

# THE IMPACT OF CLUSTERING ON THE INNOVATIVENESS OF FURNITURE INDUSTRY

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Received: 10 March 2014

Accepted: 10 May 2014

## ABSTRACT

The furniture industry in Poland is a rapidly growing area of the economy. The level of innovation strongly influences furniture enterprises competitive position on the market. To support innovation, small and medium furniture industry businesses are affiliate in cluster initiatives. It supports the area of R&D, joint promotional campaigns and financing of new ventures. The paper presents selected furniture industry cluster initiatives that implement policies to support innovation activities of enterprises affiliated to them. In Poland, more and more furniture industry businesses brings together in cluster initiatives that aim to improve their market competitiveness and increase the level of innovation. Taken studies allow to analyse the direction of innovative activities undertaken by companies of the furniture industry with particular emphasis on the ones associated in clusters. Thus the aim of the article is to investigate the interest of Polish furniture enterprises (especially SMEs), in participation in clusters. Moreover the benefits of that choice and its impact on Polish furniture manufacturers innovativeness are evaluated.

## KEYWORDS

innovation, furniture industry, cluster initiative, areas of innovation furniture industry.

## Introduction

In the era of intensifying business competition on both national and world scale, the role of innovation in improving the enterprises competitiveness increases. Innovative activities are stimulus for the development of business entities in various and often new fields or directions. Nevertheless low-tech and small and medium enterprises (SMEs), like the almost 95% of all companies from the wood sector, require some kind of assistance in enhancing innovativeness. Indeed, their innovative potential is very low in comparison to high-tech and large firms. Therefore some of them, including the furniture manufacturers, to improve firm's competitiveness on the market can either make independent attempts of innovation process execution, or decide to join in the cluster structure. In Poland, cluster initiatives are relatively uncommon form of cooperation between business entities in the furniture industry. Howev-

er companies, which have decided on that kind of partnership, share their competencies, reduce various costs, consolidate limited resources, and in this way increase their productivity, innovativeness, and profitability. Thus the aim of the article is to investigate the interest of Polish furniture enterprises (especially SMEs), in participation in clusters. Moreover the benefits of that choice and its impact on Polish furniture manufacturers innovativeness are evaluated.

## The importance of Polish furniture industry in the home and world economy

According to the Polish Classification of Economic Activities furniture industry comes under 31.0 section which belongs to the wood sector. Except the industry, there is also the manufacture of wood, cork,

straw and wicker products excluding furniture production (section 16.0) as well as the manufacture of paper and paper products (section 17.0). The role of furniture industry in the Polish economy has increased greatly over the last few years. In the REGON register, on the day of 31st December 2012 over 27 thousand economic subjects operating in the furniture industry were listed [1]. However, as regards the number of economic subjects running a furniture-based business activity in a given year and employing more than 9 people according to the Central Statistical Office (GUS) there were 1669 of them that comprised the following: 74.5% of the companies employed between 10 and 49 people, 19.6% generated the employment of between 50 and 249 and the greatest enterprises as regards employment made up 5.9% [2]. The above-mentioned data refers to companies that run account books and employ more than 9 people. Altogether 124.6 thousand people were employed in economic subjects dealing with furniture production (with the exception of micro companies), 48% of them found employment in small and medium enterprises. It means that every third person employed in the processing industry companies worked at that time in the furniture sector. The value of sold production in furniture industry in 2012 amounted to over 25.6 billion PLN which comprised 2.8% of the value of sold production in processing industry and 2.3% of processing altogether. Products launched onto the furniture market manufactured by big enterprises were worth 15.9 billion PLN (62.1%). Furniture producers employing from 10 to 249 people achieved production worth 9.7 billion PLN (37.9%).

Table 1  
 Basic data on economic subjects in industry with the emphasis on furniture sector in 2012.

Itemisation	Number of subjects	Level of employment [thousand]	Value of production sold [million PLN]
Production of furniture altogether, employing:	1669	124.6	25649.7
from 10 to 49 people	1244	23.8	3715.6
from 50 to 249 people	327	35.2	6000.8
over 249 people	98	65.7	15933.3
Industrial processing	29333	362.3	924619.3
Industry altogether	32006	2482.0	1109174.9

Source: own study on the basis of "Statistical Yearbook of Industry 2013".

Polish furniture industry occupies a strong position on the international market. It ranks eighth as regards the production value in furniture manufacture, it is surpassed only by: China, USA, Italy, Ger-

many, Japan, Brazil and Great Britain. On the European market, Polish furniture industry ranks fourth coming before, since 2012, Spain and France [3].

Polish furniture plays a significant role in international trade exchanges. Every year almost 90% of furniture sold production is destined for export. In the world ranking of furniture exporters China has been an undisputed leader for years. In 2012 the value of production destined for export amounted in China to 56.72 billion USD (Fig. 1). Other places were occupied by: Germany (12.68 billion USD) and Italy (10.92 billion USD). Poland ranked high whose value of furniture export amounted to 8.7 billion USD. In 2012 the export of furniture, occupying one of the leading positions in Polish export, increased at 0.6%. It needs to be noted that in the turnover of these articles Poland achieved a considerable surplus which in the year 2012 amounted to 5.2 billion EUR [4].

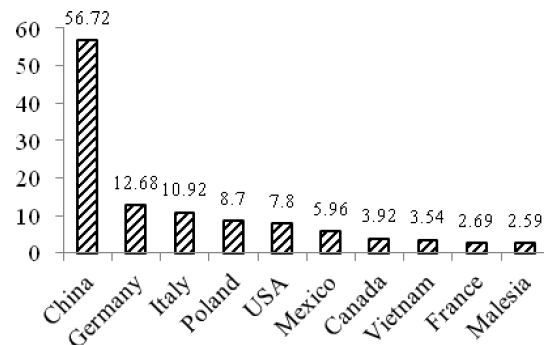


Fig. 1. Ranking of furniture exporters in the world as regards sales value in 2012 [billion USD]. Source: Polish Furniture Outlook 2014, p. 13.

Taking into consideration the volume of furniture production destined for export in 2012 Poland ranked second in the world ranking (Fig. 2). However, because of lack of brand recognition and a low price of Polish furniture products, Poland ranked fourth in the world classification as regards the sales value.

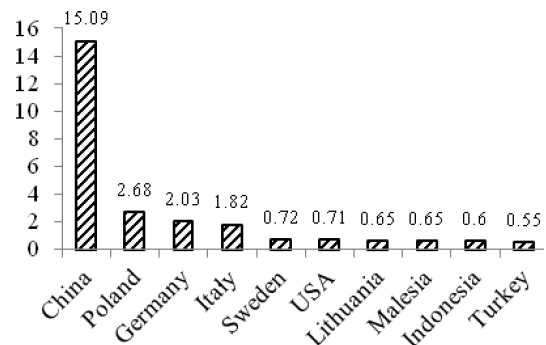


Fig. 2. Ranking of furniture exporters in the world as regards sales volume in 2012 [million ton]. Source: Polish Furniture Outlook 2014, p. 13.

A great majority of furniture sold production destined for export is sent to Germany. In 2012 40% of Polish furniture entered the German market. Other positions were occupied by: France (8.0%), Great Britain (6.4%), Czech Republic (5.7%) and Holland (4.3%). Regardless of the kind of furniture sent abroad, the first place of its recipients belongs to Germany [2-3]. In the structure of furniture export according to the product groups the first place was occupied by sit or sleep furniture and its components. Its share in the value of export together of furniture industry exceeded 4.5 billion USD, which was over 52.5%. Among its major recipients there were: Germany, France, Great Britain and Czech Republic. The second place in assortment structure in Polish export was occupied by other furniture. In 2012 the value of sold production of other furniture destined for export amounted to 3.2 billion USD. Similarly, the major recipients were Germany, France, Great Britain, Czech Republic and additionally United States [5].

As it follows from the outlined statistical data, Polish furniture industry is characterized by great activity of export. As one of the very few sectors of Polish industry, the furniture industry yields a positive commercial balance that is the value of products sent abroad greatly exceeds the value of imported products. Moreover, there are a number of characteristics for the Polish furniture industry that single it out from other sectors of the industry. In Fig. 3 chosen characteristics of Polish furniture industry were presented. Exchange rate risk is strictly connected with furniture export. In particular it refers to the Euro currency, as in this currency most of the export is accounted for. EU countries are major recipients of Polish furniture. It needs to be noted, however,

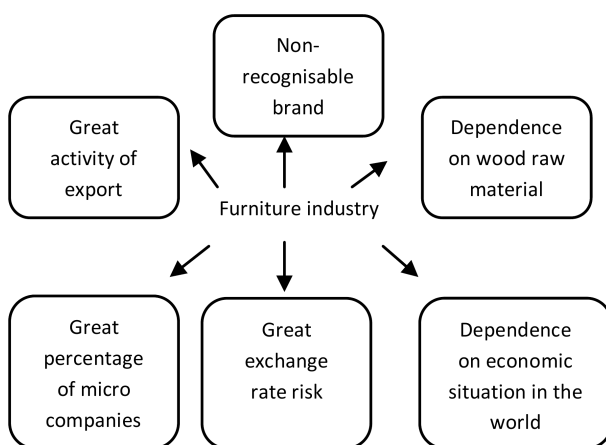


Fig. 3. Chosen characteristics of furniture industry in Poland.

that despite the high position in the world ranking of producers and exporters of furniture, Polish brand is still not recognized on foreign markets. An undisputed characteristic of furniture industry is its great dependence on the wood raw material, it is the basic material used in the production process (e.g. solid wood, chipboards, MDF boards).

### Innovativeness in the Polish furniture clusters

Innovation is an open process, in which many different actors – companies, customers, investors, universities, and other organizations – cooperate in a complex ways to develop and implement new ideas in order to solve problems [6]. The definition of innovation spins from the individual product, process and programme levels to whole organisation systems. That's way product and process, marketing and organizational innovation types are distinguished [7]. The interaction between customers, competing companies, suppliers, knowledge environments and service institutions in an innovation system is said to influence greatly on localized economic development by creating reduced cost, and increased productivity, enhancing the ability to innovate and give a better market adaption [8]. Clusters can be considered as “reduced scale innovation systems”. Creativity and innovation capacity enables not only firms, but also industrial clusters, in general, to gain competitive advantage in the world markets [9].

Cluster innovation are described as a collaborative innovation process of specialized enterprises in the same or related industries that cooperate with suppliers, customers, marketing network, government, and other actors in the cluster. Because of geographic proximity and comparisons between each other, enterprises in clusters are under strong competitive pressure, which drives innovation and the spillover and diffusion of the innovation [10]. This is also the reason that innovation often occurs locally whereas its benefits spread more widely through productivity gains. Therefore some researchers suggest that firms in the cluster have potential to be more innovative than others because they benefit from agglomeration economies such as nearby suppliers attaining efficient scale, direct observation of competitors, and ability to exploit collective knowledge. Moreover, firms in clusters also benefit from network-based effects, especially enhanced social interaction [8, 11] and have more opportunities to get in touch with customers and be aware of new customers' needs more clearly and more quickly [10].

Policy makers in EU heavily promote network and cluster initiatives in order to boost collaboration and innovation in special sectors or regions [12]. The sector matters in the intensity of innovative activities, emphasizing that high-tech production sectors have higher levels of innovation, compared to traditional production sectors [9]. The interactions between firms and local organizations in high-tech clusters are not observed or are, at least, less intense as in low-tech clusters, e.g. furniture industry [13]. Nevertheless within Polish clusters 47% of high-tech firms participate in innovation activities co-operation, whereas only 24% from the low-tech firms [14]. That observation also confirms the findings of Turkish research [9], which suggested that high-tech manufacturing firms, which were expected to be more closely linked with the global markets, mostly depend on national and local linkages. That fact in same degree results from determinants which characterize small and large firms (Table 2) and low and high-tech firms (Table 3).

Table 2  
Innovativeness in small and large firms.

Innovativeness	
Small firms	<ul style="list-style-type: none"> <li>• innovativeness is more critical for their survival and growth, but also more risky than for larger firms</li> <li>• innovativeness assures investors that they have the capability to grow over time and increase their cash flows</li> <li>• have higher stock returns than large firms because of higher salience of any single event in small firms</li> <li>• <b>innovativeness should have a stronger impact on small firm value</b></li> </ul>
Large firms	<ul style="list-style-type: none"> <li>• are more likely to benefit from innovativeness in terms of market and financial positions</li> <li>• can deploy more resources (e.g. sales support) to sustain their innovations in the marketplace</li> <li>• are able to reach consumers quickly because they have preferential access to distribution channels</li> <li>• often enjoy a reputation effect over small firms (consumers perceive the purchase of the large firms' innovations as less risky)</li> <li>• can generate great revenues as a result of their innovation efforts</li> <li>• enjoy economies of scale that allow them to obtain inputs at lower prices than small firms, thus reducing the cost of operations</li> <li>• are better tracked by analysts and, in general, have a much smaller "surprise" element</li> <li>• are more likely to lose from cannibalization because innovativeness often leads to increasing cash flows from the new products by reducing cash flows from other existing products</li> </ul>

Source: own study on the basis of Rubera and Kirca 2012, p. 133–134.

Table 3

Innovativeness in low-tech and high-tech firms.

Innovativeness	
Low-tech firms	<ul style="list-style-type: none"> <li>• do not have the onus to consistently introduce new products</li> <li>• their consumers are less sensitive to innovativeness</li> <li>• innovativeness in low-tech industries does not generate the same volume so that's way low-tech firms achieve smaller cost reduction and a worse financial position than firms in high-tech industries</li> <li>• the "technological mugging" risk is almost absent so low-tech firms can generate cash flows from their innovativeness for a longer time period than high-tech firms</li> <li>• <b>innovativeness should generate greater firm value in low-tech industries</b></li> </ul>
High-tech firms	<ul style="list-style-type: none"> <li>• innovation is the critical element of competition for them</li> <li>• are forced to constantly introduce new products to meet rapidly changing consumer needs</li> <li>• failure to innovate would cause the firm to exit the market</li> <li>• innovativeness should be more beneficial to improve the market position of these firms</li> <li>• achieve greater revenue and cost reduction through high volume so they should obtain a better financial position than firms in low-tech industries</li> <li>• present a high "technological mugging" risk that innovativeness can be easily and quickly rendered (for investors, this risk translates into short-term cash flows from innovativeness)</li> </ul>

Source: own study on the basis of Rubera and Kirca 2012, p. 133–134.

Innovation is one of the key factors for the survival, growth and development of SMEs [13]. Even though large firms are able to deploy more resources on innovation and benefit from innovativeness in terms of market and financial positions, innovativeness have a stronger impact on small firm value and generate greater firm value in low-tech industries [15]. The firms with strong local linkages have higher numbers of innovations, while most of the firms with weak local linkages are less innovative [9] so locating company in the cluster enhances it innovativeness [6]. The clusters of SMEs have proven to be among the most dynamic ways to promote the growth of regional economic systems. Moreover they also can be seen as an important mechanism for spurring innovation and dynamic economic development [16]. However the share of Polish enterprises participated in innovation activities cluster co-operation in the years 2007–2012 (Fig. 4) surprising indicates that in that period the percentage of small and medium firms remained level up to 10%. On the other hand the share of large

industrial companies in the clusters rose from 16% in 2007 to 21% in 2012. Indeed, in this class of firm size in 2010–2012 every fifth industrial enterprise, which undertook innovative activities, belonged to cluster.

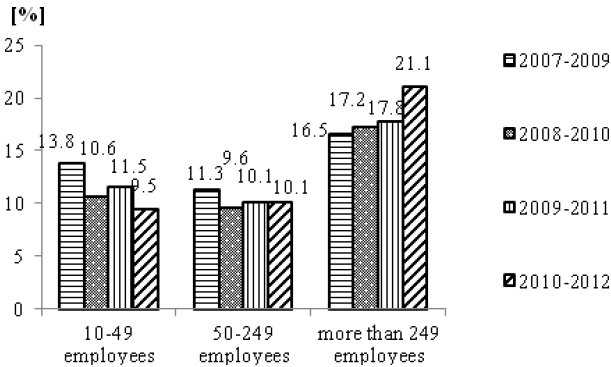


Fig. 4. Industrial enterprises which participated in innovation activities cluster co-operation in the years 2007–2012 by number of persons employed. Source: own study on the basis of <http://www.stat.gov.pl>.

In the furniture industry the share of innovative enterprises decreased by half from 2004 to 2011, i.e. from 22% to 11% (Fig. 5). The positive growth, which amounts to almost 19%, was noticed only just in 2010–2012.

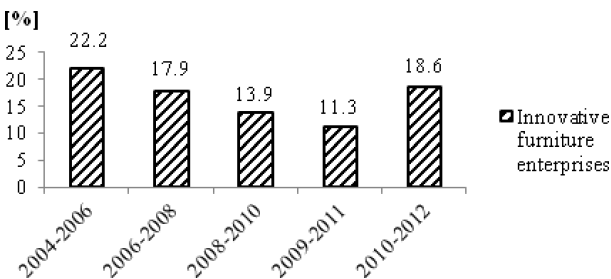


Fig. 5. Innovative furniture enterprises in the years 2006–2012. Source: own study on the basis of <http://www.stat.gov.pl>.

It has marginal reflection in the percentage of furniture enterprises which introduced product or process, marketing and organizational innovations in the years 2004–2012 (Fig. 6). The share of product or process innovations, that were implemented at furniture companies, decreased dramatically from 22% in 2004 to 4% in 2011. In the same period the marketing innovations share fell from 22% to 8%, and organizational innovations – from 21% to 6%. In 2010–2012 for every kind of innovation the 4%–5% growth was noted, but the most significant was in the group of marketing innovations, which were also the most popular among furniture manufacturers.

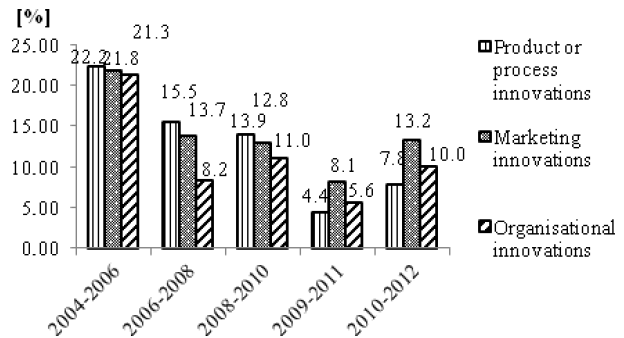


Fig. 6. Furniture enterprises which introduced product or process, marketing and organizational innovations in the years 2004–2012. Source: own study on the basis of <http://www.stat.gov.pl>.

In regard to furniture enterprises which participated in cluster co-operation in the years 2007–2012 the decline of interest in innovation activities was noticed too (Fig. 7). In 2010–2012 only 2% furniture enterprises were organized in clusters.

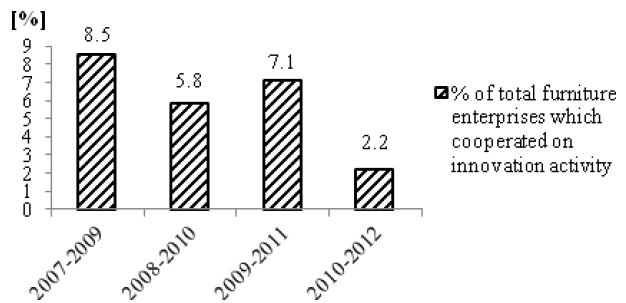


Fig. 7. Furniture enterprises which participated in innovation activities cluster co-operation in the years 2007–2012. Source: own study on the basis of <http://www.stat.gov.pl>.

Specialization, like furniture manufacturing, is an exceptional feature of cluster companies. Therefore, it is a perfect niche for innovation processes and activities. Additionally cluster companies are motivated to compete with one another and it induces their innovativeness [16]. Nevertheless the results presented above indicated that Polish furniture manufacturers haven't taken advantage of membership at clusters yet. The decreasing interest in cluster co-operation participation can suggest it. The causes of that should be diagnosed in detail in the near future.

## The importance of clusters for furniture industry companies

The first cluster concept was established in the nineties of the twentieth century. It defined industrial clusters as “geographic concentrations of in-

terconnected companies, specialized suppliers, service providers, firms operating in related industries and associated institutions (e.g. universities, standards bodies and industry associations) in different areas, competing among themselves, but also cooperating” [17]. Clusters can help build a relationship between buyer and seller through the creation of vertical interaction in the production process or can support system of horizontal relations by supporting the flow of common technology, manpower or information [18].

In Poland, since 2008, clusters has been defined as “the spatial and sectorial concentration actors for economic development or innovation involving at least ten enterprises, including micro-enterprises, small and medium-sized enterprises, engaged in economic activity in one or several neighboring regions, competing and cooperating in the same or related industries” [19].

A cluster can be a driving force in the development of a particular sector of the regional economy. Economic policy, which is based on the concept of a cluster can provide an effective response to the challenges of globalization contributing to increase productivity by providing easier access and exchange of information and support for innovative activities [20]. These activities have also beneficial effects on the industrial environment, encouraging the start-up of new companies and facilitating the commercialization of new products and technologies [21]. The positive impact of industrial clusters also extends to local communities by increasing economic activity and generating new employment opportunities [22]. To succeed – to build technical infrastructure and social capital – the initiative should pursue several goals at the same time (picture 1). These objectives are equivalent, even though they are performed by different clusters at different levels, depending on their capabilities and requirements.

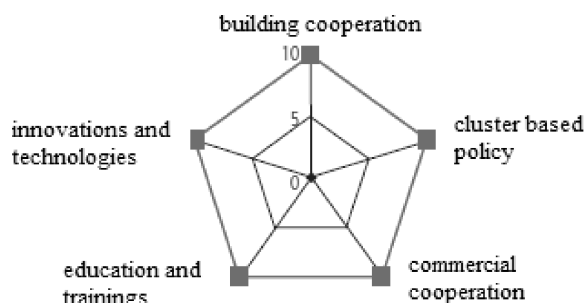


Fig. 8. Table of cluster initiatives objectives Source: O. Solvel, G. Lindqvist, Ch. Ketels, The Cluster Initiative Greenbook, Iked International Organization for Knowledge and Enterprise Development, p. 11.

The cluster initiative can also build their lines of action for success factors. Thanks to them, can gradually develop in the long term. These factors are:

- The presence of the existing networks, partnerships and linkages,
- A strong base of support innovative R&D, where appropriate,
- The existence of a strong skills base,
- Adequate technical infrastructure,
- The presence of large companies,
- A strong corporate culture,
- Access to finance [23].

To economic growth in Poland contributes cluster initiatives. According to the European Cluster Observatory research, in Poland there are 246 cluster initiatives. Among those that have been tested for innovation, 15 have high level of innovation (information technology sector, aviation, eco-energy), 19 have medium level of innovation (dealing with, inter alia, hospitality and tourism) and 13 have low levels of innovation (among others the construction sector, printing and wood and furniture industry). Table 4 shows the total number of clusters with companies in the wood sector.

Table 4  
Number of clusters of the wood sector in Poland.

Trade	Number of clusters
Wood-furniture	12
Paper products	9

Source: Own study on the [www.clusterobservatory.eu](http://www.clusterobservatory.eu)

The timber sector is strongly represented in the Warmia-Mazury region. There are four cluster initiatives in that region, while in others, for example, in Wielkopolska and Lower Silesia, one each. Initiatives of Warmia-Mazury are associated primarily with the production of windows and furniture. This article is describing the “Elblag Furniture Cluster”, “Silesia Furniture Cluster” and “Szczecinecki Furniture Cluster”, due to the high level of innovation and activity undertaken by these institutions against the companies not belonging to the cluster.

Furniture Cluster of Wielkopolska supports the activities of its affiliated companies, through the organization of training courses and workshops to promote individual brands, obtaining certificates of raising the value of products or research and development. Important initiative of the cluster is the issue of newsletter, containing articles describing current EU programs and regional business support. They also issue a catalog presenting organizations associated in the cluster and promoting them on the market.

Another example of cooperation between entrepreneurs of the wood sector is “Silesian Furniture

Cluster". Operating since 2007, focuses joinery manufacturers, suppliers of raw materials and materials necessary for production. Currently in the cluster there are 51 companies, government of Opole province and also R&D facility, i.e. Opole University of Technology. In the cluster there are associated manufacturing, trading, services, including, first and foremost manufacturers of joinery and furniture, wood industry companies supplying raw materials and production materials. Cluster cooperates with several institutions, organizations in the country and abroad, who have extensive experience in the implementation of cluster activities. There have already been established industry contacts with clusters in Poland, Austria and the Czech Republic. Cluster opened in 2013 a new factory for the manufacture of this product, which resulted in an increase in jobs in the region [24].

The most active cluster initiative of Warmia and Mazury is "Elblag Furniture Cluster", which started its operations in 2009. The cluster includes not only the manufacture of furniture and components, but also institutions providing services to enterprises. In both projections involving associated enterprises but also business support institutions and universities. The most important initiative of the cluster in recent times is the implementation of computer software that is designed to not only computerization of production processes, but also storage and accounting. The software will be available to all traders operating in "Elblag Furniture Cluster".

"Szczecinecki Furniture Cluster" is the latest initiative of the furniture sector in Poland, launched in May 2013 in Szczecin in the framework of the European Union, the West Pomeranian Regional Development Strategy and the Regional Innovation Strategy Kronospan in Szczecinek. The project aims to launch an advanced technology park and laboratories to support research and development, design, implementation, and target production of new products. Establishment of technological and industrial park can significantly improve the competitiveness of local industry, strengthen the role of "Szczecinecki Furniture Cluster" as a source of new technologies and provide the space and create favorable conditions for creation and the development of innovative projects [25].

## Conclusions

1. Polish furniture industry plays a significant role in the world market. As regards the production value, Poland ranks eighth among the producers of furniture. Additionally, around 90% of furniture sold

production is sent abroad, which influences Poland's high position in the world ranking of furniture exporters. In 2012 as regards the volume of products destined for export, Poland was surpassed only by China. Taking into consideration the criterion of the value of furniture export additionally Germany and Italy were in the lead.

2. The furniture industry because of the low level of technology is also characterized by a low level of innovativeness. Number of innovation implementations from 2004 to 2012 in the case of product and process innovations decreased by 14%, marketing innovation by 9%, and organizational innovation by 11%. This suggests the decline in innovativeness of the furniture industry. In addition, during the research period it was noticed a trend to less interest in implementing product and process innovations by furniture manufacturers in favour both: marketing and organizational innovations.

3. Belonging to the cluster (especially SMEs) raises the innovativeness of enterprises. However, only 2% of companies in the furniture industry is involved in cluster initiatives. The explanation of this phenomenon needs to take additional studies to establish the reasons for the negligible interest in participation in cluster initiatives by furniture manufacturers.

4. Cluster initiatives are an important activity for furniture industry companies. It helps in the implementation of innovative solutions for both product and process associated companies in the cluster.

5. In addition, a positive influence on brand credibility of organizations participating in the initiative and assist in solving current problems by increasing the intellectual capital.

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