

REGIONAL CLUSTER INITIATIVES AS A DRIVING FORCE FOR REGIONAL DEVELOPMENT

Zanete Garanti

University of Mediterranean Karpasia, Faculty of Business Administration, Cyprus
e-mail: zhanette@gmail.com

Andra Zvirbule - Berzina

Latvia University of Agriculture, Faculty of Economics, Department of Business Management, Latvia
e-mail: andra.zvirbule@llu.lv

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Regional cluster initiatives receive increasing interest from researchers and practitioners, as well as policy makers, although there is not consensus on a single definition on regional clusters. First authors discuss elements and dimensions of regional clusters that leads to the definition of regional clusters based on five dimensions- single sector enterprises, that cooperate and compete; supportive enterprises from a wide range of sectors; public and government institutions, interested in economic development of sector and region; other institutions, like research, education, finance and others and fifth is regional dimension, which combines all four previously mentioned dimensions into one region. The authors of this paper explore the benefits of regional cluster initiatives in micro (enterprise) and macro (region) level. The research is based on wide literature studies and includes monographic studies, descriptive, analysis and synthesis methods to find out whether regional clusters are associated with regional growth and development. The findings of this research show that regional clusters play important role in stimulating firm performance, innovation capacity and competitiveness, which leads to the region's competitiveness and development. The authors combine positive aspects of regional clusters into four statements. In statement one authors combine studies to show that geographical concentration and collaborative ties of companies promote efficiency and productivity. Statement two shows that enterprises that cooperate and collaborate with other enterprises and institutions are creating and implementing innovations more effectively. In statement three it is found that innovation capacity and increase in efficiency of geographically concentrated enterprises contribute to the enterprise competitiveness. Statement four states that clusters promote growth of existing enterprises and creation and survival of startups. These statements lead to framework showing the effects of regional clusters on the region's growth and development. The positive link is found between regional clusters and firm's performance (micro level) and region's performance (macro level); therefore it is important to stimulate regional cluster initiatives in micro and macro level. For the further research authors suggest testing these positive effects in the specific region.

Keywords: *Cluster based economy; Regional economy; Clusters; Regional Development; Porter.*

Introduction

Regional clusters are studied by geographers, economic geographers, economists, regional economists and others. The focus of this article is on regional clusters from a regional development perspective. Regional development is closely associated with two directions- regional growth and regional development. According to Rocha (2004) regional growth is a quantitative change in the economy, for example, investment, employment, purchasing power and income data, while development leads to qualitative and structural changes in standard of living, technological base and other quantitative data. According to A.C. Poveda (2011) study, growth and development are closely related terms, as growth provides resources for development and regions' or countries' transition from low income and standard of living to high income and standard of living region or country. Author concludes that regional development includes regional growth, therefore uses term development to describe both growth and development.

The **aim of the research** is to find positive interactions between regional clusters and regional development. Three **research tasks** are set up to reach the aim:

- to summarise theoretical aspects of regional clusters,
- to identify positive impacts of regional clusters on firms' performance,
- to set up the framework of regional cluster and regional growth and development interaction.

The **research materials and methods** for the first chapter include monographic studies of wide scientific literature and descriptive, analysis and synthesis methods. In the first chapter authors summarise definition of regional clusters and discuss the important elements of regional growth and development. The following chapter introduces positive effects of regional clusters based on monographic descriptive, analysis and synthesis methods. Author combined positive effects of regional clusters into four statements. In the last chapter authors suggest the framework of interaction between regional clusters and regional growth and development. The authors suggest using the proposed framework for the further research to identify benefits of regional clusters in a specific country and region.

Regional Cluster Concept

In economic literature clusters are defined as form of cooperation (Knorringa, Mayer-Stamer, 1998), network (Pachura, 2010; Cook, 2010), system (Shakya, 2009) and others, and there is not single definition of this phenomena. Clusters are known as industrial districts in Marshall's theory (Marshall, 2009) since 1890s, but interest in clusters was renewed in early 1990s by Harvard Business School and Michael E. Porter that now is considered as founder or modern cluster theory. M.E. Porter (1990, 1998a, 1998b, 1998c, 2000) in his early research defined cluster as a set of related industries, but after developed a well known definition for clusters: a cluster is a geographically proximate group of interconnected companies and associated institutions in a specific field based on commonalities and complementarities. Based on wide literature studies authors come to the conclusion that regional clusters consist of five different dimensions.

First, a regional cluster consists of **enterprises operating in the same industry**. Enterprises in a particular region operating in the same industry were a basic condition for Marshall's industrial district theory (Marshall, 2009) and it continues to be the main character of regional clusters. Geographical concentration consists mainly of small and medium-sized enterprises (Marshall, 2009, Becattini 1989, 1990; Belussi, 2004), which compete, cooperate and complement each other (Porter, 1998, 1998b, 1998c, 2000). Ties between enterprises can either be formal or informal. Enterprises can work together to have specialised services, supply, workforce, research and development (Cortright, Mayer, 2001; Barkley, Henry, 1997, 2005) and these activities will be mainly regulated by agreements, contracts and other legal documents. At the same time companies can collaborate in innovation and research process and other activities that can be regulated by informal agreements.

Apart from the enterprises working in the same industry, cluster also includes **related companies**. These are mainly related complementary enterprises, offering products and services and serving cluster enterprises.

Also cluster consists of **government, educational and other institutions**, that all forms formal and informal ties between enterprises and institutions. Clusters are mainly connected with government institutions, financial institutions, education, science, research and other institutions (Porter 1998a, 1998b, 1998c, 2000; Saxenian, 1994; Shakya, 2009; Rocha 2004; Rocha, Sternberg, 2005) that leads to the availability of governmental support for cluster development, access to finance, non- governmental institution support for knowledge, innovation and technology transfer and other benefits.

All the four previously mentioned dimensions are combined into one particular **region** forming the fifth dimension of regional clusters. Some authors (Porter 2000, Delgado, Porter, Stern, 2010, 2011) consider the regional dimension the main dimension of regional cluster, which ensure that enterprises and institutions are geographically close to each other. The benefits of geographical concentration of enterprises were identified by Marshall in the early 1890s (Marshall, 2009). According to Marshall (2009) geographically proximate enterprises have lower costs, access to the labour market and resources. Unlike Marshall and other economic theorists

who focused on the enterprise benefits benefits from the geographical concentration, the latest trends in the economic literature (Delgado, Porter, Stern, 2010, 2011) focus their research on the interactions between regional clusters and regional economy, growth and development.

All the dimensions are combined in Figure 1.

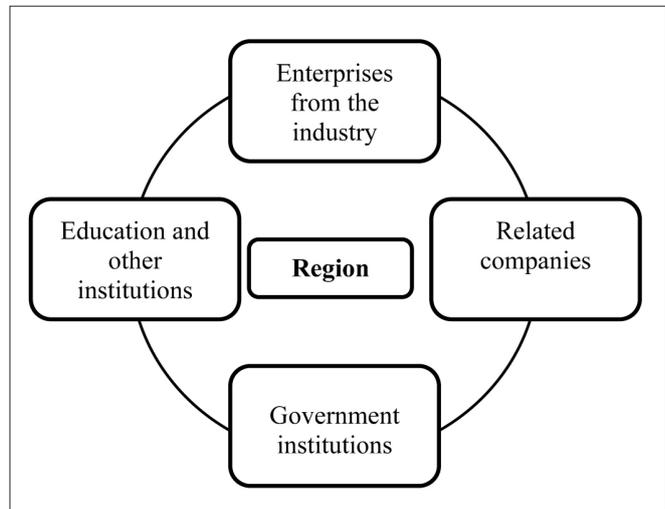


Figure 1. Regional Cluster Dimensions

Source: Authors' construction.

As shown in Figure 1, regional cluster consists of five dimensions; therefore authors propose a regional cluster definition based on these dimensions. Regional cluster is an informal form of cooperation and interaction between companies in the same industry, involving related and complementary businesses, scientific, educational and government and other related institutions in the same region (Garanti, 2013). The paper deals with interactions between regional clusters and firms' performance, as well as regions' growth and development.

Interaction Between Regional Clusters and Firms' Performance

From a literature review standpoint authors are finding evidence of positive interaction between regional clusters and firms' performance. First, the authors combine findings under four statements and expand the discussion on positive interactions found in various studies by researchers and scientists.

Statement one: Geographical concentration and collaborative ties of companies promote efficiency and productivity. Availability of raw materials and resources, including skilled labour, is the main benefit shown in the Marshall's industrial district theory (Marshall, 2009). Clusters are offering companies easy access to important resources, lower transport costs, access to customers and the workforce (Marshall, 2009; Porter, 2000; Krugman, 1991). According to some authors (Dumais, Ellison, Glaser, 2002) nowadays these are the dominant factors. Also clusters offer lower transaction costs, access to specialized services (Scott, 1988, 1994; Scott, Angel, 1987), access to infrastructure and competitive environment (Lin, Tung Huang, 2006) that leads to higher efficiency and productivity. A. Saxenian (1994) indicates that the cluster has a positive impact on business development due

to access to cheaper raw materials. M. E. Porter (2000) in his study indicates that companies operating in the cluster have access to the required specialized labour, and resources such as special equipment, spare parts, business consulting and infrastructure to ensure higher productivity and lower costs. A study in Denmark shows that clusters are associated with higher productivity, especially in the textile sector (Madsen, Smith, Dilling-Hansen, 2003) because of the networks, knowledge transfer and resource mobility. A study in China shows that firm-level productivity in the textile industry is higher in highly concentrated geographical areas (Lin, Li Yang, 2011). Study in the Netherland (Rizov, Oskam, Walsh, 2012) shows that there is a correlation between the firm-specific total factor productivity and a high business concentration in the regions. Also C.L. Chang and L. Oxley (2009) in their study found positive impact of geographical concentration of innovation activities on total factor productivity in Taiwan's manufacturing industries. In contrast to previous studies, J. Drucker (Drucker) and E. Faser (2012), after studying the U.S. rubber, plastics and metalworking industry, come to the conclusion that the agglomerations of the companies have no positive effect on productivity. The fact that companies are next to each other is not the main factor. Productivity is positively influenced by the cluster activities, for example, knowledge and information flow and transfer, public-private sector cooperation and others.

Several researchers have focused their research on labour mobility and productivity. Theorists (Marshall, 2009; Porter, 2000, Krugman, 1991, 1998) point out that the availability of labour, their specialised knowledge and skills and exchange between companies is centrifugal factor for cluster formation and development. Empirical studies indicate that in such clusters as the Silicon Valley labour exchange between firms is regular and one person is assigned to a particular workplace for a short time, thus there is very rapid circulation of information (Saxenian, 1994; Hyde, 2003; Angel, 2000). A similar study carried out in high-tech clusters in Cambridgeshire and Oxfordshire (Smith, Waters, 2005) points to the higher mobility of labour in the cluster than outside of it. Labour mobility provides knowledge and information between cluster companies, thus they are able to adapt to the market demand rapidly. As the authors conclude, empirical studies show positive link between the geographical concentration of economic activities and efficiency and productivity.

Statement two: Enterprises that cooperate and collaborate with other enterprises and institutions are creating and implementing innovations more effectively. In the economic literature clusters are referred as the drivers of innovation. The main reason is the cluster's ability to provide networking between companies and educational institutions to commercialize their innovations. A. Saxenian (1994) studied and compared the Silicon Valley and Route 128 in Boston clusters and indicated that the cluster has a major role in the innovation process. The resources and the networks are available and companies are able to introduce major innovations, which is not possible for small businesses that operate at a distance. P. Cook (2001), based on the Silicon Valley's example, agrees that the existence of local value chains and networks can be a major driver of innovation. E.M. Porter (2000) indicates that cluster enterprises have higher chances to predict consumer preferences, because the

cluster is the network not only between enterprises but also consumers. Cooperation between distributors, researchers, universities and other interested parties allow the companies in the cluster to anticipate and develop new technologies, operations and distribution channels. After research in the US Biotech clusters T.B. Folta, A.C. Cooper and Y.S. Baik (2006) came to the conclusion that clusters are stimulating the company's ability to introduce patented innovations, attract partners and private capital. The authors also found that cluster's threshold is 65 enterprises, after which overall benefit of the cluster decreases. Research of M. Ciu and X. Wei (2012) shows positive correlation between innovations and the company's network density in the provinces in China, as well as a positive correlation between members of the network and innovations.

In the Ethiopian footwear cluster, which is the strongest African cluster, M. Gebreeyesus and P. Mohnen (2011) confirm that the cluster has a business and knowledge interaction, and the econometric analysis shows a high correlation between a company's cooperation links and innovations. Similar studies have been conducted not only in China and Ethiopia, but also in the U.S. and the EU in different industries and different regional clusters. Studies in the Italian shoe manufacturers cluster (Boschma, Wal, 2007) and Chilean wine producers cluster (Giuliania, Bell, 2005) confirmed a strong correlation between cooperative and collaborative ties of the enterprises and innovations.

The ability to innovate is closely related with the cooperative ties between the enterprises and the institutions, in particular with education, research, knowledge and technology transfer institutions. Knowledge transfer is a key success factor for Taiwan's high-tech clusters (Chyi, To, Liu, 2011), involving a transfer of knowledge both internally (in the company) and externally (between companies and institutions). A study by B. McEvily and A. Zaheer (1999) emphasise the cooperative and collaborative ties between enterprises and regional education, research and other institutions. It found that the US job shop manufacturers that cooperate with regional institutions are gaining competitive advantage in pollution prevention and quality system implementation. After researching the 54 world-class high-tech clusters in China, H. Cai and R. Fan (2011) came to the conclusion that universities, research centres and business expenditure on research have a positive impact on the cluster's innovation ability. P.V. Hemert, P. Nijkamp and E. Masurel (2012) analysed 243 innovative small and medium size enterprises in Holland and came to the conclusion that the creation and implementations of innovations are more effective if there is collaboration between businesses and universities, as well as participation in international networks and cooperation with competitors. According to C. Ostergaard (2009) creation and implementation of innovations is driven not only by formal but also by informal contacts with companies, competitors, and education and research institutions. Moreover, informal contacts play greater role in spreading the knowledge. Empirical studies confirm the authors' statement that enterprises that cooperate and collaborate with other enterprises and institutions are creating and implementing innovations more effectively.

Statement three: Innovation capacity and increase in efficiency of geographically concentrated enterprises

contribute to the enterprise competitiveness. Nowadays competitiveness is synonymous with prosperity and competitiveness is measured in the countries, regions, industries and enterprises. Competitiveness is defined as the ability to produce higher quality products at lower costs than the competitors can (Kassalis, 2010). Clusters as a driver of competitiveness literature started with the work of E.M. Porter (1990) “Competitive Advantage of Nations”, which presents Porter “diamond model”. In this model Porter explains why some nations and industries are more competitive than others on a global scale with four determinants of nation’s advantage.

1. Factor conditions- include those factors that can be exploited by companies in a given nation. Factor conditions can be seen as basic factors found within a country (e.g. land, climate, demography) or advantageous factors that are subsequently built upon by companies to more advanced factors of competition (e.g. skilled labour, innovative technologies).
2. Demand factors- the more demanding the customers in an economy, the more pressure on local firms to consistently improve their services and products.
3. Related supporting industries- spatial proximity of upstream and downstream industries facilitates the exchange of information and promotes a continuous and promotes a continuous exchange of ideas and innovations.
4. Firm strategy, structure and rivalry- the world is dominated by dynamic conditions, and it is direct competition that impels firms to work for increases in productivity and innovation.

According to later researches of Porter (2001), competitiveness depends on internal and external factors. Internal factors, such as competitive advantage and success based on the decisions taken, together with external factors, which are partly connected with location, leads to competitive advantage. In the economic literature researchers often use productivity as a synonym for competitiveness (Porter, 1990, 1998; Onsel et al, 2008), although some authors (Onsel et al, 2008) indicate that productivity is an internal factor, while competitiveness is an external factor, which shows the relative ability of the company to operate more efficiently compared to its competitors.

Competitiveness as external factor is particularly associated with export. Export is very important for companies in the cluster and particularly it is important in regional clusters operating in regional markets where purchasing power often tends to be insufficient (Moosavi, Noorizadegan, 2009). On the other side cluster is an important precondition for export promotion. Studies show (Storper, 1992) that most of the exports come from the technological areas in which companies and institutions are concentrated. Study in Norway (Isaken, 1998) shows that sectors with strong clusters are more likely to be exportable. Study in the Australian wine cluster (Aylward, 2004) confirms that clusters provide a highly productive and favourable environment for export growth and thus ensures competitive advantage and higher exports.

Studies in Asia (Ganne, Leclere, 2009) show the competitive advantages obtained by companies operating in the textile, shipbuilding, and other high-tech clusters in Vietnam, China, Thailand, Malaysia and Japan. Companies operating in a dense area, in collaboration with both internal

and external market participants operate more efficiently, successfully introduce innovations, work in export markets, and attract investment, thus ensuring the competitiveness of enterprises. Indian software clusters (Dayasindhu, 2002) are achieving competitiveness by increased productivity, a clear vision and direction, and rapid innovation.

Porter (2000) summarizes that clusters affect the company’s competitiveness in three ways: 1) increasing the productivity, 2) increasing the innovation capacity and productivity growth, and 3) stimulating the formation of new businesses that promote innovation and cluster growth. The authors conclude that both theoretical and empirical studies confirm that cluster enterprises can more efficiently use existing resources and gain competitive advantage.

Statement four: Clusters promote growth of existing enterprises and creation and survival of start-ups.

Enterprise location, whether it is in the city centre, in the suburbs or a rural area, away from other companies or in the agglomeration, has a major impact on the company’s performance. Several authors have previously put forward the hypothesis that the performance of the company will be more successful in urban areas (Carter, Reynolds, Williams, 1999), but the cluster researchers argue that the most important is to be located geographically close to other similar, complementary businesses and institutions. Benefits of geographical proximity increase as the number of companies increase in the location (Arthur, 1990). Company’s desire to operate in a cluster can be associated with easier access to information and lower start-up barriers (Lin, Tung Huang, 2006) and the existing cooperation links with suppliers, customers, facilitating the commercialization of products (Ketel, 2003). As authors previously mentioned, companies cooperate with each other and interact with educational, financial and other institutions in a cluster and it results in increased productivity, innovation capability and competitiveness. In this way favourable business environment is formed and new enterprises are formed to fit cluster chain. Empirical researches are supporting the authors’ hypothesis. Clusters have a positive impact on firm growth in the French bio-tech industry (Avenel et.al, 2005). Firm growth in the Canadian IT industry is higher for the enterprises concentrated in a part of Toronto (Globerman, Shapiro, Vining, 2007) and growth is decreasing as the distance from the centre increases also in the US high-tech enterprises (Globerman, Shapiro, Vining, 2007; Maine, Shapiro, Vining 2010).

The study conducted in the regions of Portugal (Baptista, Preto, 2011) shows that high-tech companies have positive impact on employment if they are agglomerated. Extensive study in the United Kingdom (Beaudry, Swann, 2009) indicates that there is a statistically significant relationship between the company’s growth and employment in the sector in the half of the 56 industries covered in the research. The cluster effect is higher in the manufacturing sector, rather than services. A study of more than 4000 Swedish companies in various sectors (Wennberg, Lindqvist, 2010) proves that the strong growth of clusters affects the creation of new jobs, increase in taxes and wages. Researching the US biotechnology industry, researchers (McCann, Folta, 2011) show that firms benefit from the clusters asymmetric and the major benefits are for new companies with limited internal resources. A similar result is obtained by studying the Canadian IT industry, which

found that clustering effects are associated with higher growth rates for new businesses (Maine, Shapiro, Vining, 2010), because most new businesses use and benefit from resource availability in the cluster (Klumbies, Bausch, 2011). Studies show that the company's success and survival rate is ensured by collaborative links between businesses (Mazzola, Bruni, 2000). Statistically significant cluster effect on the survival rate of startups is found in five of the eight sectors studied in the US (Renski, 2011). Oldest Germal clusters established 50 to 100 years ago show positive long-term impact on employment, new business creation and survival and income (Brenner, Gildner, 2006).

Opposite results are found in the study conducted by D.G.D. Silve and R.P. McComb (2012) in Texas high-tech sector. According to the research the concentration of business establishments in a close distance (one mile) increases the probability of bankruptcy rates, while concentration in further distance has the opposite affect. Possible causes are too high competition, contributing to the increased cost. Researchers M. Pe'er and T. Keil (2012) emphasise that all clusters cannot be measured the same way and the results cannot be generalized. The benefits of the clusters are different in specific companies, industries and even clusters (Maine, Shapiro, Vining, 2010). The authors conclude that, according to government and industry, as well as cluster development stages it can have a direct or indirect positive impact on company formation, growth and survival rate.

M. Delgado, E.M. Porter and S. Stern (2010) conducted a major study in the US from 1990 to 2005 in the research "Clusters and Entrepreneurship". The authors have gained approval for the hypotheses that strong clusters foster business growth in the region, which is measured by the creation of new businesses in a particular region and industry and employment in these companies. New firm employment growth in high or low cluster specialization affected the range from 25% to 33%. When the cluster becomes more powerful (it dominates the sector), there is a 33% increase in startups. Also study confirms that the existence of the cluster contributes to existing businesses to start up new businesses as part of a cluster. Clusters have significant impact on business productivity therefore the existence of a strong cluster in the region significantly affect the survival rate of the startups.

As discussed in the four statements, regional clusters positively influence enterprise productivity and innovation capacity, competitiveness and growth. These studies are mainly based on the micro or company level and the company benefits from the cluster. However, recent studies show positive links also in regional (macro) level. In the next section authors develop framework of regional cluster effect on regions' development.

Framework of Regional Cluster Effect on Regions' Growth and Development

Based on wide literature studies authors suggest following framework (Figure 2) to describe the interaction between regional cluster and regional growth and development.

Figure 2 shows the theoretical framework of the regional cluster effect on regions' growth and development. Based on literature studies authors develop the hypothesis that the regional cluster presence has a positive impact on the growth and development of the region. Clusters provide a supportive

environment for business development, thus ensuring regional development. Scientists R.J. Stimson R.R. Stough and B.H. Roberts (2006) assume that nowadays regional clusters are promoters of regional development and are used to build regional development policy (Pachura, 2010). Of course, the business development in a particular region depends not only on the existence and development of the cluster. According to K. Chapman (2009) important factors to locate companies in particular geographical areas are cost factors (materials, energy, land, labour, and capital), income factors (market, competition) and the cost-income factors (transport, infrastructure, agglomeration, policy). As shown in Figure 1, the cluster consists of the interaction of all these factors, and provides favourable conditions for a business by reducing costs and increasing revenue factors.

According to researchers (Fritsch, 2008; Baptista, Escaria, Madruga, 2008) creation of new enterprises is a sign of regional development. M. Fritsch (2008) distinguishes between direct effect on regional development (creation of new jobs, increase in the market share) and indirect supply-side effects (efficiency, productivity, faster innovations and introduction of structural changes). These effects influence regional development with a lags of 10 years- in the medium term creation of new enterprises can positively influence productivity, but can have a negative influence on employment, but after 5 to 6 years employment effect becomes positive (Dejardin, Fritsch, 2011). Research in Portugal (Baptista, Escaria, Madruga, 2008) approves that creation of new enterprises has a better influence on indirect supply-side effects than direct effects with time lags of 8 years. Also research in Spanish manufacturing enterprises shows positive effect in short time, negative in the medium term and positive long term effects on the creation of new jobs (Carod, Solis, Bofarull, 2008). According to M. Dejardin (2011) interaction between creation of new enterprises and regional development depends on industry and sector. After research in regions of Belgium author came to conclusion that positive effect is found in service sectors, while manufacturing sectors do not show any interaction. Other research in regions of Portugal (Baptista, Preto, 2011) approves that new enterprises have more positive effect on the region's development in agglomerations. Empirical research in 74 regions in Germany (Fritsch, Mueller, 2008) shows that new enterprises have a higher positive effect on the employment in agglomerations that is explained with higher competition that stimulates enterprises to work more efficient. Similar results are found in researches done in the Netherlands (Van Stel, Suddle, 2008) and the UK (Mueller, Van Stel, Storey, 2008) showing that the interaction between creation of new business and employment is higher in high intensity areas of business. Moreover H. Rocha and R. Sternberg (2005) completed research in 97 regions in Germany and came to conclusion that there is a positive correlation between regional clusters and regional economy, mainly employment. According to A.M. Romero-Martinez and A. Montoro-Sanchez (2008) theoretical research clusters promote the formation of new businesses in less developed areas, and entering the market contributes to the cluster's competitiveness, which further contributes to the region's competitiveness.

Cluster theory argues that cluster productivity, innovation capacity and competitiveness lead to higher labour productivity

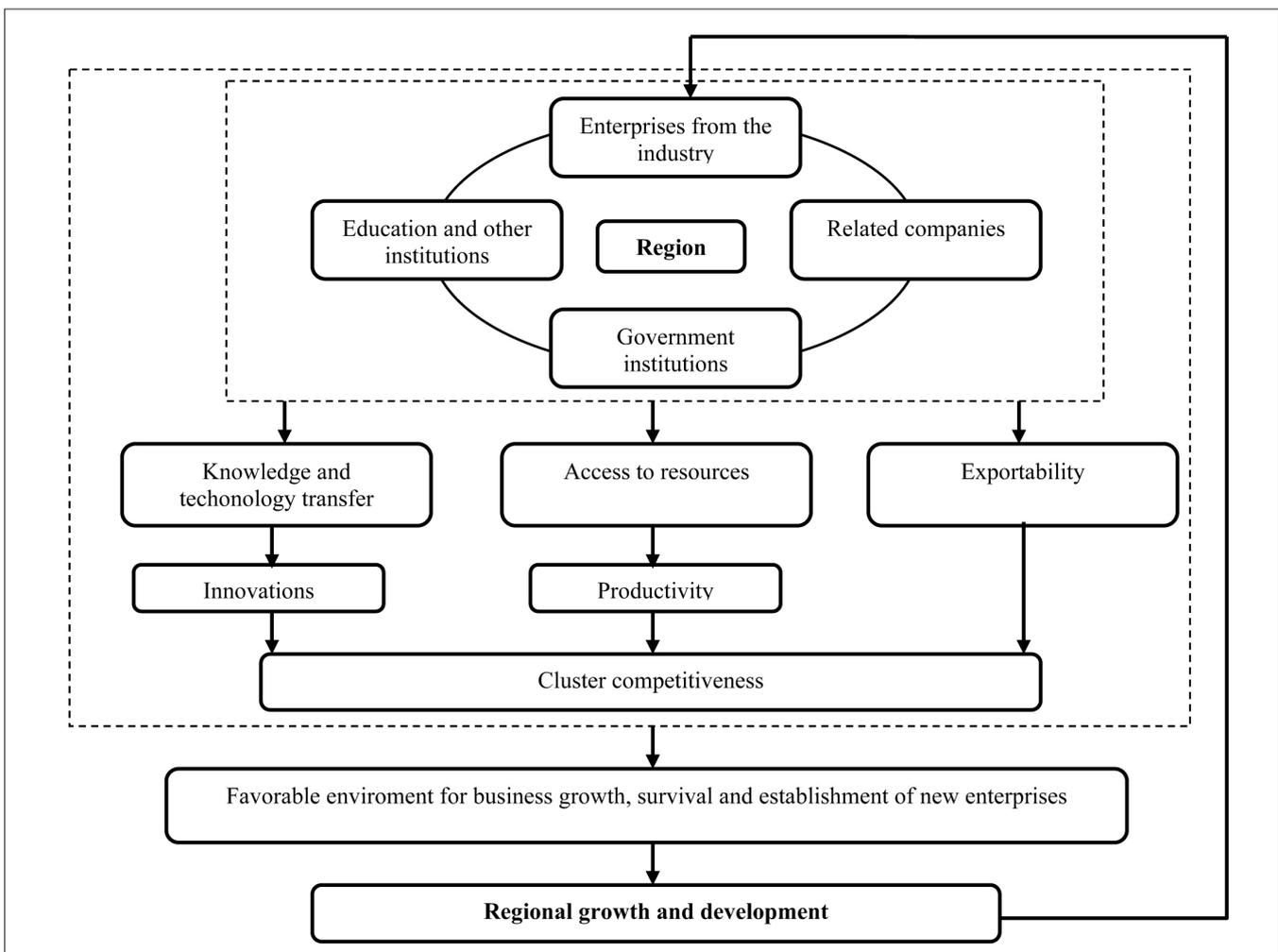


Figure 2. Regional Cluster Effect on Regional Growth and Development

Source: Authors' construction.

(Puga, 2009), more and better job opportunities (Fullerton, Villemez, 2001; Matano, Naticchioni, 2012) and increase in wages (Katz, Liu, Vey, 2006). Scientists W.C. Wheaton and M.J. Lewis (2002) demonstrate that an equal number of industry employees are earning more if the enterprise is located in the city and sector employment accounts for most of the region's employment. Also in Brazil employees are earning more if the enterprise is in the cluster (Monasterio, Salvo, 2006). Study in Colorado state (Patton, Rewete, 2003) shows that the strong competition in the cluster leads to the fact that companies are forced to offer not only higher wages to their employees but also better working and living conditions, and privileges. T. Brenner and A. Gildner (2006) study shows that the cluster enterprises are providing local governments with the resources to improve infrastructure through tax payments. Increased tax payments leads to better education, transport infrastructure and higher attractiveness of the region, which in turn stimulates the growth cycles.

The well known economic theorist who linked regional business development, increase in wages and standards of living to the regional cluster theory is the founder of the modern cluster theory E.M. Porter in his work "Economic Performance of Regions" (2003). He looked at regional differences, such as the average wage and the increase in employment, new company formation, patents per 100 thousand inhabitants,

and the correlation of these indicators in the US between the years 1990 and 2000. He classified US industries into traded, local and resource-dependent. In local industries employment is evenly distributed across all regions— that is, employment is roughly proportional to regional population. Local industries provide goods and services to the local market, or the region in which the employment is located. In resource dependent industries employment is located primarily where the needed natural resources are found, but these industries compete with other domestic and international locations. Traded industries are those that sell products and services across regional and national boundaries. They locate in a particular region based not on the resources but on broader competitive considerations, and employment concentration varies markedly by region. Research showed that around 67% of all employees were employed in local industries, 0.8% were employed in resource dependent industries and 31% were employed in traded industries. Traded industries show higher wages and rapid increase in wages (around 45 thousand USD per year with the increase of 5% while in local industries wages are around 27 thousand USD per year with the increase of 4%). Also productivity and number of patents are noticeably higher in traded industries (21 patents per 10 thousand employees in traded industries, 1.3 patents in local and 7 patents in resource dependent industries). Author

also identified 41 regional clusters in traded industries. Statistical analysis approves that identified clusters strongly influence average wages and growth of the wages in regional context, as well as other regional development indicators, like productivity, employment, innovation capacity. As author (Porter, 2003) concludes, the performance of regional economies is strongly influenced by the strength of local clusters and the vitality and plurality of innovation. Further research of E.M. Porter (2004) shows that clusters are found in both metropolitan and rural areas and they create similar economic benefits.

E.M. Porter, along with colleagues M. Delgado and S. Stern conducted researches “Clusters and Entrepreneurship” (2010) and “Clusters, Convergence and Economic Performance” (2011) where they continue Porter’s ongoing studies on the interaction between regional clusters and regional development. First authors found a positive correlation between regional clusters and regional entrepreneurship development, and continued further research on two different dimensions: industry-region and region-cluster. In industry-region dimension studies, the authors show that the existence of a cluster in a particular sector leads to regional development that can be measured by indicators such as employment, new business creation, wages, patenting capability. In region-cluster dimension studies authors obtain confirmation that the cluster develops faster if it has strong connected and contiguous clusters. Based on empirical researches that found positive interaction between the presence of regional cluster and region’s development, C.H.M. Ketels (2008) summarises and authors conclude that regional clusters are important driving force of regional development.

Conclusions

- Regional clusters can be defined as a form of cooperation, informal links between companies and others, but the authors propose using a cluster definition based on five dimensions- regional cluster is an informal form of cooperation and interaction between companies in the same industry, involving related and complementary businesses, scientific, educational and government and other related institutions in the same region.
- Authors found positive linkage between regional clusters and firms’ productivity and efficiency, claiming that geographical concentration and collaborative ties of companies promote efficiency and productivity.
- Economic literature shows positive linkages between regional clusters and firms’ innovative capacity, stating that enterprises that cooperate and collaborate with other enterprises and institutions are creating and implementing innovations more effectively.
- Productivity, innovation capacity and increase in efficiency of geographically concentrated enterprises contribute to the enterprise competitiveness.
- Authors also found positive links between clusters and the growth of existing enterprises and creation and survival of startups.
- Positive aspects mentioned before leads to regional growth and development. The authors found empirical and theoretical researches stating that regional clusters create an environment for business growth and

development that leads to the regions’ growth and development.

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