



MACROJOURNALS

The Journal of **MacroTrends** in Technology and Innovation

Clusters as drivers of competitiveness

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Abstract

Economic clusters are recognized as key central drivers and are a valuable source of much needed innovation, knowledge, and they are also economic drivers for regions and firms. Cluster initiatives are defined as means for regional competitiveness and they have got a positive impact on the members of the cluster organization. They improve companies' operational efficiency, faster innovation and tacit knowledge diffusion, they stimulate the establishment of new companies, especially through spinoffs, and they accelerate social capital formation. The aim of the study is to represent the role of clusters in increasing the national competitiveness and to identify the potential advantages and importance of establishing more clusters in the future.

Keywords: *clusters, competitiveness, collaboration*

1. Overview of the literature

The key to the rise of humanity laid in the innovative ability of our brain and the growing willingness to cooperate. The continuous changes and the creation and implementation of new things were the moments that initiated the evolution of world history and humanity. If we include the fact that the division of labour, specialization and cooperation triggered the emergence of world economy, then it becomes clear what the expected strategic behaviour is today from the participants in the economic life. Changes and making changes always inspired the economic actors to overwrite their previous usual activities and to partially or completely redefine the process of corporate operations. Today's most competitive companies and national economies are the ones that rely on cooperation on a broad scale, maintain positive relations to stimulate the economy, and they use all this constructively in their innovation processes. There are new resources too among the conditions of competitiveness, such as economic capital, which – as a special factor of production – provides a competitive edge for the enterprises through personal relationships. Moreover, the synergy deriving from the relationships and

cooperation can also be perceptibly discovered in the innovation processes. If cooperation and trust are at the right level, the economic participants will more likely work together in the innovation processes as well, thereby generating a bigger and realisable competitive edge for everyone. This approach can already be found at the competitive countries and companies, because they consciously build on the 'soft' factors of competitiveness, and with their new point of view and management methods they are shaping the economic trends of our era. The ones who do not manage effectively the economy-improving partnerships and do not carry out innovation activities, sooner or later will fall behind in the competition. Innovation can be much more successful and efficient if the economic actors cooperate at certain stages, and the cooperation might manifest in the most obvious form: clustering. Strengthening competitiveness = innovations + cooperation. Innovations and R&D: radical or step-by-step changes, developments, researches and every development effort that create a truly detectible and realisable value for the enterprise, the market and the end user as well. Cooperation: clusters, production cooperation, industrial and strategic alliances, university-industry partnerships, knowledge networks, etc.

Traditionally the competition in the markets is about confrontation between companies, or in other words it is a series of strategic moves that the rival companies are making against each other (often to the detriment of each other). In this sense competition is a zero sum game where one party wins and the other one loses, and in which the companies are basically practicing the non-cooperative strategic behaviour. However, the market is not only about rivalry and fierce competition; it also presents opportunities for cooperation. In their famous book 'The Blue Ocean Strategy' Chan Kim and Renée Mauborgne explain in detail the potential advantages that could occur if an enterprise does not press for the conventional strategic approach and strategic innovations, but rather becomes a forerunner of being able to create its own space at the market and even find new markets for itself¹. In this market-making process there is no need for "playing strategic games" to the disadvantage of our rivals, since we have the chance of creating a competition-free market space. The red ocean represents the markets where certain companies bleed out, while in the blue ocean they can also operate side-by-side. It needs to be emphasized that the blue oceans will turn into red with time, and therefore the enterprises must constantly aim for making more and more new uncontested market spaces (Chan-Mauborgne, 2008).

¹ Its tools and methods are described in detail in the book (pl.: strategy canvas, value innovation, etc.)

Table 1.: Difference between the red and blue ocean market

<i>red ocean market</i>	<i>blue ocean market</i>
<i>compete in existing market space</i>	<i>create uncontested market space</i>
<i>beat the competition</i>	<i>make the competition irrelevant</i>
<i>exploit existing demand</i>	<i>create and capture new demand</i>
<i>make the value-cost trade off</i>	<i>break the value-cost trade off</i>
<i>strategic innovation</i>	<i>value innovation</i>
<i>non-cooperative behaviour of firms</i>	<i>cooperative behaviour of firms</i>

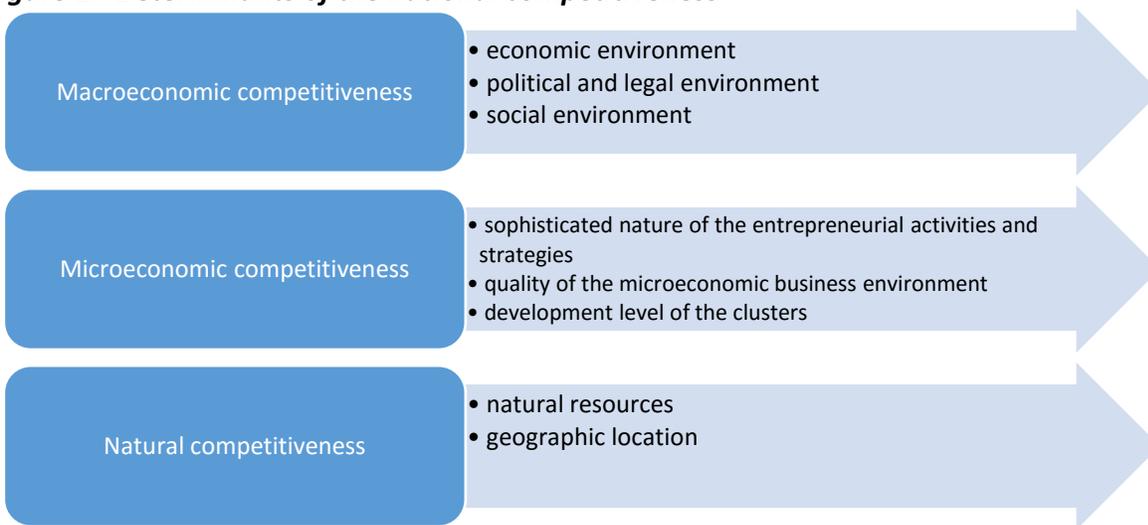
Source: own compilation

Creating an uncontested market space is not always an easy task. Most of the companies have no other choice but to compete at the red ocean markets, where there is a cutthroat fight for bringing in and keeping the customers or for increasing the market shares. The market – just like the Earth – has finite borders, thus if we are not able to widen the market borders then we can only acquire more market shares from our existing competitors, whether they are right next to us or far away. In this situation it is not a negligible question what we are trying to compete with, what conditions and resources we have, what necessary skills we possess (key and distinctive competences), how good the management is, how adequate the strategic decisions are, etc. It is nearly impossible to make a list of what we will possibly need to gain a competitive advantage, since maybe every company deems different things important for strengthening their organisational competitiveness. Some lacks money, others would need creative ideas or spend more on innovation, while some others would have to implement a better resource-management. This is exactly why competitiveness has never had a uniform definition, as everybody sees the cornerstones of competitiveness in something else. It is even safe to say that cooperation – and therefore what is significant from the study’s perspective: the clusters – can offer a meaningful help to get into a competitively more advantageous position, and they do not just have potential to improve the competitiveness of the corporations, but they can also have a positive effect on the competitiveness of the national economy. Clusters are concentrations of independent businesses – innovative start-ups, small and medium-sized enterprises, large companies and research organisations – that operate in a certain sector and region, and their goal is to encourage the innovation activities through intensive cooperation, the sharing of resources and exchange of knowledge, efficiently contributing to the transfer of technology, networking and information disclosure between the businesses belonging to the cluster (Salgó, 2010).

Naturally it cannot be asserted that cooperation can solve every problem, and it is not 100% true either that cooperation is the only means that can improve effectiveness. Forming partnerships (cooperative strategic behaviour) can still be an asset for the companies for helping to propose solutions in particular market situations, and with its aid competitive advantage could be easier to achieve, even for enterprises that would not be able to execute certain major innovations or developments on their own. Several types of cooperation are known to exist, from strategic alliances through supply chains to economic clusters. Many people have drawn attention to the role and importance of the latter, but probably the most

notable personality among them was Michael Porter, a University Professor at Harvard. Porter found strong correlation between national and business competitiveness. In his opinion the productivity of the national economy is suitable for the assessment of the national competitiveness, considering that only the continuous growth of productivity can lead to the improvement of the standard of living. However, the growth of productivity is based on the performance of the companies operating in the country (Porter-Ketels, 2003). According to Porter and his co-authors the determinants of competitiveness can be classified into three big groups. In the first group we can find the elements of macro environment, in a broader sense, which includes the macroeconomic, political, legal and social environments. The macro environment can also be considered for the enterprises as an environment where changes occur, because the vast majority of the enterprises have no influence on these changes, and most of the times it is a given condition for them. On the second level there are determinants that can actually be affected by the enterprises too, or what's more, the enterprises might even shape those. Accordingly, the sophisticated nature of the entrepreneurial activities and strategies, the quality of the business environment and last but not least the development level of the clusters all appear in this group. The third level contains factors that are just as relevant for strengthening competitiveness, but these are rather in relation with the conditions, size and geographic location of the country. Source of competitiveness can be, for instance, the ample supply of resources or the existence of natural resources too, which might help putting both the country and the economic participants into a favourable position. The levels of the competitiveness determinants are graphically described on Figure 1.

Figure 1.: Determinants of the national competitiveness



Source: own compilation

Porter says that in the global economy the long-lasting competitive advantages can often be linked to the local or regional levels. He highlights that localized enterprises can play a crucial role in competitiveness, as they are able to adopt competitiveness-enhancing initiatives through clustering. The cluster is basically an association of territorially close enterprises working in the

same sector, with the aim of specializing the companies in specific areas, developing technological skills, adapting to the market requirements, building their innovation and strengthening their competitiveness by collectively sourcing the inputs or collectively selling the outputs (Porter-Ketels, 2003). He sees the importance of the clusters in the fact (among other things) that under global economic circumstances the competitiveness of certain areas is explicitly based on local factors. The territorial concentration of the skills, knowledge, institutes, competitors, related companies, business organizations and customers with high needs are the factors that determine the competitiveness of a certain area or a nation. The proximity – in a cultural, institutional, geographical sense – provides better information availability, a special system of relationships and the formation of effective incentive arrangements (Nagyházi, 2010).

There are numerous EU studies dealing with the clusters. Some of them emphasize the weaker innovation performance of the European Union, which is the subject of several research and report. Secondly, they suggest interpreting the clusters as a network of SMEs, or a concentration of enterprises around a key company, as another approach describes them, but we can also talk about clusters structured around universities. Most of the EU studies agree that innovation is the strongest driving force for increasing the prosperity of the EU. Clusters are able to move productivity and innovation forward, and therefore they become actors that might have a key role to play, if our job is to enhance competitiveness. A cluster is a group of interdependent companies and related institutes that cooperate and compete with each other. They are concentrated in one or more geographic regions, focused on a certain area/sector, linked together by similar abilities and technologies. They either have a conventional structure or they are based on science, and they operate in an institutional (cluster manager) or not institutional form (Salgó, 2010).

Dobák and his co-authors claim that the diffusion of information, knowledge and modern technologies, and the growing proportion of the small and medium-sized enterprises have made the establishment of qualitatively new and different relationships necessary. This has shed a new light on the need for knowledge and technology, the relationships with the R+D institutional systems and innovation as well. The basic idea behind the clusters and the networks is that rival enterprises are also capable of finding the areas for mutual collaboration, which can create a dynamic balance between competition and cooperation through prioritizing the mutual interests. The enterprises participating in the clusters mostly cooperate in fields like innovation, R+D, marketing, acquisition, sales, education-training, finances and export (Dobák et al, 2003).

In the past decades plenty of definitions and approaches have evolved regarding the clusters. A European Union study distinguished four basic cluster schools, which are similar, yet they all define on the basis of different organizing principles. The Californian school underlines the cooperation of vertical networks. It specializes in the labour markets and aims to sign such agreements with which the transaction costs could be significantly reduced. Conversely, the Scandinavian school does not endeavour to increase the efficiency on the labour market, but tries to exploit the benefits of innovation instead. The Scandinavian approach states that the

clusters are relying on local knowledge, hence the emphasis needs to be on the development partnerships building on this knowledge. Knowledge, the quality and sharing of knowledge, and its continuous improvement grows into an important element for the members of the cluster. The so called school of industrial districts considers the cooperation of the regional small and medium-sized enterprises to have top priority. These enterprises – as asserted by the Italian school – might experience external impacts and mutual trust, and in addition derived benefits can appear too that may help a lot with some of the innovations and developments. The outcome of the cooperation inside the clusters can be extremely diverse, but being a member of a cluster has the following general benefits: 1. increased competitiveness, which helps obtaining better market positions, cost effectiveness and the improvement of the economic results; 2. division of labour and specialization between the members that can boost efficiency on fields like innovation; 3. identification and bonding with the local conditions and local communities, commitment to protect the local values and to promote the interests of the society.

Table 2.: The theoretical schools of clusters

NAME	
Italian school	<i>external economies + mutual trust and industrial atmosphere, leading to incremental innovations</i>
Californian school	<i>vertical disintegration, reducing transaction costs, and a specialised local labour market + conventions, informal rules and habits</i>
Scandinavian school	<i>innovation as learning, learning as a localised process, because of the importance of sticky, non-codified knowledge</i>
Porter school of clustering	<i>external economies strengthened by proximity (better access to input factors, local rivalry and local customers)</i>

Source: Observatory of European SMEs (2001)

The benefits of clustering are usually described by a simple mathematical equation: $2+2=5$. This is meant to show that the participants can gain bigger advantages together through the partnership than pursuing the realization of their ideas on their own. Cooperation multiplies the opportunities and abilities of the members.

2. Methods and analysis

Everybody agrees that clusters reinforce competitiveness, whether they are concentrated on a very narrow or wider geographic area. When defining clusters, researchers normally make a clear distinction between regional clusters, cluster-initiative and cluster-initiative program. Mills and her co-authors pointed out that clusters need to be distinguished not only with respect to on which field they can provide potential advantages for the participants, but we also have to differentiate between the cluster organizations on the basis of their geographic limits. By geographic limits we mean which geographic areas the clusters are concentrated in, and within what range. (Mills et al, 2008).

Regional industrial cluster: geographic concentration of related enterprises that take the form of a partnership for the purposes of a supplier, service provider or a relevant institution. Cluster-initiative: an official organized effort that supports the growth and competitiveness of the clusters through helping the collaborative activity of the cluster members to move forward. Cluster-initiative program: all the efforts that create and maintain the willingness and enthusiasm to initiate clusters (Salgó, 2010).

According to Christian Ketels, a professor at Harvard Business School, those enterprises will benefit the most from clustering that are able to align their activities to each other on a long term, and this can especially be a huge accomplishment in the developing countries. The origin of the benefits can be classified into three groups. First of all, there is a possibility of establishing a stronger and more effective relationship with the specialized suppliers. Secondly, clusters can shift their organizational focus on the labour markets, from where they are able to acquire deeper and more intensive skills and abilities. Finally, clusters make the existence of the channels possible (and they also create the channels), through which the participating enterprises might cooperate in sharing knowledge (knowledge transfer), siphoning off its benefits by developing a mutual channel. Ketels claims that clusters are the tangible and expected effects of the economic challenges of our era. Clusters are part of today's economic reality, offering a sort of response to the economic agglomerations (e.g. large companies) or to the dispersive economic forces (that trigger dispersal, dissension). (Ketels, 2009)

Garelli, professor of the IMD business school in Switzerland, underlined that strengthening competitiveness has four distinctly defined forces. These four forces are the followings: 1. attractiveness or aggressiveness, 2. proximity or globality, 3. assets or processes, 4. individual risk taking or social cohesiveness. The first dimension distinguishes between the countries on being receivers or proposers of foreign capital investments. In terms of the second force, proximity means a local economy close to the enterprises, while globality refers to the presence of large international corporations. Assets and resources are given conditions for a country. Procedures, on the other hand, represent processes and transformation abilities that can be improved. Competitiveness is also determined by which countries rely on which factors the most. The countries that rely on the procedures are usually more competitive than the national economies competing with the help of resources. In the case of the fourth force the IMD draws attention to the dominant social values too. The national economies are in competition not only through their products and services, but through their education and system of values as well. Of these four pillars the second and fourth are of vital importance for clustering (IMD, 2015). Garelli affirms that the advantage of the clusters lies in being closer to the end user, to whom they can provide a much more personalized offer. The proximity of the customer can also be critical in cases when unfortunate economic events occur, such as the outbreak of an economic crisis or the implementation of unfavourable economic policy measures. The proximity of the customer might become significant in sectors that don't belong to the typical global industries, because here more specific needs can arise, which cannot necessarily be satisfactorily met by a large company. (Garelli, 1997).

Porter noted – similarly to Garelli – that in the global economy the competitive edge depends more and more on the local factors, therefore the joint innovations are given a higher priority, relationships and motivation come to be important, and knowledge or cooperation are the fields where the distant competitors are less able to be successful (Porter, 1990).

Globalization also draws attention to the support and the role of the clusters. In an economic sense globalization means the completion of the multi- and transnational companies², as a result of which a company can appear in several sectors with a cross-border network and system of relationships that can even have a global scope. The emergence of the large corporations is more of a challenge for the smaller enterprises, since compared to the big rivals the small firms are less capitalised and less innovative, so they can easily be put at a competitive disadvantage due to their size. In a situation like that the smaller enterprises do not have many means to maintain their competitive position. One of the practical tools could be radical innovations, the quick success of which might generate a dynamic growth for the enterprise. Another possible solution is cooperation, because if a company is unable to carry out for example a development project or an investment on its own, then it is advisable to look for potential partners that it can work together with for the realization of bigger business successes. On top of this, clustering helps smaller enterprises to get information, access the markets and become true competitors of large companies by forming partnerships. The level of clustering in a certain country highly depend on what the business environment is like in that country and how much sponsorship the development policy provides for clustering.

Clustering might be hindered by factors like inadequate business environment, unpredictable economic policy, high corruption rate, bureaucracy, lack of trust, widespread chains of debts, fear of uncertainty, low level of social capital, etc. These are factors that have a definite negative influence on engaging cooperation, thus the countries without a well-established and far-reaching world of clusters will have to treat the resolution of the above problems as a matter of priority. Apart from processing the aforementioned issues, the cluster development policy also translates into the possibility of building ‘bridges’ between companies, and it gives an initial impetus for the enterprises to create various types of partnerships. The spirit of clustering is at a higher level in countries where the conditions necessary for cooperation are provided for the economic actors. For the enhancement of the conventional corporate competitiveness, and for the broadening of the clustering process too, the construction of a more supportive, enterprise- and cooperation-friendly business environment would give the initial push, which is primarily the responsibility of the current economic policy. However, the most determining reason of clustering is not about the mutual benefits, but the exploitation of the latest tendering opportunities. Along with the large amounts of aid, enterprises organized for the sake of obtaining the resources behind the tenders arise as well, together with their willingness to cooperate. This phenomenon is simply called rent-seeking, at which the deadweight effect is often higher than the average. When launching tenders, we have to take into account who can qualify for the aids, but at the same time it cannot be

² TNC, MNC = transnational companies, multinational companies

discriminative either, meaning that nobody can be excluded on that ground, whereas the tendering process must also not be strangled by excessive administrative burdens (MAG, 2013).

3. Results

One of the biggest advantages of clustering is the increase of the innovation performance. By reviewing the definition background of the clusters it was clearly shown that the members of the clusters are able to coordinate their operation on several fields, although sharing knowledge and innovation basically has a key role. Wheelwright and Clark stated that companies have to operate in an environment where the national and international competitions are on the rise. In other words in each industry the number of the companies able to produce world-class competitive products has grown. Technologies are changing diversely and fast, which does not only change effectiveness and supply, but it can completely transform entire industries too. Strongly segmented and selective markets are being formed. Consumers are becoming more and more sensitive to the tiny differences, and they look for easily attainable and easy-to-use products that offer solutions to their special problems and needs. Furthermore, the pressure on R+D is getting bigger, the social and environmental factors have come into focus, and the demand for involving external actors in the development process is growing (Weelwright et al, 1992).

The European Commission ascertained in its 2011 study after examining the continuous changes of the industrial structures, that the high-technology and knowledge-intensive industries yield a higher increase in productivity and they have to endure smaller recessions in the global competition (EC, 2011).

Sustaining and increasing productivity requires a constant investment activity both in the private and public sectors. We need to use the new technologies and have to create the conditions of developing innovations, which mainly depend upon own sources of finance. The most obvious source of innovation, along with our own R+D, is the takeover of innovations introduced by others, for which we need a suitable corporate structure as well. The regions also play a significant role in the dissemination of knowledge and innovations, because the diffusion of innovations is region-dependant. The existence and strength of networks and relationships between the companies have an impact on the speed and quality of the spread of innovation. Solow highlights that using new technologies enables the progress of labour productivity, encourages developments and establishes new economic sectors. The effective management represents the development of such solutions, with the help of which the information can be turned into knowledge through sophisticated methods, and then this knowledge can be converted into value. Cooperation has to mutually support the participating actors during value creation, so that a larger benefit or sense of usefulness could evolve for every participant in the course of the value creating process (Dobák et al, 2003).

The creation of the European Union also happened for the sake of enhancing the mutual benefits and innovation. By signing the Treaty of Rome in 1957 and by its entry into force in

1958 a community began to form that intended – through its future expansion and improvement – to achieve the goal of successfully competing against the Japanese and American economies on the fields of research-development and innovation. Many factors are collectively responsible for the economic prosperity of the United States of America after the Second World War. First of all, there was no war activity on American soil, therefore they managed to avoid the difficulties that the countries actually taking part in the war had to face and suffer, and secondly it was a huge advantage that in the American economy areas like innovation, R+D or project management were already of paramount importance after the end of WWII.

Following the 50s, in the American economy far more investments were made into development than anywhere else in the world, and smaller enterprises were also at the forefront in this regard. While in the 1950s hardly more than 7,000 large corporations were registered, by the 1970s their number became exponentially higher and we could talk about approximately 44,000 large companies. Globalization helped the expansion of the large companies even more, and as a result today they are relevant actors of the world economy. The role of innovation and developments are crystal clear in this evolutionary process, since none of the international corporations started as a global firm³ or as a large enterprise, but instead some of them rose from being a small company, while others are the end products of some sort of merger or buyout. However, in the natural life cycle of the enterprises it is more frequent that a small firm begins to grow due to the successful management practices, the adequate market conditions or other factors, until it reaches a size limit that opens new opportunities for the firm, for instance it can go international or become able to establish a more serious international network.

It is an option for every enterprise to harness the opportunities that can spur their growth. Clustering helps moving the innovation performance forward, and indirectly the emergence of competitive edges too, that in the end might cause the enlargement of the organization. Promoting innovation would be essential not only for the enterprises. Cooperation can potentially initiate innovation even for actors that would not be able to participate in the development processes on their own because of their size. More innovative enterprises give rise to more innovative industries, which will have a positive effect on the competitiveness of the country as well. The sum of the more competitive countries would create the more innovative and more competitive integration that the founders dreamt of in 1957, and what could effectively tackle the other powerhouses of the world economy, such as the United States, Japan or China.

³ The only exceptions are the so-called born-global companies, which operate on the international markets right from the start.

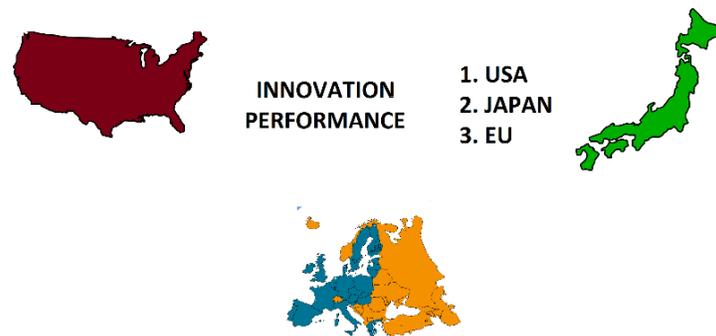
Figure 2.: Levels of building national competitiveness



Source: own compilation

According to the SAPIR report the European Union has been having a massive competitive disadvantage since the seventies, compared with the United States, and a brave cure is needed. The report suggests the complete reconsideration of the economic policy of the EU. Ketels wrote in his study 'EU vs US' that the poor growth performance of the European Union is a symptom of failing to transform into an innovation-based economy (Ketels et al, 2008).

Figure 3.: Innovation rankings in the last 30 years



Source: own compilation

4. Summary

The innovation-based economy greatly requires the increase of the innovation performance, but also the operation of such enterprises in the European Union member states that play close attention to the promotion of innovation or the R+D on a broad scale, and for that purpose they are able to engage in a durable cooperation with each other. On the other hand the member states can be characterized in a distinct manner on the basis of to what

extent they are prone to cooperate for the sake of innovation, or in other words prone to clustering.

Ketels points out in his study that one of the biggest reasons of the EU's vulnerability is being a group of countries with different development level and income, so the prosperity of the integration highly rests on when the lesser developed countries will be able to catch up with the more advanced states (Ketels et al, 2008). The same can be said about the innovation performance, since as long as there is such a difference between the EU countries in respect of innovation performance and clustering, there will be no chance for the integration to turn into a truly powerful economy that could be a serious competitor to the other world economic centres. A paper prepared by the European Commission, which is published annually under the title 'Innovation Union Scoreboard' and evaluates the innovation levels typical to the member states⁴, also reveals a lot about the different innovation performances. This proves that certain countries are significantly lagging behind in the area of innovation, and the inequality is quite substantial. No integration that wishes to evolve into an innovation-based economy in the near future can be successful with such gaps between its member states.

Figure 4.: Innovation performance in the EU

Innovation leaders (green), strong innovators (light green), moderate innovators (orange), modest innovators (red)



Source: Innovation Union Scoreboard 2016

In order to achieve this, the enterprises would have to adopt a new operational concept, their innovation activity would have to be supported, and they would have to be encouraged to be actively involved in clusters or other partnerships for economic recovery. To reach this goal the member states have to rethink their economic strategy, implement an economic policy that will set up a supportive and enterprise-friendly business environment, overcome the major obstacles to cooperation, and solve or ease the problems that are standing in the way of the

⁴ European Commission: Innovation Union Scoreboard. The study is also available on the internet in pdf format.

enterprises. An institutional system has to be established, which can help building relationships, bureaucracy and corruption has to be reduced, and a transparent legal system would be necessary that could protect the rights and interests under any circumstances. The role of clusters – as factors shaping competitiveness – lies primarily in the innovation results and in sharing knowledge. In the innovative economies the partnerships that are able to induce the innovation efforts will remain very important. Today innovation is not the privilege of the large corporations anymore. In fact, innovation can be carried out by smaller enterprises too – even in a more radical sense of the word. The goal was to shed some light on the influence of such partnerships on the economy, while at the same time we also made reference to the development of competitiveness within the EU. It was not our aim to introduce either the primary research results or large-scale comparisons. The relevance of the clusters can be determined through a secondary methodology just as well, both for the future and for the present. Innovation can be more successful with their help, and the rate of clustering is an indicator of a country's strength of competitiveness, social capital and its willingness to cooperate. In the future every support must be given to the enterprises to become involved in creating truly successful and active clusters, because it is in the best interest of not only the companies, but of the whole national economy and the society as well.

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