. NETWORK APPROACH TO INTERNATIONALIZATION OF FIRMS

The network approach provides means for understanding the totality of relationships among firms forming industrial systems. The industrial system is defined here as "a network of enterprises engaged in production, distribution and use of goods and services through which lasting business relationships are established, developed and maintained" [4]. According to this approach, internationalization of firm means establishing and developing business relationships in networks in other countries. Network internationalization model does not assume autonomy of firms in developing their market entry strategies, but sees business activities among companies as characterized by interactions and mutual interdependence. It means that the relationships and interactions between different firms will affect which countries to enter. The company takes into account not only

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its own position in relation to the customers, but also the environment of the new market in relation to other actors. Strategies made by the firm are influenced by a variety of network relationships, which drive, facilitate or inhibit a company's internationalization. Firm may enter foreign market when it develops a set of exchange relationships, allowing it to continue a business there for a long term.

Modern international firms may be treated as a form of inter-organizational networks. Traditionally, multinational corporations were viewed as hierarchical, center-dominated organizations, in which subsidiaries were engaged in relationships only with the parent company. When it was recognized that they needed flexibility to respond to changes in products, technologies and markets, they were transformed into more flexible organizational forms, which could accommodate novelty and innovation [5]. Increasingly, multinational corporations are being treated as inter-organizational networks, in which the subsidiaries have multiple relationships with other entities both inside and outside the corporation's formal boundaries [6]. The network approach describes the subsidiaries' interactions with suppliers, customers and other counterparts and recognizes that for each unit, the most important resource is the network of specific relationships, in which it is embedded. From this perspective, the international firm is an enterprise connecting business relationships in several markets. These relationships are not designed by headquarters, but they are worked out by subsidiary operating on a specific market.

III. THE CONCEPT OF CLUSTERS

Clusters have emerged over last two decades as central issue of research into innovativeness of enterprises. The most important characteristics of clusters are: geographical and sectoral concentration, co-operation and competition (coopetition), specialization in specific kinds of economic activity, the existence of relationships between cluster actors and formal interdependence [7].

Three important dimensions of cluster structures refer to the geographic scope, the breadth and the depth of a cluster. The geographic scope concerns the territorial extent of the firms, customers, suppliers, support services, and institutions that are embedded in the ongoing relationships and interdependent activities that characterize the cluster. The geographic span of a cluster can range from a small area within a city to areas encompassing much of a country or even some countries in case of trans-border cluster structures.

The breadth of clusters refers to the range of horizontally related industries within the cluster. Narrow clusters consist of one or a few industries and their supply chains. Broad clusters provide a variety of products in some related industries. Industrial clusters usually represent agglomerations of resources, skills, and capabilities that spillover into related industries. Therefore, most of the clusters include at least a few horizontally related industries and only a small percentage of clusters comprise a single segment within an industry.

The depth of the cluster refers to range of industries related by vertical relationships within the cluster. Deep clusters contain set of industries and complete supply chain, meaning

that they have many or even all the steps in the vertical production chain performed by its members. Shallow clusters rely principally on inputs, components, equipment, technology, and support services from outside the region [8]. The vertical (depth) and the horizontal dimensions (breadth) constitute the potential strength of the cluster. However, the dynamics of both depth and breadth can be further enhanced by appropriate knowledge organisations, for example universities, R&D institutes and education centres, supporting different industries. Local knowledge base may be strengthened by multinational companies, which can also support the firms in the region with financial resources in high-risk development activities. The presence of multinational companies may have high promotional value and thereby strengthen the image of the cluster.

According to M.E. Porter, as more national industries are exposed to international competition, the more pronounced the movement toward clustering will become [9]. Therefore, his original theory referred mainly to export-oriented firms or multinational companies and their subsidiaries in developed countries, since they are the ones engaged in international competition and so the most likely to become competitive in international markets. However, more recently M.E. Porter argues that the influence of factors determining clustering in previous periods has been diminished under globalization and with the emergence of knowledge-based economy. Firms may compensate for input cost disadvantages by sourcing in global markets, so the source of competitive advantage lies not in the access to inputs, but in the companies' ability to use these inputs more productively. In that context, M.E. Porter considers clusters as "a new kind of spatial organisational form that mitigates the problem of arm's-length relationships without imposing the inflexibilities of vertical integration or the management challenges of creating and maintaining formal linkages such as networks, alliances, and partnerships" [10]. Therefore, clusters consist of groups of independent and informally connected firms and institutions capable of achieving operational efficiency and flexibility at the global level.

Development of clusters is to a large degree determined by the external impulses resulting from market competition, changes in demand and technological change. The changes in technological paradigms and trajectories are connected to internationalization process and contribute to companies' strategies, relationships between firms and the industrial organization within a cluster. Clusters are one of the best diagnosed methods of horizontal cooperation in the economy, playing an important role in linking business and science, reducing information asymmetry, uncertainty and risk, as well as in increasing relational capital, trust and location attractiveness for foreign direct investments [11]. The importance of clusters for competitiveness and innovation is connected with a variety of microeconomic benefits, among which the most important are [12]:

- Easier access to information on the market (e.g. the current needs of the customers) and the latest technological advances;
- Greater access to scarce resources and skills, thanks to their complementarities in cluster structures that

facilitate mutual exchange or acquisition between partners (e.g. by centralized purchases);

- More opportunities to undertake joint R&D activities or other activities aiming at creation of innovation;
- More opportunities to identify market niches and to access to export markets;
- Human capital development, as a result of greater mobility of staff and organized trainings and conferences;
- Increase in production capacity and operational flexibility through greater opportunities to reallocate resources and to use vacant capacity of other economic entities operating in the cluster;
- Increasing the speed of action and enabling rapid response to signals from business environment;
- Greater access to customers anticipating changes in the international market;
- Opportunity to ensure complementarities of activities with other firms through better matching of offers and the needs of businesses, more efficient roles and functions distribution between them or undertaking of joint marketing activities;
- Reducing the level of uncertainty and risk in business activity, by creating an atmosphere of mutual trust in a changing environment.

IV. CLUSTERS AND INNOVATION ACTIVITY

Clusters play an important role in innovation activity, which is connected with the receptive abilities of regions with respect to modern technology used by businesses, characterized by a high level of technological development. Regional aspects of innovation such as proximity (cognitive, organizational, social, institutional, and geographic) and the neighborhood effect create forces polarizing the spatial structure of the economy and influencing the concentration of socioeconomic development, which results in the formation and development of clusters. The competitiveness of the regional economy is determined by drivers of its innovation abilities, especially soft factors that also play an important role in clustering processes. These include the quality of human and social capital, the activity of scientific and research centers, an entrepreneurship-friendly environment, support from local government, and an appropriate innovative milieu. These soft factors help create platforms for knowledge transfer, experience sharing and innovation diffusion. All these elements cannot be analyzed separately, but must constitute a single system [13]. Cluster structures are currently one of the best examined ways of stimulating horizontal cooperation, in particular that between research and development (R&D) centers, enterprises using the results of their work, and business environment institutions supporting the commercial use of technology. In connection with this, clusters may influence the launch and development of innovation processes and contribute to greater technological advancement of enterprises. Clusters as localized production systems, however, are a global trend and their occurrence is not limited to highly developed countries and high-tech sectors. Examples of well-functioning clusters can be found in the high-tech and service sectors as well as

traditional industries, such as wood and furniture, agriculture, and car making.

The development of the cluster concept has influenced the former model of cooperation between enterprises, as well as entities dealing with R&D work and companies applying the results of this work. Cluster structures differ from traditional local production systems because they bring together not only enterprises, but also scientific and research centers such as universities and laboratories. The formula of network linkages not only brought closer different scientific and industrial units, but it also enabled them to operate almost as a single economic entity. Linking local units by the network of formal and informal interactions facilitates joint research and development work, sharing of knowledge and information, exchange of modern technology and intensive innovation diffusion. Research institutions and universities are therefore important players entering into the network of connections and interactions with cooperating enterprises forming a production system. The idea of clustering fits into the modern paradigm of university performance determined by the process of transforming the economy into a knowledge-based one. In the present model of science, the main role of universities is not education and R&D, but exerting a complex influence on the economy and bringing significant value added into innovative industrial sectors. From the perspective of competitiveness, the transfer of knowledge from academia to enterprises and society is an important factor enabling universities to influence economic development. Clusters facilitate cooperation between R&D and educational units and industry. They also place this cooperation in the context of innovation, creating new enterprises and promoting knowledge transfer.

V. INTERNATIONALIZATION OF CLUSTERS

According to recent developments in economic theory, clusters are taking on new international strategies, such as outsourcing and foreign direct investment to maintain their competitive ability [14]. This observation gives a reason to reconsider the role of clusters in shaping competitiveness, suggesting that conventional models of the major forces driving the clustering of economic activities should be rethought [15]. It indicates that clusters entered into the next phase of evolution. After local clustering, taking place between actors located in one region, it is time to create cooperative relations on a supra-regional and transnational networks, and establish cross-border clusters [16].

The process of globalization has influenced clusters and other local production systems to open up their borders and to increase their linkages with actors outside their regions. In modern global economy, the notion of a cluster as a self-contained knowledge hub, incorporating strong internal knowledge exchange and little interaction with the outside world, is under pressure. Scholars increasingly recognize the division of knowledge work and specialization across clusters, where openness to external knowledge is increasingly important following from globalization [17]. Firms and clusters have gone international, searching for new sources of knowledge, new markets and lower labor costs. With the increasing ability of ICT to underpin co-ordination,

the role of proximity between different companies and other units is challenged. In an increasing number of industries, with easy access to manufacturing resources in low-cost countries and decreasing transportation costs, manufacturing is relocating. Recent research on how globalization impacts on Italian districts suggests that upgrading and increased participation in global value chains linking to customers and suppliers outside the cluster is becoming increasingly important for achieving and maintaining competitiveness [18].

It is possible to analyze 2 main areas [19] in which clusters may play an important role in the process of firm's internationalization, which will be discussed in next 2 parts of the article:

- Being a member of cluster initiative influences affiliated company's internationalization behavior, encouraging it to establish business relations in the foreign markets;
- Clusters may increase location attractiveness of the regions, attracting foreign direct investments.

VI. CLUSTERS AS DRIVERS FOR AFFILIATED FIRM'S INTERNATIONALIZATION

An impact of clusters on affiliated firm's internationalization behavior is connected with the fact that in modern economy, cluster initiatives themselves enter into relationships with foreign partners. Clusters are subject to internationalization at two levels:

- The micro level, or the level of firms taking part in clusters;
- The meso level or the cluster as a whole – through the actions undertaken by cluster coordinators, which work for establishing cooperation at the international level.

The dynamics of business networks within a cluster influences firms' internationalization behavior. The cluster can facilitate the companies both an access to and development of the necessary resources for their internationalization process. The study conducted by G. Meier zu Köcker, L. Müller and Z. Zombori [20] resulted in following findings:

- Good network and cluster management is capable of systematically reducing some of the barriers to internationalization. There is sufficient empirical evidence that companies in networks and clusters find it easier to engage in cooperation at the international level.
- Network and cluster managements increasingly see themselves as an efficient instrument for the sustainable internationalization of their affiliated firms.
- A key factor influencing the internationalization of cluster' affiliated companies is the existence and implementation of a suitable internationalization strategy. Therefore, networks and clusters with an internationalization strategy act more successfully on an international scale than those without a strategy.
- Despite some successes achieved, the international visibility of networks and clusters is frequently still quite low.

According to the literature [21], internationalization process, driven by the cluster leading firms and by the cluster

association as well, fosters extra-cluster knowledge linkages. In some cases, actors from outside, such as multinational corporations, can also drive the inflow of external knowledge into a cluster. Finally, the absorbed extra-cluster knowledge is diffused through the cluster and reaches those companies, which have no or limited external linkages. The combination of social capital and internationalization, which foster intra- and extra-cluster knowledge linkages, respectively, increases cluster absorptive capacity, thereby contributing to its growth and competitiveness.

VII. CLUSTER AS AN INSTRUMENT FOR ATTRACTING FOREIGN DIRECT INVESTMENTS (FDI)

With respect to the fact that clusters may increase location attractiveness of the regions, influencing the inflow of foreign direct investments, it is worth to notice that the geographical proximity offers frequent contacts among actors, which facilitate knowledge flows. Cluster structures stimulate inflow of FDI in two ways [22]:

- Indirectly, thanks to the cluster's features such as closer cooperation, tacit knowledge, low communication costs and other advantages stemming from proximity;
- Directly, since innovative and efficiently functioning clusters can constitute a driving force of regional growth, which is often regarded as main stimulant for foreign investors to locate their investment in a given location.

K. Ohmae [23] argues that global localization is the most advanced form of the globalization process, hence the management both have a global and a local orientation. According to different economists, e.g. A.M. Rugman and A. Verbeke [24], the vast majority of the world's largest firms operate regionally rather than globally. One of the most important sources of clusters' attractiveness for FDI is knowledge environment, understood as an ecosystem conducive for knowledge production, dissemination, development and accumulation. It may be especially important in case of multinational enterprises interested in gaining access to foreign knowledge sources, according to theories such as asset-augmenting (exploiting) or knowledge-seeking FDI. Knowledge environment in clusters is perceived as a two-dimensional notion, meaning that it includes both:

- Knowledge base (static approach) – clusters possess certain stock of knowledge, being a sum of knowledge possessed by its members, such as universities, scientific and research institutes, innovative companies or highly qualified labor force;
- Knowledge mechanisms (dynamic approach) – clusters, by linking together different units and enhancing cooperation between them, provide necessary elements facilitating knowledge dissemination, accumulation and development.

Clusters increase location attractiveness for foreign direct investments since they have a positive impact on the innovativeness of enterprises by the fact that new technologies in specific sectors are created in units located in close proximity to each other. Spatial proximity and cooperation among different cluster actors induce the flow of

knowledge, technology transfer, learning processes, as well as generation and absorption of innovations. Cluster initiatives are an effective tool of concentration of resources and financial funds for specific kinds of economic activities, facilitating the achievement of an appropriate critical mass. Clusters may attract foreign direct investments by developing relational capital, which may be defined as a set of all relations between institutions, companies and people, based on the awareness of belonging to a certain community and on significant potential for collaboration between culturally similar individuals and institutions. Relational capital in the specific region translates into creating a stable framework for multidimensional cooperation between companies, partners, subcontractors and customers.

Multinational companies which are locating activities in clusters are often motivated by the opportunities they offer for learning and sharing knowledge with co-located firms. With globalization, manufacturing is becoming an activity that is much more transferable than initially believed. Because of that, clusters have been forced to transform themselves from reservoirs of manufacturing skills and embodied learning processes to learning infrastructures or knowledge hubs in a global network of production, development, and marketing activities [25].

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