

CLUSTERS AS THE FORM OF ENTERPRISE FUNCTIONING IN POLISH METALLURGICAL INDUSTRY

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Abstract

In recent years, we have observed an increasing interest of the European Union and its selected member states in the new type of economic policy that is based on the concept of the clusters. Clusters are specialized groups of mutually competitive, but also cooperating, enterprises - they are the key to generating and maintaining competitive advantage. The crucial cluster element is the geographically concentrated group of companies engaged in identical business. The concentration of enterprises increases their mutual competitiveness on the market. Simultaneously, the fact that they act in a group causes some external factors to arise that are beneficial to all; for instance, a greater flow of innovative human resources, so necessary for the efficiency of the manufacturing process. Clusters form a new approach to the competition of competing companies that is becoming increasingly popular. Lately, we have been witnessing intensive expansion of this form of companies' functioning in the metallurgical industry. Literature and government statistics have made it possible to ascertain that Polish metallurgy makes up a significant element of national economy and there are premises for the emergence of relevant cluster structures. Metallurgical clusters tend to function as industrial (network) districts and are aware of the benefits of participating in the said cluster structure.

Keywords: clusters, small and middle sized companies, metallurgy, industrial district

1. INTRODUCTION

In recent years, we have observed an increasing interest of the European Union and its selected member states in the new type of economic policy that is based on the concept of the cluster, as it was proposed by Porter. Clusters are specialized groups of mutually competitive, but also cooperating, enterprises - they are the key to generating and maintaining competitive advantage. The crucial cluster element is the geographically concentrated group of companies engaged in identical business. On the one hand, the concentration of enterprises increases their mutual competitiveness on the market, but the fact that they act in a group causes some external factors to arise that are beneficial to all on the other; for instance, a greater flow of innovative human resources, so necessary for the efficiency of the manufacturing process. Literature and government statistics have made it possible to ascertain that Polish metallurgy makes up a significant element of national economy and there are premises for the emergence of relevant cluster structures. This paper identifies the existing clusters and describes their role in the growth of the Polish metallurgical industry. The results of the analysis based on the collected statistical material and available publications make it possible to come to the conclusion that Poland has a great potential for developing industrial clusters in metallurgy [3,4,5].

2. CLUSTERS

In professional literature, clusters are referred to as enterprise clusters, districts, learning or intelligent regions. The concept of the cluster has only recently entered the Polish economic literature. It is universally accepted that the economic meaning of this term first appeared in the works of Michael E. Porter and from there it was translated as 'klaster' or 'grono' and incorporated in the Polish business administration terminology.

An economic cluster is nothing else but a network of strongly interdependent companies (including specialized suppliers) that are linked to one another in the chain of creating the added value (see **Fig. 1**). In selected

cases, clusters form strategic alliances with universities, research institutes, highly specialized service providers, consultants and customers. It is commonly believed that the cluster development is an indispensable condition for enterprise innovation quality and thus for enhancing the economy's competitiveness.

No matter what terminology is used, it is possible to point to several common features of clusters: geographical (spatial) concentration; cooperation and competition between cluster members; specialization; interdependence of cluster members; exploitation of identical markets and technologies and of the common knowledge base [1,2].



Fig. 1 The chain of creating the added value [12]

Because of the structure of participating enterprises, the links among them and the type of their internal cooperation, clusters may be assigned to the following groups [14,15,16]:

- Cluster as an industrial (network) district. It is comprised of a network of small companies sharing the identical or similar production profile. They are characterised by the ability to quickly adapt to the changing market and varied requirements through cooperation and the use of new technologies. An important feature of the network cluster is the lack of a centre around which the companies group themselves - we witness more like a varied base of firms forming a cluster.
- Hub-and-Spoke Cluster. It is characterized by the existence of large firms each of which has its own network of suppliers (commodities and services). Small firms are often tied to the dominating company through the delivery chain. The neighborhood of large firms helps attract smaller companies. As opposed to network clusters, large companies dominate the system of companies' interrelationships.
- Satellite Cluster. In this group, clusters that operate as spokes for the hub may be called satellite clusters. A satellite cluster differs from the hub-and-spoke cluster in such a way that firms (satellites) found around a large enterprise may begin to cooperate with one another independently of the said large enterprise.

3. METALLURGICAL INDUSTRY

The analyses based on our own research into the growth of industrial structures in Poland and the methodology applied allowed us to identify the main economic centers in the Polish metallurgical industry.

In Poland, there is a large number of big enterprises. However, it is mainly small and middle-sized companies operating predominantly in the private sector that make up the greatest potential in the metallurgical branch (they constitute approximately 90% of the entire metallurgical branch). They operate mainly as sub-suppliers for various industries such as automotive, aviation, engineering, transport, construction, and food industries. In fact, the metallurgical industry is composed of small and middle-sized firms that are flexible, universal, innovative and offer a large number of workplaces.

The data presented in **Table 1** seem to suggest optimistic predictions for the growth of the metallurgical branch despite the ongoing economic slowdown.

Table 1 Production and employment in Polish metallurgical industry 2006-2011 [10]

Specification	YEAR				
	2006	2007	2008	2009	2010
PRODUCTION IN MILLIONS OF ZLOTIES					
metal products	51 609	60 166	59 767	55 145	48 424
metals	36 594	42 673	41 317	28 067	30 640
EMPLOYEES IN THOUSANDS					
manufacturing of metal products	235.2	254.3	210.0	204.0	207.0
production of metals	69.1	71.5	67.0	59.0	58.0

An upturn in the economy and the investments related to Euro 2012, including the expenditure for the development of the country's infrastructure, contributed to the growth of the construction industry which, in turn, was among the basic recipients of the metal sector products. This means that a boom in construction industry translates into the fast growth of the metallurgical industry. Hence, we could witness an increase in production and employment within the metallurgical branch in 2011 [10,14,15,16]. .

However, it should be stressed that the said effects resulted from the functioning of metallurgical enterprises within cluster structures. If operating on their own only, small and middle-sized firms are far from being competitive, have little chance to collect the financial means for innovations and have no easy access to new technologies. That is why clusters are becoming an increasingly popular form of the enterprise functioning. In Poland, clusters that are found in the metallurgical branch represent the industrial district type. An industrial district cluster type (characterized by network links) can be recognized in:

Klaster Metalowy 'Metalika' ('Metalika' Metallurgical Cluster), which embraces several metallurgical enterprises and from complementary branches from Polish provinces such as Western Pomerania, Greater Poland and Pomerania (see **Table 2**). The goal of this cluster initiative is a dynamic growth and enhanced internal cooperation.

Table 2 Leading units in the cluster [11]

Leading units in the cluster	Scope of activities
Ekomech Sp. z o. o. Wałcz	Production of metal constructions and their parts
Fabryka „Romet- Wałcz” Sp. z o. o.	Production of bicycle parts, wheelchairs and metal wares
Remprodex Sp. z o.o.	Production of containers, steel constructions, agricultural machinery and tanks
Termotech sp. z o.o.	Production of metal constructions and construction industry services

Apart from several small and middle-sized firms, the cluster encompasses Powiatowy Urząd Pracy (County Labour Office) in Wałcz, Starostwo Powiatowe (County Office) and Państwowa Wyższa Szkoła Zawodowa (Higher State Vocational School) in Wałcz.

Klaster Obróbki Metali (Metalworking Cluster) groups about 70 firms based in north-eastern Poland, chiefly from Podlaskie, Warmian and Masurian and Lubelskie Provinces that specialize in metalworking, both services, commerce and manufacturing (see **Table 3**).

Table 3 Leading units in the cluster [11]

Leading units in the cluster	Scope of activities
JAZON Sp. z o.o.	manufacture of machinery and equipment (to customer) services in the field of electroplating and heat treatment, milling
Kotniz - Zdzisław Nietupsk	production of accessories for the boating industry; services (laser cut steel, aluminum, titanium, bending metal sheets and pipes)
MEDGAL Józef Borowski	production of high-quality metal implants (steel / titanium) and the sale of implants
METAL-FACH sp. z o.o.	manufacture of machinery and equipment (buckets bale wrappers, manure, tractor cab, foragers), central heating boilers and semi-trailers
PROMOTECH Sp. z o.o.	production of professional power tools and industrial equipment for machining steel
PRONAR Sp. z o.o.	production of agricultural machinery (tractors, trailers, hay tools) and hardware

Lubuski Klaster Metalowy (Lubusz Metal Cluster) was established in 2007 on the initiative of enterprises northern part of the region of Lubusz (see **Table 4**). The aim of the cluster is the development of science and technology at university level, as well as creating effective links in the region between science and business.

Table 4 Leading units in the cluster [11]

Leading units in the cluster	Scope of activities
DEPARTMENT OF MECHANICAL "MESTIL" SP. With O.O. Gorzow Wielkopolski	Production of spare parts and components for industrial machines and comprehensive transfer of factories
PPUH "POM" Sp. z o.o.	Services Welding assembly, construction elements of production lines, manufacturing of industrial equipment
Factory machinery for wood GOMAD Sp. with o.o.	Manufacture of machinery for woodworking
Meprozet Stare Kurowo Sp. z o.o.	Production and assembly of steel and hot-dip galvanizing services of various steel components
State Higher Vocational School Gorzow Wielkopolski	The university educates include staff needed for companies in the metal industry Lubuskie
Lubuscy Employers	The contracting business environment - actively supports entrepreneurship, promotes the idea that the economy needs to grow in a sustainable manner, economic considerations may not dominate in a decisive manner on the social
Kostrzyńsko-Słubicka Special Economic Zone Kostrzyn	Economic zone

Klaster Spawalniczy KLASTAL (KLASTAL Welding Cluster) - see **Table 5**. Its goal is to provide high-quality products and services as well as to improve the welding technology processes. The cluster is coordinated by the Regional Economic Chamber.

Table 5 Leading units in the cluster [11]

Leading units in the cluster	Scope of activities
MISTA Sp. z o.o.	production of roadwork and construction machines
ZPH WELDMENT Sp. z o.o.	metalworking: cutting, lathing, milling, threading, grinding and boring, as well as execution of welded groups
PPUH INTERMECH Sp. z o.o.	production of parts and assemblies for construction and mining industries; production of railway and tram rolling stock

Apart from those outlined above, we can also bring attention to: Radomski Klaster Metalowy (Radomski Metallurgical Cluster) with 13 participating firms; Klaster Metalowy Nowoczesnych Technologii (Metallurgical Cluster of Modern Technologies) organised in December 2010 (composed of 16 enterprises from the metallurgical and supporting branches); Podlaski Klaster Obróbki Metali (Podlaski Metalworking Cluster) with 72 enterprisers, six of which do not belong in the metallurgical and machine profile (power industry, electronics, information technology). The cluster was initiated and is coordinated by Centrum Promocji Podlasia (Centre for Podlasie Promotion).

The said clusters are most frequently initiated by enterprises which is a good testimony of how well the business environment is organized and how well it is able to cooperate [2,8].

CONCLUSION

Clusters are becoming an increasingly popular approach to the cooperation of enterprises that compete on the market. In recent years we have been witnessing an intensive development of this form of enterprise operation in the metallurgical industry. However, the research done so far seems to suggest that this activity is only at the very early stage of its development. It often lacks the appropriate critical mass for to fully avail of the benefits offered by the cluster. The direct survey method used in contacting the members of selected metallurgical clusters has revealed that they expect the following benefits arising from their participation in a given cluster: increased effectiveness, know-how diffusion and staff turnover, rivalry instead of competition, attracting new resources, effective lobbying, better opportunities to work out a branch strategy, stronger representation at an international level, friendly support of local communities and fast adaptation of the educational system. It should be noted, however, that the mere creation of a cluster or the fact of joining one does not automatically guarantee success and quick benefits. No doubt that clusters do contribute to the company's expansion and of its operational area. Therefore, no wonder that they attract the interest of economic policy agents, business environment institutions, local government and other institutions capable of creating the proper conditions for cluster initiatives and cluster formation. As testified by the experience obtained in the West, clusters have the potential to be the driving force of enterprise growth and regional development [1,2,8].

REFERENCES

- [1] BIALIC-DAVENDRA, M., PAVELKOVA, D., *Cluster concept development - a case study from Poland*, Conferences Development, Energy, Environment, Economics, Tenerife, 2010, ISBN 978-960-474-253-0.
- [2] GRYCUK, A., *Koncepcja grup w teorii i praktyce zarządzania (The concept of clusters in theory and practice of management)*, Organizacja i Kierowanie, Vol. 3 (113), 2003, pp. 3-16.
- [3] MARSHALL, A., *Principles of Economics*. 8th ed. London: Macmillan, 1966.
- [4] PORTER, M.E. *The Competitive Advantage of Nations*. New York, Free Press, 1990.
- [5] PORTER, M.E. *Clusters and the new economics of competition*, Harvard Business Review. Nov/Dec 1998, Vol. 76, Iss. 6, p.78.
- [6] PORTER, M.E., *On Competition*. Updated and Expanded Edition. Boston: Harvard Business School Publishing, 2008.
- [7] PAVELKOVÁ, D., FRIEDEL, L., JIRČIKOVÁ, E., KNÁPKOVÁ, A., SKOKAN, K., and ŠKODÁKOVÁ, P., *Klustry a jejich vliv na výkonnost firem (Clusters and their influence on the performance of firms)*. Prague: GRADA; 2009.
- [8] SZULTKA, S., *Polityka wspierania klastrów w Polsce - doświadczenia, ocena i wnioski na przyszłość, (Cluster policy in Poland - experiences, evaluation and lessons to be learned)*, In DzierŜanowski, M., Szultka, S. (Eds.) *Wspieranie rozwoju klastrów w Polsce i zagranicą - doświadczenia i wyzwania (Support for cluster development in Poland and abroad - experiences and challenges)*. Gdańsk: IBnGR, 2008, pp. 12-15.
- [9] *AirLabs Environmental* [online]. Loganholme QLD, www.airlabs.com.au, Australia, 2014 [cit. 01.03.2014]

- [10] *Central Statistical Office Statistical Bulletin*, Statistical Yearbook of Polish in 2009, CSO, Warsaw 2009, pp.. 507-511.
- [11] *Clusters in Poland*. 2012 catalog, Polish Agency for Enterprise Development, Warsaw 2011, ISBN 978-83-7633-115-7.
- [12] *Klastr OMNIPACK* [online]. www.klastr.net, Jaroměř, 2013 [cit. 01.11.2013].
- [13] Polish Agency for Enterprise Development: *Benchmarking of clusters in Poland* [online]. The report of the study, PARP, www.pi.gov.pl. Warsaw, 2010 [cit. 04.02.2014] ISBN 978-83-7633-155-3.
- [14] Polish Agency for Enterprise Development: *Benchmarking of clusters in Poland* [online]. The report of the study, PARP, www.pi.gov.pl. Warsaw, 2011 [cit. 04.02.2014] ISBN 978-83-7633-155-3.
- [15] Polish Agency for Enterprise Development: *Benchmarking of clusters in Poland* [online]. The report of the study, PARP, www.pi.gov.pl. Warsaw, 2012 [cit. 01.03.2014] ISBN 978-83-7633-155-3.
- [16] *Polish Innovation Portal* [online]. www.pi.gov.pl. Warsaw, 2012 [cit. 01.03.2014].